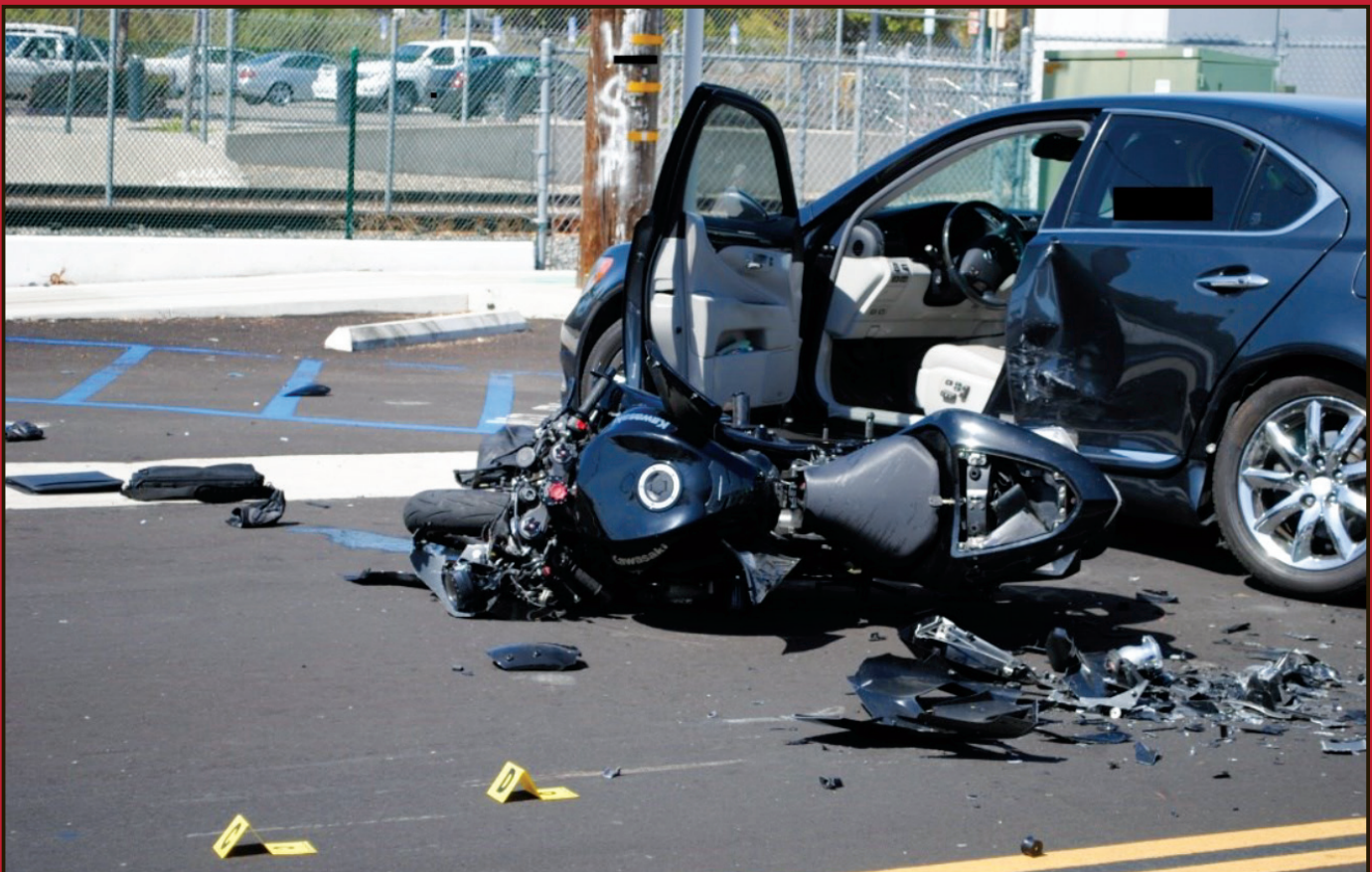


Motorcycle Crash Causation Study: Volume 2—Coding Manual

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FOREWORD

The Motorcycle Crash Causation Study, conducted through the Federal Highway Administration Office of Safety Research and Development, produced a wealth of information on the causal factors for motorcycle crashes, and its corresponding Volumes provide perspectives on what crash-countermeasure opportunities can be developed. This study used a crash- and control-case approach developed from the Organisation for Economic Cooperation and Development protocols, which as discussed in this report, has provided insights into more than 1,900 data elements that may be associated with motorcycle-crash causation. The research team produced a final report along with a 14-volume series of supplemental reports that provide an overview of the study and a summary of its observations, the data-collection forms and coding definitions, a tabulation of each data element collected from each form, and selected comparisons with previous studies. It is anticipated that readers will select those Volumes and data elements that provide information of specific interest.

This document, *Volume 2—Coding Manual*, provides the coding conventions used in this study. It provides data that enable the proper interpretation and understanding of the codes assigned to variables of interest during the study. This report will be of interest to individuals involved in traffic safety, safety training, crash and injury reduction, and roadway design and policy making, as well as to motorcycle- and safety-equipment designers, crash investigators and researchers, motorcycle and automotive manufacturers and consumers, roadway users, and human-factors specialists.

Brian P. Cronin, P.E.
Director, Office of Safety and Operations
Research and Development

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
AREA				
in ²	square inches	645.2	square millimeters	mm ²
ft ²	square feet	0.093	square meters	m ²
yd ²	square yard	0.836	square meters	m ²
ac	acres	0.405	hectares	ha
mi ²	square miles	2.59	square kilometers	km ²
VOLUME				
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft ³	cubic feet	0.028	cubic meters	m ³
yd ³	cubic yards	0.765	cubic meters	m ³
NOTE: volumes greater than 1000 L shall be shown in m ³				
MASS				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
TEMPERATURE (exact degrees)				
°F	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	°C
ILLUMINATION				
fc	foot-candles	10.76	lux	lx
fl	foot-Lamberts	3.426	candela/m ²	cd/m ²
FORCE and PRESSURE or STRESS				
lbf	poundforce	4.45	newtons	N
lbf/in ²	poundforce per square inch	6.89	kilopascals	kPa
APPROXIMATE CONVERSIONS FROM SI UNITS				
Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
AREA				
mm ²	square millimeters	0.0016	square inches	in ²
m ²	square meters	10.764	square feet	ft ²
m ²	square meters	1.195	square yards	yd ²
ha	hectares	2.47	acres	ac
km ²	square kilometers	0.386	square miles	mi ²
VOLUME				
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m ³	cubic meters	35.314	cubic feet	ft ³
m ³	cubic meters	1.307	cubic yards	yd ³
MASS				
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg (or "t")	megagrams (or "metric ton")	1.103	short tons (2000 lb)	T
TEMPERATURE (exact degrees)				
°C	Celsius	1.8C+32	Fahrenheit	°F
ILLUMINATION				
lx	lux	0.0929	foot-candles	fc
cd/m ²	candela/m ²	0.2919	foot-Lamberts	fl
FORCE and PRESSURE or STRESS				
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	lbf/in ²

*SI is the symbol for the International System of Units. Appropriate rounding should be made to comply with Section 4 of ASTM E380.
(Revised March 2003)

MOTORCYCLE CRASH CAUSATION STUDY REPORT SERIES

This Motorcycle Crash Causation Study (MCCS) research report series is comprised of a final report supplemented by 14-volumes. This document is Volume 2. Each Volume is a description of a data-collection form or protocol used in the MCCS, and any reference to a Volume in this series will be referenced in the text as “MCCS Volume 1,” “MCCS Volume 2,” and so forth. A list of the Volumes is as follows:

Volume	Title	Report Number
1	Data Collection and Variable Naming	18-040
2	Coding Manual	18-039
3	Crash Form Data Tabulation	Unpublished, available on request
4	Environment Form Data Tabulation	Unpublished, available on request
5	Contributing Factors Form Data Tabulation	Unpublished, available on request
6	Motorcycle Rider and Control Rider Forms Data Tabulation	Unpublished, available on request
7	Motorcycle Passenger and Control Passenger Forms Data Tabulation	Unpublished, available on request
8	Motorcycle Mechanical and Control Motorcycle Mechanical Forms Data	Unpublished, available on request
9	Motorcycle Dynamics Form Data Tabulation	Unpublished, available on request
10	Injury Form Data Tabulation	Unpublished, available on request
11	Other Vehicle Driver Form Data Tabulation	Unpublished, available on request
12	Other Vehicle Form Data Tabulation	Unpublished, available on request
13	Helmet Form Data Tabulation	Unpublished, available on request
14	Study Comparison Report	Unpublished, available on request

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LIST OF ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ABS	antilock braking system
AIS©	Abbreviated Injury Scale
ANSI	American National Standards Institute
BC	beginning of curve
BAC	blood alcohol concentration
BRC	Bike Rider Course
CB	citizens band
CBS	Combi Brake System
CD	compact disc
CDC	<i>Collision Deformation Classification</i>
CG	center of gravity
CNC	computer numeric control
CT	curve to tangent
DSI	Dynamic Science, Inc.
EC	end of curve
EMS	emergency medical services
EMT	emergency medical technician
EPP	expanded polypropylene
EPS	expanded polystyrene
ER	emergency room
EU	European Union
FCI	Functional Capacity Index
FHWA	Federal Highway Administration
GAWR	gross axle weight rating
GED	General Equivalency Development
GPS	Global Positioning System
GSI	Gadd Severity Index
GVWR	gross vehicle weight rating
HIC	head-injury criteria

HOV	high-occupancy vehicle
HSIS	Highway Safety Information System
ICD-9	International Classification of Disease, Version 9
ISO	International Safety Organization
MAIDS	Multipurpose Automatic Inspection and Diagnostic System
MC	motorcycle
MCCS	Motorcycle Crash Causation Study
MRC	Motorcycle Riding Concepts
MSF	Motorcycle Safety Foundation
MUTCD	<i>Manual on Uniform Traffic Control Devices for Streets and Highways</i>
MV	motor vehicle
NASS	National Automotive Sampling System
NFS	not further specified
NHTSA	National Highway Traffic Safety Administration
NICB	National Insurance Crime Bureau
NOAA	National Oceanic and Atmospheric Administration
NMVCCS	National Motor Vehicle Crash Causation Survey
OECD	Organisation for Economic Cooperation and Development
OEM	original equipment manufacturer
OV	other vehicle/opposing vehicle
PAR	police accident report
PC	point of curvature
PDOF	principal direction of force
POI	point of impact
POR	point of rest
PT	point of tangency
RR	railroad
RSS	rich site summary
RWAL	rear-wheel antilock
SAE	Society of Automotive Engineers
TC	tangent to curve
TIA	transient ischemic attack

TTC	temporary traffic control
USDOT	U.S. Department of Transportation
VIN	vehicle identification number

INTRODUCTION

The Federal Highway Administration (FHWA) conducted this Motorcycle Crash Causation Study (MCCS) to identify and evaluate factors that may contribute to the rising toll of motorcycle crash-related fatalities and injuries in the United States.

The National Highway Traffic Safety Administration (NHTSA) conducted a pilot study titled *Motorcycle Crash Causes and Outcomes: Pilot Study* in September 2005 (herein referred to as the Pilot Study).⁽¹⁾ The purpose of the Pilot Study was to develop and evaluate the research methodology and instruments the MCCS used to investigate motorcycle (MC)-involved crashes in the United States.

There has been no U.S. program focused on such crashes since the *Motorcycle Accident Cause Factors and Identification of Countermeasures, Volume 1: Technical Report* study in the 1970s.⁽²⁾ That project was the starting point for a methodology adopted by the Organisation for Economic Cooperation and Development (OECD) and subsequently used in research conducted in Europe.⁽³⁾

NHTSA's Pilot Study adapted the OECD methods for use in the United States and enhanced the protocol with the addition of data elements drawn from the National Automotive Sampling System (NASS) and recommendations from the advisory project working group.⁽⁴⁾ As a result, all new data-collection forms, a coding and editing manual, training materials, a database, and a user manual were created.

This MCCS collected data on 351 police-reported, motorcycle-involved, injury-producing crashes. Whenever possible, trained investigators responded to notifications of crashes and began data collection while first responders were present at the scene of the crash.

Comparison data were gathered through the use of case controls. Non-crash-involved motorcyclists were interviewed, and their motorcycles were inspected. Data collection generally occurred 1 week after each crash at the same location and time of day. Two case controls were included for each investigated crash.

The content of the coding manual follows that of the data-collection forms. Each crash case received a unique four-digit case number, which was the only identifier used in the case reports and in the database. There is a Crash Form for every case. This volume is the master form that establishes case parameters. Every case also has one Motorcycle Mechanical Form, one Motorcycle Dynamics Form, and one Motorcycle Rider Form. If there were passengers on the motorcycle, their data were recorded using Motorcycle Passenger Forms and were identified by rider number. One Environment Form was completed for each vehicle in the crash. Also, the Rider/Occupant Injury Form¹ was used to record coded injury information.

If more than one motorcycle was involved in a given crash, one was selected as the case motorcycle, and information about the remaining motorcycles was recorded on Other Vehicle Forms. Data on cars, trucks, and buses involved in the crash were also recorded on Other Vehicle

¹Table 7 in Volume 1 details the numbering scheme of the variables used for the Rider/Occupant Injury Forms.⁽⁵⁾

Forms, and these vehicles were sequentially numbered. Information about the vehicle operators was reflected on Other Vehicle Driver Forms. There was one Environment Form for each Other Vehicle Form. Rider/Occupant Injury Forms recorded data for other-vehicle drivers. Helmets were inspected, and those that were used in cases of serious injuries were obtained for laboratory testing when possible. Data from the inspections and testing were recorded on the Helmet Testing/Evaluation Form.

The Contributing Factors Form reflects expert judgment and opinion as to the pre-crash circumstances and crash parameters that may have contributed to the crash and resulting injuries and their severity.

Information collected from the case controls was recorded as follows: the corresponding crash four-digit case numbers were used; investigators completed a Control Motorcycle Mechanical Form for each inspected motorcycle; the Control Motorcycle Rider Form was used for information collected from rider interviews; and a Control Motorcycle Passenger Form was used to record passenger information. The motorcycles, riders, and passengers were sequentially numbered for each case control.

The format of this coding manual provides useful information for crash investigators and subsequent users of the data. The manual covers every data element, each of which is listed, on every form. The OECD reference is also included; however, if there is no OECD reference, the data element did not appear in the OECD data-collection protocol.

The information provided in the Conventions/Coding Source section describes the coding convention (the attributes) and also provides a reference for the source of the attribute descriptions when applicable. These sources range from Dynamic Science, Inc., (DSI) to other technical and publicly available sources. The Element Attributes section shows attributes in the same order as they appear on the data-collection forms. The Range section displays the allowable coding ranges that have been programmed into the database as range checks and reflects the allowable responses for the data element. The Source section describes the originations of the responses, which may include interviews, observations, official documents, calculations, or investigator judgment. The Remarks section displays guidance in defining or interpreting the attributes.

CRASH FORM

Case Number

OECD Reference: None

Convention/Coding Source: N/A

Element Attributes: Case number

Range: 0001–2000

Source: Primary–case assignment chart

Remarks: This variable is assigned by the investigator from the source.

CRASH FORM

1. Day of Week Crash Occurred

OECD Reference: A.2.2

Convention/Coding Source: OECD, NASS⁽⁴⁾

Element Attributes:

- (1) Monday
- (2) Tuesday
- (3) Wednesday
- (4) Thursday
- (5) Friday
- (6) Saturday
- (7) Sunday

Range: 1–7

Source:

- Primary—police crash report
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

CRASH FORM

2. Time of Day Crash Occurred

OECD Reference: A.2.1

Convention/Coding Source: OECD, NASS⁽⁴⁾

Element Attributes: 24-hour clock

Range: 0001–2400

Source:

Primary—police crash report

Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

3. First Harmful Event for Motorcycle

OECD Reference: A.2.4

Convention/Coding Source: OECD, NASS,⁽⁴⁾ DSI

Element Attributes:

- (01) collision with other motor vehicle
- (02) collision with fixed object
- (03) collision with nonfixed object
- (04) collision with pedestrian/cyclist/nonmotorist
- (05) noncollision
- (98) other event (specify)
- (99) unknown event or object

Range: 01–05, 98, 99

Source:

- Primary—scene inspection and vehicle inspection
- Secondary—police report and interviewees

Remarks: This variable is assigned by the investigator from the sources.

Enter the appropriate initial harmful event in the crash sequence. Note that there could be more than one crash event or objects contacted; however, code only the first of the harmful events that occurred.

collision with other motor vehicle: Select this when the initial harmful event is between the motorcycle and another vehicle in transport.

collision with fixed object: Select this when a motorcycle is involved and has interaction with one or more fixed objects. These include guardrails, bridge abutments, curbs, embankments, ditches, the ground, impact attenuators, walls, trees, shrubbery, bushes, poles or posts, and other roadside features or objects not readily movable. Note that “laying the bike down” is considered an impact with the ground whether or not it was intentional.

collision with nonfixed object: This refers to a collision with any moveable object that is either readily moveable or is moving and is not specifically named elsewhere. Examples include trash cans, grocery carts, unoccupied pedal cycles, small boulders, sheared poles, and objects that have fallen off other vehicles.

3. First Harmful Event for Motorcycle (Continued)

collision with pedestrian/cyclist/nonmotorist: Select this when a person walking or running is struck, or a person operating or riding on a bicycle, tricycle, or motorized bicycle. A nonmotorist refers to a person who is not an occupant of a motor vehicle in transport, a pedestrian, or a cyclist. A nonmotorist conveyance includes the following: baby carriage, coaster wagon, ice skates, roller skates, push cart, scooter, skateboard, skis, sled, wheelchair, rickshaw, etc. This includes those persons in a nonmotorist conveyance who hold onto a motor vehicle in motion.

Use this attribute if the impact was with a nonmotorist conveyance or a nonmotorist associated with a nonmotorist conveyance. This attribute also would be used for the occupants of a motor vehicle not in transport only if they become separated from the not-in-transport vehicle. This code is also used if the object contacted was an animal (stationary or nonstationary).

noncollision: This is used when crash circumstances result in non-impact-related damage or harm. This includes a fire or explosion.

other event (specify): This is used when an event occurs that cannot be classified using one of the existing attributes or definitions. A complete description should be given as well as describing the event in the case summary.

unknown event or object: This is used whenever the object contacted is not known or if an unknown event occurs and the researcher cannot determine what the event consisted of and how to enter it.

CRASH FORM

4. If This Is a MC vs. MC, Provide Matching Case Number

OECD Reference: None

Convention/Coding Source: OECD

Element Attributes: Provide matching case number. If there is no matching case, it should equal 0000.

Range: 0001–2000

Source: Primary—case number chart

Remarks: This variable is assigned by the investigator from the source, or coded 0000 if it is not MC versus MC.

How to code a crash with two or more motorcycles: When a given crash involves more than one motorcycle (MC), each motorcycle involvement shall be considered a separate crash. This is based on the concept that each motorcycle rider has a unique collision experience; therefore, each experience shall be coded as a separate crash.

In order to properly code each crash, the opposing motorcycle shall be coded as an opposing vehicle (OV) for each particular crash.

CRASH FORM

5. Presence at Crash (Code up to Four)

OECD Reference: None

Convention/Coding Source: National Motor Vehicle Crash Causation Survey (NMVCCS)⁽⁶⁾

Element Attributes (Code up to Four):

- (00) not on scene
- (01) nothing present
- (02) crash vehicles present
- (03) police present
- (04) EMS present
- (05) motorcycle rider present
- (06) motor vehicle driver(s) present
- (07) motorcycle passengers present
- (08) motor vehicle passengers present
- (09) nonmotorists present
- (98) other present (specify)
- (99) unknown

Range: 00–09, 98, 99

Source: Primary—scene inspection

Remarks: This variable is determined by the investigator from the source.

To determine the level of effort required by the investigator, it is important to record what is present at the scene on the arrival of the investigator. Select up to four as applicable, except choice 1. If choice 1 (not on scene) is selected, then the whole entry will be 00.

6. How Many Other Vehicles Were Involved in the Crash?

OECD Reference: A.2.5

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) none
- (01) one
- (02) two
- (03) three
- (04) four or more
- (96) non-contact vehicle
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–04, 96–99

Source:

- Primary—scene inspection
- Secondary—police crash report and interviews

Remarks: This variable is assigned by the investigator from the sources.

The case vehicle is not counted in this variable; however, all other in-transport vehicles involved in the crash must be counted. Any not-in-transport vehicles that are struck by a motorcycle in-transport vehicle must also be counted.

The following are examples: The PAR stated that Vehicle 1, a motorcycle, struck Vehicle 2, another vehicle. Vehicle 2 then rebounded into Vehicle 3, a legally parked vehicle. The motorcycle (case vehicle) is not counted, but all other vehicles are included in the case.

Each case must have at least one in-transport motorcycle and applicable vehicle.

Vehicle information must be entered for each motor vehicle involved in the crash. For example, one vehicle is towing another by a nonfixed linkage (rope, chain, etc.). Assuming both vehicles are involved in the crash, data are required for both vehicles. If the linkage was fixed (“fixed linkage” is defined in the next paragraph), only the power unit would be considered in transport and only one form is required. When one motor vehicle is towing another, the number of vehicles depends on the crash circumstances and the type of linkage between the vehicles.

6. How Many Other Vehicles Were Involved in the Crash? (Continued)

A fixed linkage is defined as one that has the purpose of keeping the towed unit separated from the power unit by a distance that is essentially constant. Included within this definition are cradle linkages where the towed unit has two or more wheels off the ground. A nonfixed linkage (such as a rope or a chain) required the towed unit to be manually controlled. If the linkage between the units is fixed, consider only the vehicle that is the power (i.e., towing) unit and consider the towed unit as cargo throughout the entire crash sequence regardless of subsequent events/impacts sustained by the towed unit. In other words, a vehicle towed by a fixed linkage is never considered as an in-transport vehicle, will not have vehicle information entered, and will be considered as cargo associated with the power unit.

If the linkage between the units is nonfixed, each vehicle is considered in transport, and all vehicles involved in the crash sequence should be recorded individually. Hit-and-run crashes occasionally cause some confusion. Vehicle information is entered for each in-transport motor vehicle involved in the crash independently of the amount of information collected on the vehicles by the police.

A non-contact vehicle is another vehicle whose action caused the motorcycle rider to take an action that resulted in a crash. It is only coded in the case when the investigator makes the determination that the OV is involved in the crash. Phantom vehicles, where there is no supporting evidence of their involvement, are not included. Examples include vehicles that maneuver in front of a motorcycle causing the motorcyclist to lose control while braking, or vehicles that drop objects onto the roadway in the path of a motorcycle.

CRASH FORM

7. How Many Pedestrians Were Involved in the Crash?

OECD Reference: A.2.6

Convention/Coding Source: N/A

Element Attributes:

- (00) none
- (01) one
- (02) two
- (03) three
- (04) four or more
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—scene inspection and police crash report
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

CRASH FORM

8. Number of Passengers on the Motorcycle

OECD Reference: A.2.7

Convention/Coding Source: N/A

Element Attributes:

- (00) none
- (01) one
- (02) two
- (03) three
- (04) four
- (05) five
- (06) six
- (99) unknown

Range: 00–06, 99

Source:

- Primary—scene inspection and police crash report
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

CRASH FORM

9. Are There Any Fatal Injuries?

OECD Reference: A.2.8

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (99) unknown

Range: 00, 01, 99

Source:

- Primary—police crash report
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

Any fatal injuries refer to all parties that have been involved in the crash. This includes the motorcycle rider, motorcycle passenger, OV driver, other vehicle passengers, and pedestrians. It does not include animal fatalities.

CRASH FORM

Page 1 of 2

10. Crash Configuration

OECD Reference: A.2.9

Convention/Coding Source: OECD

Element Attributes:

- (01) head-on collision of MC and OV
- (02) OV into MC impact at intersection; both vehicles proceeding straight ahead, paths perpendicular
- (03) MC into OV impact at intersection; both vehicles proceeding straight ahead, paths perpendicular
- (04) OV turning left in front of MC, MC proceeding in either direction perpendicular to OV path
- (05) OV turning right in front of MC, MC proceeding in either direction perpendicular to OV path
- (06) MC and OV traveling in opposite directions, OV turns in front of MC, crossing MC path, OV impacting MC
- (07) MC and OV traveling in opposite directions, OV turns in front of MC, crossing MC path, MC impacting OV
- (08) MC turning left in front of OV, OV proceeding in either direction perpendicular to MC path
- (09) MC turning right in front of OV, OV proceeding in either direction perpendicular to MC path
- (10) MC overtaking OV while OV turning left
- (11) MC overtaking OV while OV turning right
- (12) OV impacting rear of MC
- (13) MC impacting rear of OV
- (14) sideswipe, OV and MC traveling in opposite directions
- (15) sideswipe, OV and MC traveling in same directions
- (16) OV making U-turn or Y-turn ahead of MC
- (17) other MC/OV impacts
- (18) MC falling on roadway, no OV involvement
- (19) MC running off roadway, no OV involvement
- (20) MC falling on roadway in collision avoidance with OV
- (21) MC running off roadway in collision avoidance with OV
- (22) other MC accidents with no OV or other involvement
- (23) MC impacting pedestrian or animal
- (24) MC impacting environmental object
- (98) other (specify)
- (99) unknown

CRASH FORM

Page 2 of 2

10. Crash Configuration (Continued)

Range: 01–24, 98, 99

Source: Primary—scene inspection and vehicle inspection
Secondary—police crash report and interviews

Remarks: This variable is assigned by the investigator from the sources.

If the MC runs off the roadway and then collides with an environmental object (such as a tree, pole, bus bench, or the ground), code the accident as 19, “MC running off roadway, no OV involvement,” or 21, “MC running off roadway in collision avoidance with OV.”

Use the code 24, “MC impacting environmental object,” only if the MC strikes an environmental object that is in the roadway.

Environmental objects in the roadway could include, for example, construction equipment, animals, a boulder or tree that has fallen into the roadway. It would not include the pavement itself, pavement defects, pavement contamination, or parked cars.

11. Light Conditions

OECD Reference: A.3.1.2

Convention/Coding Source: AASHTO, NASS⁽⁴⁾

Element Attributes:

- (01) daylight, bright
- (02) daylight, not bright
- (03) dusk, sundown
- (04) night, lighted
- (05) night, not lighted
- (06) dawn, sunup
- (07) night, continuous illumination
- (08) night, spot illumination
- (98) other (specify)
- (99) unknown

Range: 01–08, 98, 99

Source:

Primary—police crash report

Secondary—interviews, scene inspection, and weather information

Remarks: This variable is assigned by the investigator from the sources.

The light condition best representing the pre-crash conditions at the time of the crash is selected based on ambient and artificial sources.

night, lighted: Select this when the crash occurred after dark but before dawn, and artificial light source(s) are present at the scene.

night, not lighted: Select this when the crash occurred after dusk but before dawn, and no artificial light source is present at the scene.

Note that “night, lighted” and “night, not lighted” include crashes occurring in tunnels or in underpasses.

11. Light Conditions (Continued)

night, continuous illumination: This provides relatively uniform lighting on all main lanes and direct connections and complete interchange lighting of all interchanges. The following roadways are eligible for continuous illumination systems:

- Urban freeways that are multilane, divided facilities for which full control of access is provided.
- Multilane arterial highways with partial control of access where the following conditions exist:
 - Access is provided to abutting property.
 - At-grade crossings are provided at minor streets and roads.
 - Grade separation structures are provided at major crossings of arterial highways, streets, and roads.

night, spot illumination: This usually consists of one to five units intended to illuminate a nighttime hazard, such as sections with complex geometry or raised channelization.

Spot illumination may be used at intersections or other areas where lighting will provide safer movement of traffic.

unknown: Select this when it cannot be reasonably determined what the light conditions were at the time of the crash.

CRASH FORM

12. Ambient Temperature

OECD Reference: A.3.1.32

Convention/Coding Source: N/A

Element Attributes:

(plus (+) or minus (-) degrees Fahrenheit)
(999) unknown

Range: (-50 °F)-(+120 °F), 999

Source:

Primary—weather service
Secondary—scene inspection and police crash report

Remarks: This variable is assigned by the investigator from the sources.

13. Weather Description

OECD Reference: A.3.1.33

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) clear
- (02) cloudy, partly cloudy
- (03) overcast
- (04) drizzle, light rain
- (05) moderate or heavy rain
- (06) snow
- (07) sleet, freezing rain
- (08) hail
- (98) other (specify)
- (99) unknown

Range: 01–08, 98, 99

Source:

- Primary—scene inspection, police crash report, and weather service
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

The weather description is selected with respect to the conditions just prior to the critical event. The element attributes are oriented toward precipitation or particle dispersion, which may affect the driver's visual ability or the vehicle's control.

It is possible for different drivers to experience different conditions.

drizzle, light rain; moderate or heavy rain: Select this when the precipitation falling at the time of the crash is predominately in the form of water droplets.

sleet, freezing rain; hail: Select this when the precipitation falling at the time of the crash is predominately in the form of frozen or partially frozen raindrops.

13. Weather Description (Continued)

snow: Select this when the precipitation falling at the time of the crash is predominately in the form of translucent ice crystals originating in the upper atmosphere as frozen particles of water vapor. This attribute includes rain mixed with snow. Accumulation is not necessary to select this attribute.

fog: Select this when condensed water vapor, in cloud-like masses, is close to the ground limiting visibility at the time of the crash scene.

other (specify): Select this when the particular condition (e.g., smog, smoke, blowing sand or dust, etc.) was present at the time of the crash. This attribute should not be used solely because of cloudy or overcast skies.

14. Wind Description

OECD Reference: A.3.1.34

Convention/Coding Source: OECD

Element Attributes:

- (00) none, calm
- (01) light
- (02) moderate
- (03) strong
- (04) light with gusts
- (05) moderate with gusts
- (06) strong with gusts
- (07) variable
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—scene inspection and weather service
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

Wind description at the time of the crash should be measured using a calibrated anemometer. The coding should follow these guidelines:

light: Wind speed is between 1 and 7 mph. Associated Beaufort Scale of Wind Force will be 1 and 2.

moderate: Wind speed is between 8 and 18 mph. Associated Beaufort Scale of Wind Force will be 3 and 4.

strong: Wind speed is 19 mph and above. Associated Beaufort Scale of Wind Force will be 5 and above.

light with gusts: Wind speed is under 6 mph with occasional gusts of wind that are in excess of 7 mph.

14. Wind Description (Continued)

moderate with gusts: Wind speed is between 8 and 18 mph with occasional gusts of wind that are in excess of 18 mph.

strong with gusts: Wind speed is 19 mph and above with occasional gusts of wind that are in excess of 31 mph.

variable: Wind speed varies between calm and strong with no discernable pattern or regularity.

15. Wind Direction With Respect to Motorcycle Path

OECD Reference: A.3.1.35

Convention/Coding Source: OECD

Element Attributes:

- (00) none, no wind
- (01) left crosswind
- (02) headwind
- (03) right crosswind
- (04) tailwind
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source:

- Primary—scene inspection and weather service
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

The wind direction is always taken relative to the path of the motorcycle rider. The following definitions shall be applied:

left crosswind: This is wind that is blowing across the path of travel of the motorcycle in a left-to-right direction.

headwind: This is wind that is blowing in a direction opposite to the path of travel of the motorcycle.

right crosswind: This is wind that is blowing across the path of travel of the motorcycle in a right-to-left direction.

tailwind: This is wind that is blowing in the same direction as the path of travel of the motorcycle.

ENVIRONMENT FORM

Case Number

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes: Case number

Range: 0001–2000

Source: Primary—case assignment chart

Remarks: This variable is assigned by the investigator from the source.

ENVIRONMENT FORM

Vehicle Number

OECD Reference: A.4.3.1

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes: Vehicle number

Range: 001–010

Source:

Primary—scene inspection and police crash report
Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

If there is only one motorcycle involved, then this is assigned “MC 1.” If more than one motorcycle is involved, then the motorcycle of interest is assigned “MC 1” by the investigator. The other motorcycles are considered other vehicles for the particular case investigation.

Each in-transport motor vehicle is assigned a unique number. After the motorcycles involved in the crash are assigned a number (as either the case vehicle or other vehicles), vehicle numbers are assigned consecutively according to the order in which the vehicles are listed on the police crash report, except in the following circumstances: if there are any in-transport vehicles not listed on the police crash report, then use the next consecutive number; or if there are any not-in-transport vehicles that are struck by an in-transport vehicle, then treat them as fixed objects (i.e., parked car).

An example is when the police crash report stated that Vehicle 3, a Honda motorcycle, struck Vehicle 2, a Chevrolet Impala, and the Impala rebounded into vehicle 1, a legally parked Toyota Corolla. In this case, the Honda motorcycle is MC 1, the Impala is OV 1, and the Toyota Corolla is a fixed object.

ENVIRONMENT FORM

Page 1 of 2

1. Type of Land Development

Same Side of Street _____

Other Side of Street _____

OECD Reference: A.3.1.1, A.3.2.1

Convention/Coding Source: DSI, Wikipedia⁽⁷⁾

Element Attributes:

- (01) urban industrial
- (02) commercial/business
- (03) housing: apartments
- (04) housing: single-family homes
- (05) urban school
- (06) urban park
- (07) rural farming, ranching, etc.
- (08) rural wilderness
- (09) rural school
- (10) rural park
- (98) other (specify)
- (99) unknown

Range: 01–10, 98, 99

Source:

- Primary—scene inspection
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

urban industrial: This is an urban area is an area with an increased density of human-created structures in comparison to the areas surrounding it. Urban areas may be cities, towns, or conurbations, but the term is not commonly extended to rural settlements such as villages and hamlets.

commercial/business: This is a high density of commercial enterprises such as strip malls or consecutive enterprises.

housing: apartments: This refers to an area that comprises expansive apartment/condominium-type complexes. Note that if the housing apartment complex is within an urban area, code 03; if the housing apartments are within a suburban area, code 03.

ENVIRONMENT FORM

Page 2 of 2

1. Type of Land Development (Continued)

housing: single-family homes: This refers to residential neighborhoods that are usually established as suburban areas.

urban school: Select this if within visible proximity of a school or where signage exists that identifies a school zone in an urban environment.

urban park: Select this if within visible proximity of a park or where signage exists that identifies a park in an urban environment.

rural: Rural areas (also referred to as “the country” and/or “the countryside”) are settled places outside towns and cities; such areas are distinct from more intensively settled urban and suburban areas.

rural wilderness: Wilderness is generally defined as a natural environment that has not been modified by human activity.

rural school: Select if within visible proximity of a school or where signage exists that identifies a school zone in a rural environment.

rural park: Select if within visible proximity of a park or where signage exists that identifies a park in a rural environment.

2. Relation to Junction

OECD Reference: A.3.1.3

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) non-junction
- (01) at-grade intersection area
- (02) interchange area
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source:

- Primary—scene inspection
- Secondary—police crash report and interviews

Remarks: This variable is assigned by the investigator from the sources.

The attribute selected is based on the characteristics of the roadway environment just prior to the critical pre-crash event for this vehicle.

American National Standards Institute (ANSI) D16.1 should be referred to for additional information about the characteristics of junctions and interchanges.⁽⁸⁾

A junction is, in general, the area formed by the connection of two roadways. It includes (1) all at-grade intersections, (2) connections between a driveway access or alley access and a roadway that is not a driveway access or an alley access, (3) connections between two alley accesses or driveway accesses, or (4) a connection between a driveway access and an alley access.

non-junction: Select when the vehicle's environment just prior to the critical pre-crash event does not occur within a junction.

2. Relation to Junction (Continued)

at-grade intersection area: Select when the vehicle’s environment just prior to the critical pre-crash event is (1) in an intersection or in an approach to or exit from an intersection and (2) results from an activity, behavior, or control related to the movement of traffic units through the intersection. “Traffic units” means any traffic unit involved or not involved in the crash. If the vehicle’s environment just prior to the critical pre-crash event occurs outside but near an intersection and involves a vehicle that was engaged or should have been engaged in making an intersection-related maneuver such as turning, then at-grade intersection area must be selected. However, if the loss of control is unrelated to the intersection, then select non-junction. An intersection is a type of junction that contains a crossing or connection of two or more roadways not classified as a driveway access or alley access.

At-grade intersection area also includes any two-leg intersections. To qualify for inclusion, at least one of the two legs must be controlled by a regulatory sign (see Traffic Control Device Form) or traffic signal; otherwise, treat the area as a sharp curve. A rotary or traffic circle is a specialized form of at-grade intersection. Traffic flows by entering and leaving a one-way roadway connecting all intersection approach legs and running continuously around a central island. Rotary intersections are commonly called traffic circles, but proper design can result in central islands of various rounded shapes.

The following are examples of noninterchange junctions:

A crossover is a designated opening within a median used primarily for U-turns. To be considered, the nearest lateral boundary line of the crossover must be greater than 10 m (33 ft) from the nearest lateral boundary line of any roadway (highway, street, ramp, driveway, or alley) that intersects with either side of the roadways that the median divides. Select other (specify) if the characteristics of the vehicle’s roadway environment just prior to the critical pre-crash event were in the junction of a crossover and roadway. Do not use this attribute if the crash was precipitated by the actions of a non-contact road vehicle or person.

An area of merge or divergence is in an auxiliary lane that is adjacent to the through lane(s) and follows an entrance ramp or channel or precedes an exit ramp or channel. A merge area extends longitudinally from where the ramp or channel ends and ends where the auxiliary lane ends. A divergence area extends longitudinally from where the auxiliary lane begins and ends where the ramp or channel begins. The area extends laterally across the through lane(s), for traffic in the same direction, ending at a centerline, median, or road edge/curb.

2. Relation to Junction (Continued)

interchange area: Select when the vehicle's environment just prior to the critical pre-crash event occurs within an interchange area. An interchange is the area around a grade separation that involves at least two trafficways. Included within its boundaries are (1) all ramps that connect the roadways and (2) each roadway entering or leaving the interchange at a point of 30 m (100 ft) beyond the gore or curb return at the outermost ramp connection of the roadway. One may find included within an interchange area intersections, driveway accesses, and roadway sections that are non-junction.

other (specify): Select when the vehicle's environment just prior to the critical pre-crash event is not interchange-related or intersection-related but does occur in a junction. The type of junction must be specified when this attribute is selected.

unknown: Select when the environment of the vehicle just prior to the critical event is unknown.

3. Type of At-Grade Intersection/Alley or Driveway

OECD Reference: A.3.1.3

Convention/Coding Source: OECD, NASS⁽⁴⁾

Element Attributes:

- (00) not at intersection
- (01) four-leg intersection, not skewed
- (02) four-leg intersection, skewed
- (03) T-intersection
- (04) Y-intersection
- (05) alley, driveway
- (06) offset intersection
- (07) intersection as part of interchange
- (08) roundabout or traffic circle (specify)
- (09) multileg (five-leg or more) intersection (specify)
- (10) rail/light-rail crossing
- (98) other (specify)
- (99) unknown

Range: 00–10, 98, 99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

not at intersection: This is a section of roadway without any immediate vehicle ingress or egress.

four-leg intersection, not skewed: This is where two roads intersect at a 90-degree angle.

four-leg intersection, skewed: This is where two roads intersect at an angle other than 90 degrees.

3. Type of At-Grade Intersection (Continued)

T-intersection: This is the area contained within the extension or projection of roadway curbs of two roadways that join at right angles. A T-intersection shall be defined as any intersection with one of the roadways terminating at the point of intersection of the two roadways.

Y-intersection: This is the area contained within the extension or projection of roadway curbs of three roadways that join at an intersecting angle other than 90 degrees.

alley, driveway: This is a street or highway intended to provide access to a building or private property; it is not intended for the purpose of through vehicular traffic.

offset intersection: This is the area contained within the extension or projection of roadway curbs of two or more roadways that may or may not intersect at right angles and that are offset in such a manner that one or more of the roadways are not continuous.

intersection as part of interchange: This refers to an interchange area/on/off ramp that merges into an adjoining roadway.

roundabout or traffic circle (specify): This is any intersection of two or more roadways where the vehicular traffic must travel around an island or other designated marker in order to continue in the original direction of travel.

multi-leg (five-leg or more) intersection (specify): This is where roads intersect, creating at least five points of entrance to intersection.

rail/light-rail crossing: This is an intersection of roadway and rail tracks.

ANSI D16.1 should be referred to for additional information about the characteristics of junctions and interchanges.⁽⁸⁾

A junction is, in general, the area formed by the connection of two roadways, which includes (1) all at-grade intersections, (2) connections between a driveway access or alley access and a roadway that is not a driveway access or an alley access, (3) connections between two alley accesses or driveway accesses, or (4) a connection between a driveway access and an alley access.

4. Trafficway Description

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) two-way, undivided
- (02) two-way, with a continuous left-turn lane
- (03) two-way, divided, no median barrier
- (04) two-way, divided, with median barrier
- (05) one-way
- (98) other (specify)
- (99) unknown

Range: 01–05, 98, 99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

If the collision occurred in an area other than a junction, select the attribute on the basis of the most representative description of the characteristics of the vehicle’s roadway environment just prior to the critical pre-crash event. If this is off the roadway, select the attribute on the basis of the most representative description of the roadway leading to the point of departure.

If the characteristics of the vehicle’s roadway environment just prior to the critical pre-crash event are represented by the junction of two or more roadways, choose the trafficway flow on the basis of the most representative description of the approach leg to the junction for this vehicle.

A roadway is that part of a trafficway where vehicles travel. A divided trafficway is composed of two or more roadways. A trafficway that has a median that is designed as a two-way, left turn lane is considered to be one roadway for lane-identification purposes.

4. Trafficway Description (Continued)

The researcher selects the descriptor that best represents the vehicle's environment just prior to the critical pre-crash event. If the flow is designed to separate traffic, then choose accordingly.

two-way, undivided: Select if there is no median. Generally, medians are not designed to legally carry traffic. Note that, although gores separate roadways and traffic islands (associated with channels) separate travel lanes, neither is involved in the determination of trafficway division.

two-way, with a continuous left-turn lane: Select if the trafficway is physically divided by a two-way, left-turn lane that is designed to allow left turns to driveways and into shopping centers, businesses, etc., while at the same time providing a separation of opposing straight-through travel lanes.

two-way, divided, with no median barrier: Select if the trafficway is physically divided, and the division is unprotected (e.g., vegetation, gravel, paved medians, trees, water, embankments, and ravines that separate a trafficway (i.e., all nonmanufactured barriers)). Note that raised, curbed medians do not constitute a positive barrier by themselves. The unprotected medians can be of any width; however, painted, paved flush areas must be 1.2 m in width to constitute a median strip.

two-way, divided, with median barrier: Select whenever the traffic is physically divided and the division is protected by a concrete, metal, or other type of longitudinal barrier (i.e., all manufactured barriers). Bridge or underpass-support structures and bridge rails take this attribute.

one-way: Select primarily when the trafficway is undivided and traffic flows in one direction (e.g., one-way streets). However, this attribute can also be selected where a median is present as long as all the traffic on the trafficway goes in the same direction. An example of this is when the opposing roadway of the same named trafficway had to be split by such a distance that the right-of-way divides to accommodate other property. If one of the trafficways is further divided into multiple roadways by a median (rare), then in this instance, the one-way trafficway should be selected, including on/off ramps.

unknown: Select if the trafficway flow cannot be determined (e.g., ongoing construction and movable traffic barriers moved or removed since the crash date).

5. Roadway Function

OECD Reference: A.3.2.8

Convention/Coding Source: FHWA,⁽⁴⁾ AASHTO

Element Attributes:

- (00) none
- (01) interstate/freeway mainline
- (02) freeway entrance ramp
- (03) freeway exit ramp
- (04) freeway transition (freeway to freeway)
- (05) freeway frontage road
- (06) principal arterial, nonfreeway
- (07) minor arterial
- (08) collector
- (09) local road/street
- (10) construction detour
- (11) parking area, off-street
- (12) alley
- (13) driveway
- (14) roundabout or traffic circle (specify)
- (15) overpass mainline
- (16) overpass entrance ramp
- (17) overpass exit ramp
- (18) underpass mainline
- (19) underpass entrance ramp
- (20) underpass exit ramp
- (21) dedicated bicycle/moped path separated from ordinary vehicular traffic roadway
- (22) dedicated bicycle/moped path not separated from ordinary vehicular roadway
- (23) unseparated HOV lane
- (24) separated HOV lane
- (98) other (specify)
- (99) unknown

Range: 00–24, 98, 99

5. Roadway Function (Continued)

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

FHWA has established a roadway functional system classification scheme. The basic functional systems are (1) rural areas, (2) urbanized areas, and (3) small urban areas (under 50,000 in population). Each system comprises various functional categories. The categories are shown as follows:

Rural Area

- Principal Arterials
 - Interstate
 - Other
- Minor Arterials
 - Major
 - Minor
- Local Roads

Urbanized and Small Urban Area

- Principal Arterials
 - Interstate
 - Other Freeways and Expressways
 - Other
- Minor Arterials
- Collector Streets
- Local Streets

As evident, the element values listed evolved from these two categorizations. Specific applications may be summarized as follows.

rural principal arterial system: The rural principal arterial system consists of a connected rural network of continuous routes with the following characteristics:

- Serve corridor movements having trip-length and travel-density characteristics indicative of substantial statewide or interstate travel.
- They serve all, or virtually all, urban areas with a population of 50,000 and over and a large majority of those with a population of 25,000 and over.
- They provide an integrated network without stub connections, except where unusual geographic or traffic-flow conditions dictate otherwise (e.g., international boundary connections and connections to coastal cities).

In the more densely populated States, this system of highways may not include all heavily traveled routes that are multi-lane facilities. It is likely, however, that in the majority of States, the principal arterial system will include all existing rural freeways.

5. Roadway Function (Continued)

urban principal arterial system: In every urban environment, there exists a system of streets and highways that can be identified as unusually significant to the area in which it lies in terms of the nature and composition of travel it serves. In smaller urban areas (with a population under 50,000), these facilities may be very limited in number and extent and their importance may be primarily derived from the service provided to travel passing through the area. In larger urban areas, their importance also derives from service to rural-oriented traffic, but equally or even more important, from service for major movements within these urbanized areas.

This system of streets and highways is the urban principal arterial system and should serve the major centers of activity of a metropolitan area, the highest traffic-volume corridors, and the longest trip desires. It should also carry a high proportion of the total urban-area travel on a minimum of mileage. This system should be integrated both internally and between major rural connections.

The urban principal arterial system should carry the major portion of trips entering and leaving the urban area, as well as the majority of through movements desiring to bypass the central city. In addition, significant intra-area travel, such as between central business districts and outlying residential areas between major inner-city communities or between major suburban centers, should be served by this system. Frequently, the urban principal arterial system will carry important intraurban and intercity bus routes. Finally, this system in small urban and urbanized areas should provide continuity for all rural arterials that intercept the urban boundary.

Because of the nature of travel served by the urban principal arterial system, almost all fully and partially controlled access facilities will be part of this functional system. This system, however, is not restricted to controlled access routes. In order to preserve the identification of controlled access facilities, the principal arterial system is stratified as follows: (1) interstate, (2) other freeways and expressways, and (3) other principal arterials (with no control of access). The spacing of urban principal arterials will be closely related to the trip-end density characteristics of particular portions of urban areas. While no firm spacing rule can be established that will apply in all or even most circumstances, the spacing of principal arterials in larger urban areas may vary from less than 1 mile in the highly developed central business areas to 5 miles or more in the sparsely developed urban fringes.

For principal arterials, the concept of service to abutting land should be subordinate to the provision of travel service to major traffic movements. It should be noted that only facilities within the other principal arterial system are capable of providing any direct access to adjacent land, and such service should be purely incidental to the primary, functional responsibility of this system.

5. Roadway Function (Continued)

interstate/freeway mainline: This is a rural roadway segment that is part of the interstate/freeway system and not part of the on/off ramps that serve these roadways.

interstate: This is a roadway segment that is part of the interstate system and is located in an urbanized or small urban area and not part of the on/off ramps that serve these roadways.

freeways and expressways: This refers to a type of roadway segment that is located in an urbanized or small urban area, is a divided roadway segment (e.g., travel lanes are physically separated), and is designated as a freeway or expressway and not part of the on/off ramps that serve these roadways.

freeway frontage road: A frontage road (also known as an access road, feeder, service drive, service road, outer road, and surface road) is a non-limited access road running parallel to a higher-speed road, usually a freeway, and feeding it at appropriate points of access (interchanges). In many cases, the frontage road is a former highway already in existence when the limited access road was built. In other cases, it may be built prior to construction of the highway. In urban areas, frontage roads are frequently one-way roads when they exist on both sides of a highway. In more rural areas, roads are typically two-way.

principal arterial, nonfreeway: A rural principal arterial, nonfreeway is a roadway segment that is located in a rural area and is not part of the interstate system. Rural principal arterial roadways are intended to provide interstate, intrastate, and intercounty service. For example, many four-lane State roadways that provide service across the State and/or to adjoining States would be classified in this element. While a number of these roadways may be divided, separation of the travel lanes is not a necessary condition for the principal arterial designation.

urban principal arterial (nonfreeway): This is a roadway segment that has uncontrolled access and is located in an urbanized or small urban area. These segments should carry the major portion of trips entering and leaving the urban area, as well as the majority of through movements desiring to bypass the central city. In addition, significant intra-area travel, such as between central business districts and outlying residential areas, between major inner-city communities, or between major suburban centers, should be served by these segments.

5. Roadway Function (Continued)

minor arterial (rural minor arterial road system): The rural minor arterial road system should, in conjunction with the principal arterial system, form a rural network with the following characteristics:

- Link cities and larger towns (and other traffic generators, such as major resort areas, that are capable of attracting travel over similarly long distances) and form an integrated network providing interstate and intercounty service.
- Be spaced at such intervals, consistent with population density, so that all developed areas of the State are within a reasonable distance of an arterial highway.
- Provide (because of the two characteristics defined immediately above) service to corridors with trip lengths and travel density greater than those predominantly served by a rural collector or local systems. Minor arterials, therefore, constitute routes whose design should be expected to provide for relatively high overall travel speeds, with minimum interference to through-traffic movement.

urban minor arterial street system: The minor arterial street system should interconnect with and augment the urban principal arterial system and provide service to trips of moderate length at a somewhat lower level of travel mobility than principal arterials. This system also distributes travel to geographic areas smaller than those identified with the higher system.

minor arterial street system: This includes all arterials not classified as a principal and contains facilities that place more emphasis on land access than the higher system and offer a lower level of traffic mobility. Such facilities may carry local bus routes and provide intracommunity continuity but ideally should not penetrate identifiable neighborhoods. This system should include urban connections to rural collector roads where such connections have not been classified as urban principal arterials.

The spacing of minor arterial streets may vary from 1/8–1/2 mile in the central business district to 2–3 miles in the suburban fringes, but it should normally be not more than 1 mile in fully developed areas.

collector (rural collector road system): The rural collector routes generally serve travel of primarily intracounty rather than statewide importance and constitute those routes on which (regardless of traffic volume) predominant travel distances are shorter than on arterial routes. Consequently, more moderate speeds may be typical on average.

5. Roadway Function (Continued)

In order to more clearly define the characteristics of rural collectors, this system should be subclassified according to the following criteria:

major collector roads: These routes should (1) provide service to any county seat not on an arterial route, to the larger towns not directly served by the higher systems, and to other traffic generators of equivalent intracounty importance, such as consolidated schools, shipping points, county parks, important mining, and agricultural areas; (2) link these places with nearby larger towns or cities, or with routes of higher classification; and (3) serve the more important intracounty travel corridors.

minor collector roads: These routes should (1) be spaced at intervals consistent with population density to collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road, (2) provide service to the remaining smaller communities, and (3) link the locally important traffic generators with their rural hinterland.

urban collector streets system: This system provides both land access service and traffic circulation within residential neighborhoods and commercial and industrial areas. It differs from the arterial system in that facilities on the collector system may penetrate residential neighborhoods, distributing trips from the arterials through the area to the ultimate destination. Conversely, the collector streets also collect traffic from local streets in residential neighborhoods and channel it into the arterial system. In the central business district, and in other areas of like development and traffic density, the collector streets system may include the street grid that forms a logical entity for traffic circulation.

rural local streets system: The rural local streets system should have the following characteristics: (1) serve primarily to provide access to adjacent land and (2) provide service to travel over relatively short distances as compared to collectors or other higher systems. Local roads will constitute the rural mileage not classified as part of the principal arterial, minor arterial, or collector systems.

urban local streets system: The urban local streets system comprises all facilities not on one of the higher systems. It serves primarily to provide direct access to abutting land and access to the higher order systems. It offers the lowest level of mobility and usually contains no bus routes. Service to through-traffic movement is usually deliberately discouraged.

5. Roadway Function (Continued)

roundabout or traffic circle (specify): This is a type of road junction at which traffic enters a one-way stream around a central island. In the United States it is technically called a modern roundabout to emphasize the distinction from the older, larger type of traffic circle.

A traffic circle is an intersection with a circular shape and usually has a central island. In some traffic circles, two-way traffic is allowed within the circle. It is much more common, however, that traffic flows in only one direction around a central island. Traditionally, traffic entering a circle has the right-of-way, although some circles give the right-of-way to the primary roads. In roundabouts, as opposed to traffic circles, entering traffic must yield to traffic already in the circulatory roadway.

overpass mainline: An overpass is a bridge or supported roadway above another roadway, stream, railway, or other obstruction that avoids the obstruction or a need for an intersection.

overpass entrance ramp: An overpass entrance ramp is an elevated or supported access roadway that spans another roadway, stream, railway, or other obstruction that avoids the obstruction or a need for an intersection.

overpass exit ramp: An overpass exit ramp is an elevated or supported egress roadway that spans another roadway, stream, railway, or other obstruction that avoids the obstruction or a need for an intersection.

underpass mainline: An underpass is a roadway passing beneath another roadway or elevated structure that avoids an obstruction or a need for an intersection.

underpass entrance ramp: An underpass entrance ramp is a roadway passing beneath another roadway or elevated structure that avoids an obstruction or a need for an intersection.

underpass exit ramp: An underpass exit ramp is a roadway egress passing beneath another roadway or elevated structure that avoids an obstruction or a need for an intersection.

dedicated bicycle/moped path not separated from ordinary vehicular roadway: A dedicated path is noted on the roadway with surface-painted designators and/or road signs. There exists no physical barrier between the bicycle path and the vehicle roadway.

unseparated HOV lane: A high-occupancy vehicle (HOV) lane is designed to encourage carpooling. The lane is designated by surface painted markings and roadside signs. An unseparated lane has no physical barrier separating the lane from the other travel lanes.

5. Roadway Function (Continued)

separated HOV lane: An HOV lane is designed to encourage carpooling reserved for vehicles with a driver and one or more passengers. The lane is designated by surface painted markings and roadside signs. Separated lanes have physical barriers separating the lane from the other travel lanes.

ENVIRONMENT FORM

6. Posted Speed Limit in MPH

OECD Reference: A.3.1.9

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(01–96)	actual speed limit in miles per hour
(97)	not applicable, no posted speed limit
(98)	other (specify)
(99)	unknown

Range: 01–99

Source:

Primary—scene inspection
Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

A speed limit must be identified for all known crash-scene locations.

If no speed-limit sign is posted within a reasonable distance from the location of the first crash event along the approach leg of the roadway on which the vehicle was traveling, then reference State statutes to obtain the applicable statutory, maximum speed limit for the location (local or State). Disregard advisory or other speed signs that do not indicate the legal speed limit. Do not confuse advisory signs on on/off ramps or near intersections with the actual, legal maximum speed limit. If a State has a statute that uniformly reduces the maximum allowable speed within or near a construction zone, then code the indicated reduced limit.

not applicable, no posted speed limit: Select for roadways that are neither posted nor have a statutory limit (e.g., entrances/exits to parking lots, service stations, or driveways).

unknown: Select only in rare situations where a crash scene cannot be located.

7. Number of Through Lanes

OECD Reference: A.3.1.10

Convention/Coding Source: OECD, NASS⁽⁴⁾

Element Attributes:

(01–08)	number of lanes
(97)	not applicable
(99)	unknown

Range: 01–08, 97, 99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the number of through lanes. This response applies to the environmental conditions only. It does not apply to the actual lane of travel of the vehicle. Special turning lanes are not included in the count of through lanes. Any lane that permits both turning- and through-lane travel will be considered a through lane.

The attribute is determined from the same roadway that was used to determine the trafficway flow. If traffic flows in both directions and is undivided, select the number of lanes in both directions. If the trafficway is divided into two or more roadways, select only the number of lanes for the roadway on which the vehicle under consideration was traveling.

If turn bays; acceleration lanes; deceleration lanes; or center two-way, left-turn lanes exist and are physically located within the cross section of the roadway, and these lanes are the most representative of the driver's environment just prior to the critical pre-crash event, then they are to be included in the number of lanes. Channelized lanes are separated from other through or turn-related lanes. Note that the separation normally will not involve a physical barrier. Because a channelized lane is separated, it should not be included unless it is preceded by a turn bay or turn lane and this bay or lane is felt to be most representative of the driver's environment just prior to impact.

The number of lanes counted does not include any that are rendered unusable by restriction of the right-of-way (e.g., closed due to construction). Show lanes on the scaled diagrams and annotate why a lane is closed.

Only those lanes ordinarily used for motor vehicle travel should be considered when completing this variable (i.e., pedestrian/bicycle lanes are excluded).

7. Number of Through Lanes (Continued)

In a number of instances, there will be uncertainty as to the number of lanes due to: (1) nonstandard roadway widths; (2) variability of width in the same roadway due to disrepair and other reasons; or (3) absence of lane, center, and edge lines, etc. The number selected in these cases should represent the number of operational lanes based on customary or observed usage.

On a road that has legal parking, such that the legal parking area ends short of the junction of the roadway with another roadway or drive; and the space left between the end of the legal parking area and the beginning of the junction can be utilized for turning by a vehicle on the roadway, do not consider this additional area as another travel lane (regardless of customary or observed usage in this instance).

This area should be construed as additional width to the existing travel lane(s). The only time that another lane will be counted at a junction is when that space is expressly designated for turning (e.g., by lane (line or turn arrow) marking, signs or signals).

The number of lanes for driveways, wide-mouth parking lots, etc., should be selected as follows:

- If it is possible to determine the number of lanes through either lane markings or observed or customary use, select the actual number of lanes present.
- If the number of lanes cannot be accurately established, select unknown.

If the vehicle was on or in a driveway that is in essence a private way, select the number of lanes for that vehicle.

ENVIRONMENT FORM

8. Lane in Which the Vehicle Was Traveling

OECD Reference: A.3.1.11

Convention/Coding Source: OECD

Element Attributes:

(01–09)	actual lane number
(10)	right-turn only
(11)	left-turn only
(12)	vehicle traveling opposite intended traffic, any lane
(13)	lane splitting
(97)	not applicable, vehicle not in a lane
(98)	other (specify)
(99)	unknown

Range: 01–13, 97–99

Source:

Primary—scene inspection
Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

The lane of travel for any vehicle is determined using a numbering system that considers the lane closest to the curb or roadway edge to be the number one lane. Each lane is then sequentially numbered from this initial lane designation.

Note that if a center median or barrier delineates the opposing travel lanes, then they are considered separate roadways with their respective travel lanes.

ENVIRONMENT FORM

9. Lane Width in Feet/Inches

_____ feet _____ inches

OECD Reference: A.3.1.12

Convention/Coding Source: OECD

Element Attributes:

- (01-96) actual number of feet and inches
- (97-97) not applicable, vehicle not in a lane
- (99-99) unknown

Range: 01-96, 97-97, 99-99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

The lane width is measured from the centerline of the lane marker to the centerline of the opposite lane marker. In the event that there are no lane markers or if the measurement is taken from the side of the roadway, the roadway edge will be used as the reference landmark. The roadway shall be considered only the part of the road intended for travel. It does not include the roadway shoulders or berms or any bicycle or breakdown lanes. If there is no painted marker to indicate the edge of the roadway, the edge of the road paving can be used as a guideline for lane measurement.

ENVIRONMENT FORM

10. Travel-Way Width in Feet/Inches

_____ feet _____ inches

OECD Reference: A.3.1.13

Convention/Coding Source: OECD

Element Attributes:

- (01-96) actual number of feet and inches
- (97-97) not applicable, vehicle not in a lane
- (99-99) unknown

Range: 01-96, 97-97, 99-99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

The curb-to-curb roadway width is measured by determining the distance from one roadway edge to the opposite roadway edge. If there are unmountable or vertical-faced curbs present on the roadway, the measurement is taken from the middle of the upright face of the curb. If the curb is sloped or mountable, the measurement is taken from the edge of the curb closest to the roadway.

11. Type of Surface

OECD Reference: A.3.1.14

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) concrete
- (02) asphalt
- (03) brick
- (04) stone
- (05) gravel
- (06) dirt
- (07) metallic
- (98) other (specify)
- (99) unknown

Range: 01–07, 98, 99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

The type of surface is determined from the same roadway that was used to determine the trafficway flow. If the lateral cross section contains lanes of more than one surface type, select the surface type of the lane in which the driver’s vehicle was traveling just prior to the vehicle’s critical pre-crash event.

concrete: Select when the road surface is made of a material consisting of a conglomerate of gravel, pebbles, broken stone, or slag, in a mortar or cement matrix.

asphalt: Select when the road surface is made of a product obtained by the distillation of coal and petroleum. It is also referred to in nontechnical terms as bituminous or “blacktop.”

brick: Select when the road surface is constructed of paving stone (e.g., cobblestone or paving bricks). Also referred to as “block.”

stone: Select when the road surface is constructed of a loose material primarily consisting of small rocks.

gravel: Select when the road surface is constructed of a loose material primarily consisting of small stones.

11. Type of Surface (Continued)

dirt: Select when the improved road surface is made of a natural earthen surface.

metallic: Select when the road surface is constructed of metal.

other (specify): Select for another type of surface such as wood.

unknown: Select when the surface type is unknown.

ENVIRONMENT FORM

12. Surface Condition (Code up to Four; Input 00 for Remaining Responses)

OECD Reference: A.3.1.16.1, A.3.1.16.2, A.3.1.16.3, A.3.1.16.4

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) none
- (01) dry
- (02) wet
- (03) snow
- (04) slush
- (05) ice/frost
- (06) water (standing, moving)
- (07) mud, dirt
- (08) sand
- (09) gravel
- (10) oil
- (11) debris (tire tread, construction materials, tree limbs, etc.)
- (12) loads dropped from another vehicle
- (98) other (specify)
- (99) unknown

Range: 00–12, 98, 99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

The surface condition is based on the location that best represents the pre-crash environment data. The element should be selected based on the same lanes used to select trafficway flow.

It is possible for different surface conditions to exist on the same roadway (e.g., intermittent wet and dry sections). The researcher should consider the condition most representative of the roadway immediately prior to this vehicle's critical pre-crash event.

sand; mud, dirt; oil: Select when this attribute is present on another road surface (i.e., a dirt road would not receive this attribute solely due to presence). If the sand, mud, dirt, or oil occurs in combination with the moisture conditions wet, snow, slush, or ice, then also select the moisture condition.

13. Surface Special Features (Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.3.1.15

Convention/Coding Source: OECD

Element Attributes:

- (00) none
- (01) surface cracking (longitudinal, transverse)
- (02) spalling (breaking up, splintering)
- (03) potholes
- (04) ruts
- (05) bump
- (06) ripples, ridges
- (07) pavement edge drop
- (08) overbanding and tar snakes (specify)
- (09) bitumen repair (specify)
- (10) tram/train rails
- (11) rumble strips
- (12) grooved pavement
- (13) steel plates
- (14) speed bumps/humps
- (15) bridge grating
- (16) expansion joints
- (98) other (specify)
- (99) unknown

Range: 00–16, 98, 99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

Roadway-condition defects are best visualized at the scene. Photographs are not suitable for recognition of roadway defects unless the roadway has been significantly altered between the time of the accident and the time of data coding and analysis. The following definitions may be applied in order to assist in the determination of a roadway condition and/or defect.

13. Surface Special Features (Continued)

surface cracking (longitudinal, transverse): This is a condition where visual cracks can be seen in the roadway as a result of the roadway material's brittle fracture.

spalling (breaking up, splintering): This is a condition where small portions of the roadway surface have been separated as a result of tire contact from passing vehicles. Horizontal fractures allow flat fragments to break away as layered pieces. This surface defect results in an irregular height in the roadway surface and a discontinuous surface for the vehicle tire to travel upon. Spalling can also result from a vehicle fire.

potholes: This is a condition where physical vacancies exist in the roadway.

ruts: This is a condition where the roadway exhibits characteristic depressions in the direction of travel due to the continuous vertical overload stresses acting on the roadway surface.

bump: This is a physical rise in the roadway with a large radius with the principal curvature along the path of travel.

ripples, ridges: These occur when there are one or more physical rises in the roadway with very small radii. The ripples/ridges may be parallel, angled, or perpendicular to the direction of travel.

pavement edge drop: This is the termination of the pavement surface.

overbanding and tar snakes (specify): This is a roadway construction where physical separations have been placed in the pavement to allow for expansion and contraction of the roadway materials.

bitumen repair (specify): This is any portion of the roadway that has been physically repaired using bitumen or a similar asphalt material.

tram/train rails: This refers to any portion of the roadway specifically designed for the transport of trains or tram vehicles. The surrounding support structures for the tram/train rails shall also be classified under this category.

rumble strips: These are man-made grooves perpendicular to the flow of traffic that are designed to get the attention of the rider.

grooved pavement: These are man-made grooves in the direction of traffic flow that are designed to facilitate water flow or are created in preparation of road surface work.

13. Surface Special Features (Continued)

steel plates: These are temporary plates on the road surface used to cover existing road work.

speed bumps/humps: These are man-made, small humps perpendicular to the traffic flow designed to slow traffic to an approved rate of speed by making higher rates of speed uncomfortable or dangerous.

ENVIRONMENT FORM

14. Vertical Alignment

OECD Reference: A.3.1.17

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) level
- (02) upgrade
- (03) crest vertical curve
- (04) downgrade
- (05) sag vertical curve
- (98) other (specify)
- (99) unknown

Range: 01–05, 98, 99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

The element attribute is determined from the same roadway that was used to determine trafficway flow. Measure the area most representative of the pre-crash environment. To determine the grade, the vertical measurement is divided by the horizontal value; the result is a percentage value of the grade.

level: Select when the roadway surface tangent gradient is less than or equal to 2% (i.e., vertical divided by horizontal (vertical/horizontal)).

upgrade: (>2%) Select when the roadway profile is uphill or positive relative to the direction of travel of the vehicle.

crest vertical curve: This refers to a surface in vertical transition between two points of tangency.

downgrade: (>2%) This is used when the roadway profile is downhill or negative, relative to the direction of travel for this vehicle.

sag vertical curve: This refers to a surface in a vertical transition between two points of tangency.

15. Horizontal Alignment

OECD Reference: A.3.1.18

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) straight
- (02) curve right
- (03) curve left
- (04) corner right
- (05) corner left
- (06) reverse curve right: turn to right, then left, resuming approximate original direction
- (07) reverse curve left: turn to left, then right, resuming approximate original direction
- (98) other (specify)
- (99) unknown

Range: 01–07, 98, 99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

This element is determined from the same roadway that was used to determine trafficway flow. Select the descriptor that best represents the vehicle's environment just prior to the critical pre-crash event.

Any perceptually determined curvature of a roadway constitutes a curve.

straight: This refers to a roadway that has no perceptually determined curvature.

curve right; curve left: These refer to a perceptually determined curvature of a roadway. The vehicle's direction of travel determines whether the curvature is right or left.

reverse curve right: turn to right, then left, resuming approximate original direction: This is an S-type curve sequence initiating with a right curve.

reverse curve left: turn to left, then right, resuming approximate original direction: This is a reversed S-type curve initiating from the left.

16. Horizontal Curve Data

Radius of Curvature _____ feet
 Chord _____ feet
 Middle Ordinate _____ feet
 Superelevation Rate _____ %
 Length of Horizontal Curve _____ feet

OECD Reference: None

Convention/Coding Source: SAE⁽⁹⁾

Element Attributes:

(0000) no curve
 (0001–9996) actual curvature
 (9998) other (specify)
 (9999) unknown

Range: 0000–9996, 9998, 9999

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

chord: This is a straight line connecting the ends of an arc or two points on a curve. A chord is never greater than the diameter of the circle of which the arc is a part.

middle ordinate: This is the distance from the middle point of the curve to the middle of the chord.

The chord-offset method usually uses a 100-foot tape held on either end at the precise edge of the roadway while a carpenter’s rule is used at the middle of the tape to measure the distance between the edge of the tape and the edge of the roadway. These two measurements, the 100-foot chord length and the measured middle offset, are then used in the following equation to compute the radius.

radius of curvature: This uses the standard radius of the curvature formula. The formula assumes that the curve being measured is a regular (constant) curve. A quick way to check this is to make two measurements in addition to the middle ordinate measurement. The two measurements must occur at like points (i.e., identical distances along the chord). If the measurements are the same, it is a regular curve; otherwise, it is an irregular curve and this calculation is invalid.

16. Horizontal Curve Data (Continued)

The following is a formula for the radius of a curve:

$$R = \left(\frac{c^2}{8m}\right) + \left(\frac{m}{2}\right) \tag{1}$$

Where:

R = the roadway curve radius (ft).

c = the chord length (ft).

m = the measured middle offset (ft).

superelevation rate: This is the degree to which the outside edge of a roadway is higher than the inside edge at a specified point on a curve; the change in elevation per unit distance across the roadway is from the inside to the outside of the edge (i.e., bank).

measuring the superelevation of a curve: The superelevation should be measured at right angles to the centerline from the inside edge to the outside edge of the curve.

length of the horizontal curve: The length of the curve is the distance from the point of curvature (PC) to the point of tangency (PT) measured along the curve.

PC: The PC is the point on the back tangent where the circular curve begins. It is sometimes designated as beginning of curve (BC) or tangent to curve (TC).

PT: The PT is the point on the forward tangent where the curve ends. It is sometimes designated as end of curve (EC) or curve to tangent (CT).

17. Exclusive Turn-Lane Presence and Type of Signal Phasing

OECD Reference: A.3.1.19

Convention/Coding Source: MUTCD Part 4⁽¹⁰⁾

Element Attributes:

- (00) no exclusive turn lane, no traffic signal
- (01) no exclusive left-turn lane, permissive LT signal phasing
- (02) no exclusive left-turn lane, protected/permissive LT signal phasing
- (03) no exclusive right-turn lane, permissive RT signal phasing
- (04) no exclusive right-turn lane, protected/permissive RT signal phasing
- (05) exclusive left-turn lane, protected-only LT signal phasing with leading green
- (06) exclusive left-turn lane, protected-only LT signal phasing with lagging green
- (07) exclusive left-turn lane, protected/permissive LT signal phasing with separate signal face
- (08) exclusive left-turn lane, protected/permissive LT signal phasing with shared signal face
- (09) exclusive right-turn lane, protected-only RT signal phasing with leading green
- (10) exclusive right-turn lane, protected-only RT signal phasing with lagging green
- (11) exclusive right-turn lane, protected/permissive RT signal phasing with separate signal face
- (12) exclusive right-turn lane, protected/permissive RT signal phasing with shared signal face
- (13) exclusive turn lane, no traffic signal
- (98) other (specify)
- (99) unknown

Range: 00–13, 98, 99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

17. Exclusive Turn Lane Presence and Type of Signal Phasing (Continued)

no exclusive left-turn lane, permissive-only mode: This refers to turns made on the circular green signal indication after yielding to oncoming traffic and pedestrians.

no exclusive left-turn lane, protected-only mode: This refers to turns made only when the left-turn, green-arrow signal indication is displayed.

no exclusive left-turn lane, protected/permissive mode: This refers to how both modes occur on an approach during the same cycle.

exclusive left-turn lane, permissive-only mode: The signal indications for permissive-only-mode left turns shall be provided by the signal faces controlling the through movement or by a left-turn, permissive-only signal face that is either a shared signal face or a separate signal face. A permissive-only shared signal face—regardless of where the left-turn, permissive-only signal face is positioned and regardless of how many adjacent through signal faces are provided—shall always simultaneously display the same color of circular indication that the adjacent through signal face or faces display. A separate left-turn, permissive-only signal face sometimes displays a different color of circular signal indication than the adjacent through signal faces display. If a separate left-turn signal face is provided for permissive-only left turns, it shall meet the following requirements:

- During the permissive left-turn movement, the left-turn signal face shall display a circular green signal indication.
- If the circular green and circular yellow signal indications in the left-turn signal face are visibly limited from the adjacent through movement, the left-turn signal face shall not be required to simultaneously display the same color of circular signal indication as the signal faces for the adjacent through movement.
- If the circular green and circular yellow signal indications in the left-turn signal face are visibly limited from the adjacent through movement, the display of a circular green signal indication for a permissive left-turn movement, while the signal faces for the adjacent through movement display circular red signal indications and the opposing left-turn signal faces display left-turn, green-arrow signal indications for a protected left-turn movement, shall be permitted.
- If the left-turn signal face does not simultaneously display the same color of circular signal indication as the signal faces for the adjacent through movement, a left-turn yield on green (symbolic green ball) (R10-12) sign or a left-turn signal and yield on green (symbolic green ball) (R10-21) sign shall be used.⁽⁶⁾

17. Exclusive Turn Lane Presence and Type of Signal Phasing (Continued)

exclusive left-turn lane, protected only mode: The left-turn signal face shall be capable of displaying one of the following sets of signal indications:

- Left-turn, red-arrow; yellow-arrow; and green-arrow signal indications only: At least one left-turn signal face shall be provided in addition to the two-approach signal faces required in Section 4D.15 for the major movement.⁽⁶⁾ Only one of the three colors shall be illuminated at any given time. A signal instruction sign shall not be required with this set of signal indications. If used, it shall be a left on a green-arrow only sign (R10-5).
- Circular red; left-turn, yellow-arrow; and left-turn, green-arrow signal indications: At least one left-turn signal face shall be provided in addition to the two-approach signal faces required in Section 4D.15 for the major movement.⁽⁶⁾ Only one of the three colors shall be illuminated at any given time. Unless the circular red signal indication is shielded, hooded, louvered, positioned, or designed such that it is not readily visible to drivers in the through lane(s), a left-turn signal sign (R10-10) shall be used.
- Circular red; circular yellow; circular green; and left-turn, green-arrow signal indications: This four-section signal face shall be used only when the circular green and left-turn, green-arrow signal indications begin and terminate together. During each interval, the circular signal indication shall be the same color as the signal indication on the signal face(s) for the adjacent through traffic.

exclusive left-turn lane, protected/permissive mode: The signal indications for protected/permissive mode left turns shall be provided in either a shared signal face or a separate signal face. Any protected/permissive left-turn signal face that always simultaneously displays the same color of circular signal indication that the adjacent through signal faces display shall be considered a shared signal face, regardless of where the left-turn signal face is positioned and regardless of how many adjacent through signal faces are provided. Any protected/permissive left-turn signal face that sometimes displays a different color of circular signal indication than the adjacent through signal faces display shall be considered to be a separate signal face. The requirements for each type of signal face are as follows:

- If a shared signal face is provided, it shall be considered an approach signal face and shall meet the following requirements:
 - During the protected left-turn movement, the signal face shall simultaneously display a left-turn, green-arrow signal indication and a circular signal indication that is the same color as the signal indication for the adjacent through lane on the same approach as the protected left turn. During the protected left-turn movement, the signal faces for through traffic on the opposing approach shall simultaneously display circular red signal indications.

17. Exclusive Turn Lane Presence and Type of Signal Phasing (Continued)

- During the permissive left-turn movement, all signal faces on the approach shall display circular green signal indications.
- All signal faces on the approach shall simultaneously display the same color of circular signal indications to both through and left-turn road users.
- A supplementary sign shall not be required. If used, it shall be a left-turn, yield on green (symbolic green ball) (R10-12) sign.⁽⁶⁾
- If a separate signal face is provided, it shall be considered a left-turn signal face and shall meet the following requirements:
 - During the protected left-turn movement, the left-turn signal face shall display a left-turn, green-arrow signal indication. During the protected left-turn movement, the signal faces for through traffic on the opposing approach shall simultaneously display circular red signal indications.
 - During the permissive left-turn movement, the left-turn signal face shall display a circular green signal indication.
 - If the circular green and circular yellow signal indications in the left-turn signal face are visibly limited from the adjacent through movement, the left-turn signal face shall not be required to simultaneously display the same color of circular signal indication as the signal faces for the adjacent through movement.
 - If the circular green and circular yellow signal indications in the left-turn signal face are visibly limited from the adjacent through movement, the display of a circular green signal indication for a permissive left-turn movement while the signal faces for the adjacent through movement display circular red signal indications and the opposing left-turn signal face displays a left-turn, green-arrow signal indication for a protected left-turn movement shall be permitted.
 - If the left-turn signal face does not simultaneously display the same color of circular signal indication as the signal faces for the adjacent through movement, a left-turn signal and yield on green (symbolic green ball) (R10-21) sign shall be used.⁽⁶⁾

exclusive right-turn lane, permissive-only mode: A separate signal indication or signal face for right turns shall not be required. The signal indication for permissive-only mode right turns shall be the same color as the signal indication for adjacent through traffic, except that, if the right turn is held to provide an exclusive pedestrian movement, a separate right-turn, red-arrow signal indication shall be provided.

17. Exclusive Turn Lane Presence and Type of Signal Phasing (Continued)

exclusive right-turn lane, protected only mode: The right-turn signal face shall be capable of displaying one of the following sets of signal indications:

- Right-turn, red-arrow; yellow-arrow; and green-arrow signal indications only: At least one right-turn signal face shall be provided in addition to the two approach signal faces required in Section 4D.15 for the major movement.⁽⁶⁾ Only one of the three colors shall be illuminated at any given time. A signal instruction sign shall not be required with this set of signal indications. If used, it shall be a right on green-arrow only sign (R10-5a).
- Circular red; right-turn, yellow-arrow; and right-turn, green-arrow signal indications: At least one right-turn signal face shall be provided in addition to the two approach signal faces required in Section 4D.15 for the major movement.⁽⁶⁾ Only one of three colors shall be illuminated at any given time. Unless the circular red signal indication is shielded, hooded, louvered, positioned, or designed such that it is not readily visible to drivers in the through lane(s), a right turn signal sign (R10-10R) shall be used.
- Circular red; circular yellow; circular green; and right-turn, green-arrow signal indications. This four-section signal face shall be used only when the circular green and right-turn, green-arrow signal indications begin and terminate together. During each interval, the circular signal indication shall be the same color as the signal indication on the signal faces for the adjacent through traffic.

exclusive right-turn lane, protected/permissive mode: A separate signal face is not required for the right turn, but, if provided, it shall be considered an approach signal face and shall meet the following requirements:

- During the protected right-turn movement, the signal face shall simultaneously display (a) a right-turn, green-arrow signal indication and (b) a circular signal indication that is the same color as the signal indication for the adjacent through lane on the same approach as the protected right turn.
- During the permissive right-turn movement, all signal faces on the approach shall display a circular green signal indication.
- All signal faces on the approach shall simultaneously display the same color of circular signal indications to both through and right-turn road users.

18. Type of Traffic Control

OECD Reference: A.3.1.20

Convention/Coding Source: NASS,⁽⁴⁾ MUTCD⁽¹⁰⁾

Element Attributes:

- (00) no traffic control (skip to # 22)
- (01) yield sign
- (02) stop sign
- (03) three-way, four-way, all-way stop
- (04) traffic control signal
- (05) traffic officer
- (06) construction personnel
- (07) gate, toll gate
- (08) pedestrian crossing
- (09) traffic calming/speed bumps
- (10) traffic advisory signage (specify)
- (11) traffic warning signage (specify)
- (12) traffic signal, actuated, two-phase
- (13) traffic signal, actuated, multiphase
- (14) traffic signal, pre-timed, two-phase
- (15) traffic signal, pre-timed, multiphase
- (16) traffic control signal, midblock pedestrian crossing
- (17) flasher red
- (18) flasher yellow
- (98) other (specify)
- (99) unknown

Range: 00–18, 98, 99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

This attribute is determined from the same roadway used to define the trafficway flow. The investigator should select the descriptor that best controls traffic in the vehicle's environment just prior to the vehicle's critical pre-crash event.

18. Type of Traffic Control (Continued)

This variable measures the above-ground traffic control(s) that regulate vehicular traffic. Excluded are any controls that solely regulate pedestrians (e.g., wait/walk signals).

Focus on the road segment just prior to the location of the critical pre-crash event and select the traffic control device(s) that are most related to this event. In-junction crashes should be based on the presence of a traffic control device for the roadway on which the vehicle is traveling. For non-junction crashes, traffic control devices should be selected based on their relationship to the crash circumstances and not be based merely on presence.

regulatory signs: These signs give notice for traffic laws or regulations. Examples include STOP signs and no parking signs.

warning signs: These signs call attention to conditions on or adjacent to a highway or street that is potentially hazardous to traffic operations. Examples include signs warning of falling rocks or curves ahead.

guide signs: These signs show route designations, destinations, directions, distances, services, points of interest, and other geographical recreational or cultural information.

standard shape signs: The octagon is exclusively used for the STOP sign. The equilateral triangle, with one point downward, is used exclusively for the YIELD sign. The round shape is used for the advance warning of a railroad crossing and for the civil defense evacuation route marker. The pennant shape, an isosceles triangle with its longest axis being horizontal, is used to warn of no-passing zones. The diamond shape is used only to warn of existing or possible hazards either on or adjacent to the roadway or adjacent thereto. The (vertical) rectangle, ordinarily with the longer dimension vertical, is used for regulatory signs with the exception of STOP signs and traffic control device YIELD signs. The (horizontal) rectangle, ordinarily with the longer dimension horizontal, is used for route markers and recreational area guide signs.

The pentagon, with the point up, is used for school advance and school crossing signs. Other shapes are reserved for special purposes, such as the shield or other characteristic designs for route markers and crossbucks for railroad crossings.

Signs can be distinguished by their color. The following general rules apply. Red is used as a background color on prohibitory-type regulatory signs (e.g., STOP, DO NOT ENTER, WRONG WAY). It is also used as the circular outline and diagonal bar prohibitory symbol. Black may be used as a background (e.g., ONE WAY). It is used as a message on white, yellow, and orange signs. White is used as the background for route markers, guide signs, and regulatory signs (except for STOP). It is used as the legend for brown, green, blue, black, and red signs. Orange is used only as a background color for construction and maintenance signs. Yellow is used as a background color for warning signs and for school signs. Brown, green, and blue are used as a background color for guide signs.

18. Type of Traffic Control (Continued)

Pavement markings are used to supplement the regulations or warnings of other devices such as traffic signs or signals. In other instances, they are used alone and produce results that cannot be obtained by the use of any other device. Pavement markings can convey warnings or information to the driver without diverting his or her attention from the roadway. Pavement markings are not considered when completing this variable.

Guide signs do not constitute traffic controls. The investigator should consider the intent of this statement. If at the time of the crash there was no intent to control (regulate or warn) vehicle traffic, then select no traffic control; otherwise, select the appropriate value.

For example, if the intersection is channelized and controlled differently on the channel than on the through lanes (e.g., signal and YIELD signs), report the traffic controls depending on whether the roadway (number of travel lanes) was chosen based on its through lanes or its channelized lanes.

The attributes are in prioritized order. This means that traffic control signal takes precedence over school zone signs, other regulatory signs, and warning signs. Note that the only exception to the prioritization rule is that any officially designated person (miscellaneous controls) takes precedence over any other attribute.

no traffic control: Select when there is no above-ground sign or signal to regulate traffic flow. If a traffic control device has been deactivated (e.g., traffic signal that emits no signal) during certain times of day and was deactivated at the time of the crash, select No traffic control.

yield sign: Select when a trafficway is controlled by an equilateral-shaped triangle with one point downward, having a red-border band and white interior and the word “YIELD” in red inside the border band.

other regulatory sign: Select when a regulatory sign other than a STOP or YIELD sign is present. Other signs include speed limit signs, movement signs (e.g., NO TURN, LEFT TURN ONLY, DO NOT ENTER, WRONG WAY, ONE WAY), parking signs (e.g., NO PARKING, EMERGENCY PARKING ONLY), and other miscellaneous signs (e.g., ROAD CLOSED TO THROUGH TRAFFIC, WEIGHT LIMIT).

traffic control signal (not RR crossing): Select when (1) any signal that processes through the green, amber, and red cycles (the source of the actuation is of no concern); (2) any green, amber, and red cycling signal for which a signal is missing or inoperable; (3) any green, amber, and red cycle capability being used to flash amber/red or red/red; (4) any flashing beacon—only capable of flashing amber/red or red/red signals; and (5) any portable signal that controls traffic flow (i.e., a gas-powered directional signal to divert traffic for an impending lane closure).

18. Type of Traffic Control (Continued)

A traffic control signal that is out (e.g., due to a power failure) and was related to the crash should be indicated as “present” unless a temporary control (e.g., STOP sign, police officer, miscellaneous controls) has been inserted, in which case the temporary control should be selected.

Note that regulatory signs enhanced by flashing lights should be selected based on their regulatory design (e.g., a STOP sign with a flashing light should be coded as a STOP sign; disregard the flashing light).

STOP sign is selected when a trafficway is controlled by an octagon-shaped sign with white letters and a border on a red background.

traffic officer: Select when a police officer or other officially designated person controls both pedestrian and vehicular traffic.

construction personnel: Select when an area is controlled by a construction warning sign (any black text or graphic on an orange diamond-shaped sign).

traffic warning signage (specify): (not an RR crossing) Select when a sign is used to warn of an existing or potentially hazardous condition on or adjacent to a highway or street. Generally, warning signs are diamond-shaped with a black text on the sign and a border on a yellow background. Examples include turn signs, curve signs, winding road signs, STOP AHEAD signs, and T-symbol signs. Some warning signs are horizontal rectangles such as a large arrow sign intended to give notice of a sharp change in alignment in the direction of travel.

unknown: Select when a regulatory sign was present at the time of collision but was removed or not available during the scene inspection to determine its type, and the PAR is not specific about a traffic control presence.

other (specify): Select when RR crossing controls are present (e.g., any gates, flashing lights, bells, crossbucks, railroad crossing signs, or circles with a black “X” on a yellow background).

Note that an officially designated person controlling traffic takes precedence over any other attributes.

ENVIRONMENT FORM

19. Was Traffic Control Functioning Properly?

OECD Reference: A.3.1.21

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) no, nonoperational
- (01) yes
- (02) operational, but malfunctioning (e.g., signal-turn timing is incorrect)
- (97) not applicable, no traffic control
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

no, nonoperational: Select for the following situations:

- The traffic control device was not operating.
- The traffic control device was defaced, badly worn, rotated so it could not be seen, covered with snow, lying on ground, etc.

yes: Select when the traffic control device was functioning as designed at the time of the crash.

operational, but malfunctioning (e.g., signal-turn timing is incorrect): Select when the reported traffic control device had some function, but the function was improper, inadequate, or operating erratically (e.g., signal worked, but was stuck on red).

unknown: Select when the status of the traffic control device at the time of the crash cannot be determined.

ENVIRONMENT FORM

20. Traffic Control Visible to Vehicle Operator?

OECD Reference: A.3.1.22

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no traffic control
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

- Primary—scene inspection
- Secondary—police crash report and interviews

Remarks: This variable is assigned by the investigator from the sources.

ENVIRONMENT FORM

21. Traffic Control Violated by Vehicle Operator?

OECD Reference: A.3.1.23

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no traffic control
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—scene inspection and crash report

Remarks: This variable is assigned by the investigator from the source.

In the event that the subject vehicle involved in the accident has violated a traffic control (e.g., traveled through a red light or STOP sign), the following guidelines should be used.

no: There was no violation of a traffic control.

yes: There was a violation of a traffic control.

not applicable, no traffic control: There is no traffic control at the scene of the accident.

other (specify): For any other response or condition, see the coding response convention note below.

unknown: It is not possible to determine the vehicle that violated the traffic control.

Please read the following important coding response convention note: If there is a traffic control violation and insufficient information to determine whether the subject vehicle violated the traffic control in a given collision, use the response code 98, “other (specify).”

ENVIRONMENT FORM

22. Traffic Density at Time of Crash

OECD Reference: A.3.1.24

Convention/Coding Source: OECD

Element Attributes:

- (00) no other traffic
- (01) light traffic
- (02) moderate traffic
- (03) heavy traffic, traffic moving
- (04) heavy traffic, congested roadway
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source: Primary—scene inspection and crash report

Remarks: This variable is assigned by the investigator from the source.

Traffic density at the time of the accident should be coded using the following guidelines:

light traffic: Vehicular flow was sporadic and irregular with a distance of greater than five car lengths between each vehicle. There was no significant interaction between the vehicles.

moderate traffic: Vehicular flow was regular and moved with a distance of at least one to two car lengths between the vehicles.

heavy traffic, traffic moving: Vehicular flow was continuous and moving with a distance of one car or less between the vehicles.

heavy traffic, congested roadway: Vehicular flow was continuous with a distance of less than one car length between the vehicles. The traffic was moving at a rate less than the posted speed limit.

ENVIRONMENT FORM

23. Visibility Limitation Due to

OECD Reference: A.3.1.25

Convention/Coding Source: DSI

Element Attributes:

- (00) not significantly limited
- (01) dust
- (02) smoke
- (03) smog
- (04) fog
- (05) precipitation
- (06) glare
- (07) windscreen/visor condition (specify)
- (08) misaligned/obscured roadside curved mirror
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source:

- Primary—police crash report
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

ENVIRONMENT FORM

24. Direction of Traffic in Lane Adjacent to Vehicle

Right Side _____

Left Side _____

OECD Reference: A.3.1.4.1, A.3.1.4.2

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) no adjacent lane
- (01) same direction
- (02) opposite direction
- (03) both directions
- (04) bike lane
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

The definitions of each of the four categories are as follows.

no adjacent lane: Select when there is no adjacent travel lanes with respect to this vehicle's travel lane (i.e., one way or the roadway is not wide enough to consider being two travel lanes).

same direction: Select when vehicles in the adjacent lane were traveling in the same direction on the same roadway.

opposite direction: Select when vehicles in the adjacent lane were traveling in opposite directions on the same roadway.

both directions: Select when the vehicles were in a common travel lane of the roadway (i.e., mutual left-turning lane).

bike lane: Select when there were marked lanes allowing bicycle travel in one or both directions. The lane was closed to motor vehicle traffic.

unknown: Select for situations where the travel direction for vehicles in the adjacent lane cannot be determined.

ENVIRONMENT FORM

25. Parked Vehicle Presence in Lane Adjacent to Vehicle

Right Side _____
Left Side _____

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no parked vehicles
- (01) parallel parked vehicles
- (02) angle parked vehicles
- (03) loading zone, parked vehicles
- (97) not applicable, no adjacent lane
- (98) other (specify)
- (99) unknown

Range: 00–03, 97–99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

parallel parked vehicles: Select when vehicles parked in one line, parallel to the curb, with the front bumper of each car facing the back bumper of the adjacent one.

angle parked vehicles: Select when parked vehicles are arranged at an angle to the aisle (an acute angle in the direction of approach). Most angled parking is design in a head-in configuration while a few cities have some back-in angled parking (typically on hills or low traffic volume streets).

loading zone, parked vehicles: Select for an area that is marked as a loading zone and where vehicle(s) are parked within the loading zone designated area.

ENVIRONMENT FORM

26. Shoulder and Sidewalk Presence in Area Adjacent to Vehicle Lane of Travel

Right Side _____

Left Side _____

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no shoulder or sidewalk
- (01) shoulder (specify)
- (02) sidewalk (specify)
- (03) concrete median
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

shoulder (specify): Select for an angled or sloped surface delineating the edge of the roadway.

sidewalk (specify): Select for a paved or unpaved flat surface adjacent to the roadway designed for pedestrian or other nonvehicular traffic.

concrete median: Select for a paved, raised delineator separating lanes of opposing traffic.

Note that if a shoulder or sidewalk is present, describe the surface composition (i.e., bituminous, paved, gravel, concrete, etc.)

ENVIRONMENT FORM

27. Longitudinal Pavement Markings at Edge of Lane Traveled by Vehicle

Right Side _____
Left Side _____

OECD Reference: None

Convention/Coding Source: MUTCD Part 3, "Markings"⁽¹⁰⁾

Element Attributes:

- (00) no markings
- (01) centerline, skip-dash, yellow
- (02) centerline, solid, yellow
- (03) centerline, solid double, yellow
- (04) lane line, skip-dash, white
- (05) lane line, solid, white
- (06) edge line, left, yellow
- (07) edge line, right, white
- (08) left-turn lane lines, combination of solid and skip-dash, yellow
- (09) turn arrow symbols, thru, left, or combination of the two
- (97) not applicable, no adjacent lane
- (98) other (specify)
- (99) unknown

Range: 00–09, 97–99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

Review MUTCD Part 3, "Markings."⁽¹⁰⁾

ENVIRONMENT FORM

28. Pavement Markings Material

Right Side _____

Left Side _____

OECD Reference: None

Convention/Coding Source: MUTCD Part 3, "Markings"⁽¹⁰⁾

Element Attributes:

- (00) no markings
- (01) paint
- (02) thermoplastic
- (03) raised markers
- (04) tape
- (97) not applicable, no adjacent lane
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

thermoplastic: The material consists of a combination of light-plasticized resin, aggregate pigment, and extender.

raised markers: These are usually made with plastic, ceramic, or occasionally metal and come in a variety of shapes and colors. Many varieties include a lens or sheeting that enhance their visibility by reflecting automotive headlights. Some other names for raised pavement markers include Botts' dots, delineators, cat's eyes, road studs, or reflectors.

ENVIRONMENT FORM

29. Delineator Presence

Right Side _____

Left Side _____

OECD Reference: A.3.1.5.1, A.3.1.5.2

Convention/Coding Source: MUTCD Part 3, "Markings"⁽¹⁰⁾

Element Attributes:

- (00) no delineator
- (01) delineator
- (97) not applicable, no adjacent lane
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

Delineators are particularly beneficial at locations where the alignment might be confusing or unexpected, such as at lane reduction transitions and curves. Delineators are effective guidance devices at night and during adverse weather. An important advantage of delineators in certain locations is that they remain visible when the roadway is wet or snow covered.

Delineators are considered guidance devices rather than warning devices.

Option: Delineators may be used on long, continuous sections of highway or through short stretches where there are changes in horizontal alignment.

Standard: Delineators shall be retroreflective devices mounted above the roadway surface and along the side of the roadway in a series to indicate the alignment of the roadway. Delineators shall consist of retroreflector units that are capable of clearly retroreflecting light under normal atmospheric conditions from a distance of 300 m (1,000 ft) when illuminated by the high beams of standard automobile lights.

ENVIRONMENT FORM

30. Roadside Environment

Right Side _____

Left Side _____

OECD Reference: A.3.1.6.1, A.3.1.6.2

Convention/Coding Source: DSI

Element Attributes:

- (01) level ground, no remarkable features
- (02) grass, ground cover
- (03) shrubbery
- (04) dirt, soft soil, sand
- (05) gravel preparation
- (06) sidewalk
- (07) paved or topped surface
- (08) trees, posts
- (98) other (specify)
- (99) unknown

Range: 01–08, 98, 99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

Note that in many cases there will be numerous roadside objects within the pre-crash environment. Choose or select the element(s) that best describes that section of the roadside environment.

An example would be if the right side of the roadway is mainly aligned with trees with grass-covered landscaping (code 08).

Another example would be if the left side of the roadway is grass covered with some sporadic shrub cover (code 02).

31. Roadside Fixed Objects

Right Side ____
Left Side ____

OECD Reference: A.3.1.7.1, A.3.1.7.2

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) none
- (01) wall, building, tunnel, etc.
- (02) ditch or low-lying area (specify)
- (03) trees
- (04) impact attenuator/crash cushion
- (05) bridge pier or support
- (06) bridge rail
- (07) culvert (specify)
- (08) curb (specify)
- (09) embankment foreslope, describe ____ slope = 1V:xH
- (10) embankment transverse-slope describe ____ slope = 1V:xH
- (11) cut slope, backslope
- (12) guardrail
- (13) concrete traffic barrier
- (14) other traffic barrier
- (15) utility pole, light support
- (16) traffic sign support
- (17) other post, pole, or support
- (18) fence
- (19) mailbox
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–19, 97–99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

31. Roadside Fixed Objects (Continued)

When a vehicle impacts a tree, shrubbery, bush, pole, or post and causes the fixed object or any portion thereof to become dislodged or airborne such that the object or portion thereof subsequently falls on the vehicle, the appropriate object-contacted attribute for the object in its dislodged or airborne state is what it was initially.

wall, building, tunnel, etc.: This refers to solid, vertical-faced concrete, brick, stone, or other structurally sound, man-made roadside objects that may act as a traffic barrier in some locations.

ditch or low-lying area (specify): This refers to a man-made excavation for drainage purposes.

tree: This refers to a tree large enough in diameter to cause significant damage to the vehicle or driver.

impact attenuator/crash cushion: This refers to crash cushions that are barriers placed in front of fixed objects on the highway to absorb energy, and thus mitigate the injury effects of collisions at such sites. A number of common impact attenuating devices may be encountered, so be sure to photograph them.

bridge pier or support; bridge rail: This encompasses all structural members of an overpass used for vehicular or pedestrian traffic. This attribute includes guardrails, permanent concrete barriers, bridge rails/walls, bridge piers, bridge abutments, bridge parapet ends, wing walls associated with bridge abutments, and support columns.

culvert (specify): This refers to a man-made transverse and totally enclosed drain under a road.

curb (specify): This is used when the vehicle contacts a raised element at the edge of a roadway. Curbs are used to control drainage, act as deterrents to vehicles leaving the pavement at hazardous points, delineate the edge of the pavement, present a more finished appearance, and assist in the orderly development of the roadway edge. Often a curb serves two or more of these purposes.

embankment: This is used only when damage or injury results from a vehicle impacting an embankment.

foreslope: This is the angle of the embankment in the direction of the vehicular travel flow.

transverse slope: This is the angle of the embankment perpendicular to the vehicular travel flow.

31. Roadside Fixed Objects (Continued)

concrete traffic barrier: This refers to the longitudinal traffic barriers constructed of concrete and located on the outside of the road surface, in a median or in gore areas. This includes all temporary concrete barriers regardless of location (e.g., temporary Jersey barrier on a bridge being used to control traffic during bridge repair/construction). Concrete walls (i.e., vertical side surfaces) do not apply here. See, “wall, building, tunnel, etc.”

other traffic barrier: This refers to any longitudinal barrier not constructed of concrete and includes all permanent guardrails and median barriers not on a bridge.

utility pole, light support: A permanently attached support used for retaining utility lines (phone, power, etc.) or lights. Privately and publicly owned, highway devices are included in these attributes. They may be made of wood, metal, or concrete and may have various cross-sectional shapes and dimensions. The pole or post must be nontemporary (i.e., have a permanent base or be anchored in the ground).

fence: This includes both the fence material and the support posts.

other (specify): This is used for any other object of sufficient mass or anchored such that it is not readily movable; examples of this include large boulders and large logs (fallen trees).

unknown: This is used when it is known that the vehicle struck a fixed object, but the specific type of object is not known.

ENVIRONMENT FORM

32. Stationary View Obstructions Along the Operator's Line of Sight at Time of Precipitating Event (Code up to Three)

OECD Reference: A.3.1.30

Convention/Coding Source: AASHTO

Element Attributes:

- (00) none
- (01) buildings
- (02) signs
- (03) vegetation, trees, bushes, walls, vegetation covered fences
- (04) crest vertical curve
- (05) blind horizontal curve
- (06) stationary or parked vehicles
- (07) barricades
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

Stationary view obstructions are nonmovable objects that prevent the rider/driver from seeing a safe distance ahead of the vehicle.

The ability to see ahead is of the utmost importance in the safe and efficient operation of a vehicle on a highway.

Sight distance is the distance along a roadway at which an object of specified height is continuously visible to the rider/driver. This distance is dependent on the height of the driver's eye above the road surface, the specified object's height above the road surface and the height of sight obstructions within the line of sight.

ENVIRONMENT FORM

33. Mobile View Obstructions Along the Operator's Line of Sight at Time of Precipitating Event

OECD Reference: A.3.1.31

Convention/Coding Source: AASHTO

Element Attributes:

- (00) none
- (01) vehicles: automobiles
- (02) vehicles: light trucks and vans
- (03) trucks and busses
- (04) vehicles: special purpose equipment, construction, cranes
- (05) farm and/or agricultural equipment
- (06) people, pedestrians
- (07) animals
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

Mobile view obstructions are nonmovable objects that prevent the rider/driver from seeing a safe distance ahead of the vehicle.

The ability to see ahead is of the utmost importance in the safe and efficient operation of a vehicle on a highway.

Sight distance is the distance along a roadway at which an object of specified height is continuously visible to the rider/driver. This distance is dependent on the height of the driver's eye above the road surface, the specified object's height above the road surface, and the height of sight obstructions within the line of sight.

ENVIRONMENT FORM

34. Was This Crash Work-Zone Related?

OECD Reference: None

Convention/Coding Source: MUTCD Part 6, Chapter 6c, “Temporary Traffic Control”⁽¹⁰⁾

Element Attributes:

- (00) no (skip to # 37)
- (01) yes
- (99) unknown

Range: 00, 01, 99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

work zone: This is one particular kind of temporary traffic control zone. A work zone is an area of a highway with construction, maintenance, or utility work activities. A work zone is typically marked by signs, channelizing devices, barriers, pavement markings, and/or work vehicles.

ENVIRONMENT FORM

35. Location of Crash Within Work Zone

OECD Reference: None

Convention/Coding Source: MUTCD, Chapter 6C, “Temporary Traffic Control Elements”⁽¹⁰⁾

Element Attributes:

- (01) before the first work-zone warning sign
- (02) advance warning area
- (03) transition area
- (04) activity area
- (05) terminal area
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–05, 97–99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

advance warning area: This is the section of highway where road users are informed about the upcoming work zone or incident area.

The advance warning area may vary from a single sign or high-intensity rotating, flashing, oscillating, or strobe lights on a vehicle to a series of signs in advance of the temporary traffic control (TTC) zone activity area.

transition area: This is that section of highway where road users are redirected out of their normal path. Transition areas usually involve strategic use of tapers.

In mobile operations, the transition area moves with the work space.

activity area: This is the section of the highway where the work activity takes place. It comprises the work space, traffic space, and buffer space. The traffic space is the portion of the highway in which road users are routed through the activity area.

terminal area: Select to return road users to their normal path. The termination area shall extend from the downstream end of the work area to the last TTC device such as END ROAD WORK signs, if posted.

ENVIRONMENT FORM

36. Type of Work Zone

OECD Reference: None

Convention/Coding Source: MUTCD Chapter 6C, “Temporary Traffic Control Elements”⁽¹⁰⁾

Element Attributes:

- (01) lane closure
- (02) lane shift/crossover
- (03) work on shoulder or median
- (04) intermittent or moving work
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–04, 97–99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

lane closure: Select when there is a closure of one or more lanes of the roadway to traffic.

lane shift/crossover: Select when there is a shift or crossover of lane(s) without lane(s) closure.

intermittent or moving work: The removal or suspension of traffic from a segment of roadway for specified time increments, typically 5 to 30 minutes while roadwork takes place, for the purpose of reconstruction and/or maintenance activities.

37. Location of First Harmful Event

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) on roadway
- (02) shoulder
- (03) median
- (04) roadside nonmedian
- (05) gore area
- (06) separator (between arterial and frontage road)
- (07) parking lane or zone
- (08) off roadway, location unknown
- (09) outside trafficway
- (98) other (specify)
- (99) unknown

Range: 01–09, 98, 99

Source: Primary—scene inspection and crash report

Remarks: This variable is assigned by the investigator from the sources.

on roadway: Select when this vehicle’s location reference to the first harmful event is within a designated travel lane.

shoulder: Select when this vehicle’s location reference to the first harmful event is on the shoulder of the roadway. The shoulder area does not have to be paved to be considered a shoulder. This area, however, must be stabilized and graded. Nonstabilized areas adjacent to the roadway are considered to be the part of the roadside area.

median: Select when this vehicle’s location reference to the first harmful event is in the median strip that physically divides the trafficway. The division may be unprotected (e.g., vegetation, gravel, paved medians, painted medians, trees, water, embankments, ravines) or may be protected (e.g., concrete, metal, or other types of longitudinal barriers). Painted flush areas must be 1.2 m in width to constitute a median strip.

37. Location of First Harmful Event (Continued)

roadside nonmedian: Select when this vehicle's location reference to the first harmful event is in the area between the outside edge of the shoulder and the right-of-way boundary. If there is no shoulder, the roadside area is defined as that area between the outside edge of the roadway and the right-of-way boundary.

gore area: Select when this vehicle's location reference to the first harmful event is in the area separating the travel lanes from an on/off ramp/roadway. The gore area must be tapered and begins/ends where the ramp/roadway separates from/joins the travel lanes.

separator (between arterial and frontage road): Select when this vehicle's location reference to the first harmful event is in the area or is in the area of or in contact with a structure that separates an arterial and frontage road.

parking lane or zone: Select when this vehicle's location reference to the first harmful event is in a parking lane located outside of the travel lanes. The parking lane may be an officially designated lane delineated by appropriate markings or may be established by customary usage without specific delineation.

off roadway, location unknown: Select when there is insufficient information to accurately locate this vehicle's position off the roadway reference to the first harmful event. There is sufficient information, however, to determine that this vehicle was off the roadway at the time of interest.

outside trafficway: Select when this vehicle's location reference to the first harmful event is outside/beyond the trafficway boundary.

unknown: Select when there is insufficient information to determine this vehicle's location reference to the first harmful event.

38. If First Harmful Event Is a Noncollision

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) overturn
- (02) fire/explosion
- (03) immersion
- (04) jackknife
- (05) cargo/equipment loss or shift
- (06) fell/jumped from motor vehicle
- (07) thrown or falling object
- (97) not applicable, event is a collision
- (98) other (specify)
- (99) unknown

Range: 01–07, 97–99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

overturn rollover (excludes end-over-end): Select when a vehicle rolls over or overturns primarily about the longitudinal axis. This event is reported in the crash sequence variables on the Case Form. It is assumed that a rollover will generally involve contact with the road surface or ground. In this situation, the object contacted is encoded, “overturn rollover and not ground.” In the event that another object in the environment is contacted during the rollover sequence, the rollover event may not be encoded in the CDC unless the rollover is applicable to CDC.⁽¹¹⁾ Overturn or rollover typically refers to four-wheeled vehicles, and given the NASS definition, it does not relate to two-wheeled vehicles.⁽⁴⁾ Laying down the motorcycle should be coded as a collision with the roadway or ground.

fire/explosion: Select when a vehicle fire or explosion occurs during the crash sequence or as a result of the crash.

immersion: Select when a vehicle goes under water.

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38. If First Harmful Event is a Noncollision (Continued)

jackknife: Select when there is sufficient uncontrolled rotation (articulation) between a towing unit and a trailing unit such that they contact each other resulting in direct damage to the towing unit. Jackknife may occur to any vehicle that is pulling a trailing unit by a fixed linkage as long as the trailing unit and the pulling vehicle are capable of rotating (articulating) with respect to each other.

unknown: Select when it is known that the event was a noncollision but specifics are not known.

39. If First Harmful Event Is a Collision With a Nonfixed Object

OECD Reference: None

Convention/Coding Source: NASS,⁽⁴⁾ DSI

Element Attributes:

- (01) motor vehicle in transport
- (02) railway/light-rail vehicle
- (03) pedestrian
- (04) pedalcycle
- (05) motorcycle
- (06) animal
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

motor vehicle in transport: Select when the vehicle has been determined to be a motor vehicle that is in transport. This is determined by the investigator and may not necessarily agree with the police crash report. For example, the PAR may list a parked vehicle as a “struck vehicle.” Upon inspecting the scene, the researcher determines there is no legal parking at the scene, so the police crash report—a reported parked vehicle—becomes an in-transport vehicle.

railway/light-rail vehicle: This refers to any railway train, moving or not moving.

pedestrian: This is defined as any person who is on a trafficway or on a sidewalk, or on a path contiguous with a trafficway, and who is not in or on a nonmotorist conveyance. This includes persons who are in contact with the ground, roadway, etc., while holding onto a vehicle. A nonmotorist conveyance is defined as any human-powered device by which a nonmotorist may move or by which a pedestrian or nonmotorist may move another nonmotorist other than by pedaling. A nonmotorist conveyance includes the following: baby carriage, coaster wagon, ice skates, roller skates, push cart, scooter, skateboard, skis, sled, wheelchair, rickshaw, etc. This includes those persons in a nonmotorist conveyance who hold onto a motor vehicle in motion. Pedalcyclists are excluded.

39. If First Harmful Event is a Collision with a Nonfixed Object (Continued)

pedacycle: This is a pedal-driven, two-wheeled vehicle used in cycling. It consists of a metal frame mounted on two large wire-spoked wheels with handlebars in front and a seat between the front and back wheels.

motorcycle: This is a single-track, two-wheeled motor vehicle powered by an engine.

animal: Select if the object contacted was an animal (stationary or nonstationary). When a nonmotorist was associated with the animal (i.e., on the animal or on or in an animal-powered non-motor-vehicle transport device), use the following scheme: if the contact is to (1) the animal, the animal and the person, the animal and the conveyance, or the animal, conveyance, and the person, use the attribute animal; or (2) the conveyance, the person, or both the conveyance and the person, use the attribute other.

40. If First Harmful Event Is a Collision With a Fixed Object

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) impact attenuator/crash cushion
- (02) bridge overhead structure
- (03) bridge pier or support
- (04) bridge rail
- (05) culvert
- (06) curb
- (07) ditch or low-lying area
- (08) embankment, foreslope
- (09) embankment transverse-slope
- (10) cut slope, backslope
- (11) guardrail (nonterminal end)
- (12) guardrail (terminal end)
- (13) concrete traffic barrier
- (14) other traffic barrier
- (15) trees
- (16) utility pole, light support
- (17) traffic sign support
- (18) traffic signal support
- (19) other post, pole, or support
- (20) fence
- (21) mailbox
- (22) wall, building, tunnel, etc.
- (23) parked motor vehicle
- (24) work-zone equipment
- (25) paved surface/ground
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–25, 97–99

Source: Primary—scene inspection and crash report

40. If First Harmful Event is a Collision with a Fixed Object (Continued)

Remarks: This variable is assigned by the investigator from the source.

When a vehicle impacts a tree, shrubbery, bush, pole, or post and causes the fixed object or any portion thereof to become dislodged or airborne such that the object or portion thereof subsequently falls on the vehicle, the appropriate object contacted attribute for the object in its dislodged or airborne state is the same as it was for the object initially.

impact attenuator/crash cushion: This refers to crash cushions that are barriers placed in front of fixed objects on the highway to absorb energy and thus mitigate the injury effects of collisions at such sites. A number of common impact attenuating devices may be encountered; therefore, be sure to photograph them when encountered.

bridge overhead structure; bridge pier or support; bridge rail: This encompasses all structural members of an overpass used for vehicular or pedestrian traffic. This attribute includes guardrails, permanent concrete barriers, bridge rail/walls, bridge piers, bridge abutments, bridge parapet ends, wing walls associated with bridge abutments, and support columns.

culvert: This refers to a man-made transverse and totally enclosed drain under a road.

curb: Select if the vehicle contacts a raised element at the edge of a roadway. Curbs are used to control drainage, act as deterrents to vehicles leaving the pavement at hazardous points, delineate the edge of the pavement, present a more finished appearance, and assist in the orderly development of the roadway edge. Often a curb serves two or more of these purposes.

ditch: This refers to a man-made excavation for drainage purposes.

embankment: Select only when damage or injury results from a vehicle impacting an embankment.

foreslope: This is the angle of the embankment in the direction of the vehicular travel flow.

transverse slope: This is the angle of the embankment perpendicular to the vehicular travel flow.

guardrail (nonterminal end): This is the section of the guardrail that is located between the two ends of the guardrail.

guardrail (terminal end): This is the section of guardrail that is located at either end of the guardrail system.

40. If First Harmful Event is a Collision with a Fixed Object (Continued)

concrete traffic barrier: This refers to the longitudinal traffic barriers constructed of concrete and located on the outside of the road surface, in a median, or in gore areas. This includes all temporary concrete barriers regardless of location (e.g., temporary Jersey barrier on a bridge being used to control traffic during bridge repair/construction). Concrete walls (i.e., vertical side surfaces) do not apply here. See the description for wall.

other traffic barrier: This refers to any longitudinal barrier not constructed of concrete. This includes all permanent guardrails and median barriers not on a bridge.

tree: This refers to a tree large enough in diameter to cause significant damage to the vehicle or driver.

utility pole, light support: This is a permanently attached support used for retaining utility lines (phone, power, etc.) or lights. Privately and publicly owned highway devices are included in these attributes. They may be made of wood, metal, or concrete and may have various cross-sectional shapes and dimensions. The pole or post must be nontemporary (i.e., have a permanent base or be anchored in the ground).

fence: This includes both the fence material and the support posts.

wall: This refers to solid, vertical-faced, concrete, brick, stone, or other structurally sound roadside devices that may act as a traffic barrier in some locations. Do not confuse this attribute with a building.

building: This is when the vehicle impacts a roofed and walled structure built for permanent use. The type of construction material used is not of interest nor is the use of the building.

parked motor vehicle: Select when the inspected vehicle has been determined to be a motor vehicle that is not in-transport. This is determined by the investigator and may not necessarily agree with the police report. For example, the police crash report may list a parked vehicle as a "struck vehicle." Upon inspecting the scene, the investigator determines there is no legal parking at the scene, so in the police crash report, the reported parked vehicle becomes an in-transport vehicle. Only those motor vehicles that are struck by an in-transport vehicle are to be included. If an in-transport motor impacts a legally parked vehicle that then strikes another legally parked vehicle, these vehicles would be included.

40. If First Harmful Event is a Collision with a Fixed Object (Continued)

work-zone equipment: Select when there is equipment within a work zone. A work zone is defined as an area of a trafficway with highway construction, maintenance, or utility-work activities. A work zone is typically marked by signs, channeling devices, barriers, pavement markings, and/or work vehicles. It extends from the first warning sign or flashing lights on a vehicle to the end of road work sign or the last traffic control device. A work zone may be for short or long durations and may include stationary or moving activities. The following inclusions for stationary or moving activities should be considered:

- Long-term stationary highway construction such as building a new bridge, adding travel lanes to the roadway, and extending an existing trafficway.
- Mobile highway maintenance such as striping the roadway, median and roadside grass mowing/landscaping, and pothole repair.
- Short-term stationary utility work such as repairing electric, gas, or water lines within the trafficway.

other (specify): Select when any other object of sufficient mass or anchored such that it is not readily movable; compare with other nonfixed objects. Examples include large boulders and large logs (fallen trees).

unknown: Select when it is known that the vehicle struck a fixed object but the specific type of object is not known.

ENVIRONMENT FORM

41. Pedestrian Involvement

OECD Reference: A.3.1.28

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) none (skip to # 44)
- (01) yes, pedestrian involved in precipitating event
- (02) yes, pedestrian involved in collision with vehicle or motorcyclist
- (99) unknown

Range: 00–02, 99

Source: Primary—scene inspection and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Pedestrian is defined as any person who is on a trafficway, sidewalk, or path contiguous with a trafficway and who is not in or on a nonmotorist conveyance. This includes persons who are in contact with the ground, roadway, etc., but who are also holding onto a vehicle. A nonmotorist conveyance is defined as any human-powered device by which a nonmotorist may move or by which a pedestrian or nonmotorist may move another nonmotorist in a manner other than by pedaling. A nonmotorist conveyance includes the following: baby carriage, coaster wagon, ice skates, roller skates, push cart, scooter, skateboard, skis, sled, wheelchair, rickshaw, etc. This includes those persons in a nonmotorist conveyance who hold onto a motor vehicle in motion. Pedalcyclists are excluded.

ENVIRONMENT FORM

42. Location of Pedestrian at Precipitating Event

Pedestrian 1 _____
Pedestrian 2 _____
Pedestrian 3 _____

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no pedestrian involvement in precipitating event
- (01) in crosswalk
- (02) jaywalking
- (03) darting from roadside
- (04) passenger entering or leaving automobile
- (05) passenger entering or leaving public transportation
- (06) darting from roadside near school
- (07) entering or leaving transportation near school
- (97) not applicable, pedestrian not involved in crash
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source:

- Primary—police crash report
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

ENVIRONMENT FORM

43. Location of Pedestrian at Impact

Pedestrian 1 _____
Pedestrian 2 _____
Pedestrian 3 _____

OECD Reference: A.3.1.29.1, A.3.1.29.2, A.3.1.29.3

Convention/Coding Source: DSI

Element Attributes:

- (00) pedestrian not impacted
- (01) in crosswalk
- (02) jaywalking
- (03) darting from roadside
- (04) passenger entering or leaving automobile
- (05) passenger entering or leaving public transportation
- (06) darting from roadside near school
- (07) entering or leaving transportation near school
- (97) not applicable, no pedestrian involved
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source:

- Primary—police crash report
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

ENVIRONMENT FORM

44. Animal Involvement

OECD Reference: A.3.1.26

Convention/Coding Source: DSI

Element Attributes:

- (00) none (skip to # 46)
- (01) small dog, less than 20 pounds
- (02) big dog
- (03) cat
- (04) bird
- (05) cow
- (06) horse
- (07) deer
- (08) sheep
- (09) squirrel
- (10) elk
- (11) moose
- (98) other (specify)
- (99) unknown

Range: 00–11, 98, 99

Source:

- Primary—police crash report
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

Animal involvement may include the actual harmful event of the animal being impacted, or the animal may have created a situation (i.e., standing or crossing the roadway) that may have precipitated the impending harmful event or chain of harmful events.

ENVIRONMENT FORM

45. Was Animal Struck?

OECD Reference: A.3.1.27

Convention/Coding Source: DSI

Element Attributes:

- (00) no, animal not struck
- (01) yes, animal involved in precipitating event
- (02) yes, animal struck by vehicle, or involved with motorcyclist
- (97) not applicable, no animal involved
- (99) unknown

Range: 00–02, 97, 99

Source:

- Primary—police crash report
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

Note that if code 01, “yes, animal involved in precipitating event,” is selected, it is not imperative or necessary for the aforementioned animal to have been struck or impacted.

ENVIRONMENT FORM

46. Roadway-Design Factors

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no design issue
- (01) roadway-design issue present but not a contributing factor
- (02) roadway-design issue was the precipitating event
- (03) roadway-design issue was the primary contributing factor
- (04) roadway-design issue was a contributing factor
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—scene inspection
- Secondary—police crash report and interviews

Remarks: This variable is assigned by the investigator from the sources.

For example, a curve that is not superelevated or has a negative superelevation or banking grade would be considered a roadway design issue and may actually be the precipitating event (i.e., if a motorcyclist departs the roadway at a curve).

ENVIRONMENT FORM

47. Roadway-Maintenance Factors

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no maintenance issue
- (01) roadway-maintenance issue present, but not a contributing factor
- (02) roadway-maintenance issue was the precipitating event
- (03) roadway-maintenance issue was the primary contributing factor
- (04) roadway-maintenance issue was a contributing factor
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—scene inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

For example, a roadway maintenance issue may indicate the presence of numerous potholes, surface rutting or broken-pavement sections. The poorly maintained roadway surface may have contributed (i.e., steering around a pothole) or actually precipitated the harmful event (i.e., impacting a pothole or losing control).

ENVIRONMENT FORM

48. Traffic-Control Factor

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no traffic-control issue or malfunction
- (01) traffic-control issue or malfunction present, but not a contributing factor
- (02) traffic-control issue or malfunction was the precipitating event
- (03) traffic-control issue or malfunction was the primary contributing factor
- (04) traffic-control issue or malfunction was a contributing factor
- (97) not applicable, no traffic controls
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—police crash report, scene inspection
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

Examples of this include a traffic signal's light(s) is/are burned out, a STOP sign is on the ground and should be upright, and flowage is blocking the view of a STOP sign.

ENVIRONMENT FORM

49. Traffic Hazard, Including Construction and Maintenance Operations

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no temporary traffic hazard or obstruction
- (01) temporary traffic obstruction present but not a contributing factor
- (02) temporary traffic obstruction was the precipitating event
- (03) temporary traffic obstruction was the primary contributing factor
- (04) temporary traffic obstruction was a contributing factor
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—police crash report
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

Examples could include traffic cones, temporary warning signs, or barricades.

ENVIRONMENT FORM

50. Weather-Related Problems

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no weather-related problem
- (01) weather-related problem was the precipitating event
- (02) weather-related problem was the primary contributing factor
- (03) weather-related problem was a contributing factor
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–03, 97–99

Source:

- Primary—police crash report
- Secondary—interviews and weather information

Remarks: This variable is assigned by the investigator from the sources.

ENVIRONMENT FORM

51. Effect of the Visual Background of Other Vehicle Along the Operator's/Rider's Line of Sight at Time of Precipitating Event

OECD Reference: None

Convention/Coding Source: AASHTO

Element Attributes:

- (00) visual background of motor vehicle made no contribution to conspicuity of the vehicle
- (01) visual background had a positive effect on vehicle conspicuity, vehicle was more noticeable
- (02) visual background had a negative effect on vehicle conspicuity, vehicle was less noticeable
- (03) no other vehicle involved in crash
- (97) not applicable, view obstructed by foreground
- (98) other (specify)
- (99) unknown

Range: 00–03, 97–99

Source:

- Primary—police crash report
- Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

Some environmental backgrounds may actually mask the presence of the other vehicle or object within the operator's/rider's line of sight.

For example, a snow-covered landscape may mask the presence of a white car traversing an intersection, or a considerable sunshine glare might impede the operator's/rider's vision of an impending danger within his or her line of sight.

CONTRIBUTING FACTORS FORM

Case Number

OECD Reference: A6 variables

Convention/Coding Source: N/A

Element Attributes: Case number

Range: 0001–2000

Source: Primary—case assignment chart

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcycle-Passenger Number

OECD Reference: A.5.1.2.1

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(02–09)	passenger number
(99)	unknown

Range: 02–09, 99

Source:

Primary—interview
Secondary—rider and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The passenger numbers must be assigned sequentially beginning with the passenger behind the rider with the code 02. Numbers should be assigned front to back and left to right for passengers on the motorcycle.

CONTRIBUTING FACTORS FORM

Environmental Factors—Motorcycle

1. Roadway Design Issue

OECD Reference: A.6.1.1.1

Convention/Coding Source: OECD

Element Attributes:

- (00) roadway design issue present but not a contributing factor
- (01) roadway design issue was the primary pre-crash factor
- (02) roadway design issue was a contributing factor
- (97) not applicable, no roadway design issue
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

- Primary—scene inspection and police report
- Secondary—interview data

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Environmental Factors—Motorcycle

2. Roadway Maintenance Issue

OECD Reference: A.6.1.1.2

Convention/Coding Source: OECD

Element Attributes:

- (00) roadway maintenance issue present but not a contributing factor
- (01) roadway maintenance issue was the primary pre-crash factor
- (02) roadway maintenance issue was a contributing factor
- (97) not applicable, no roadway maintenance issue
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

- Primary—scene inspection and police report
- Secondary—interview data

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Environmental Factors—Motorcycle

3. Traffic Controls Issue or Malfunction

OECD Reference: A.6.1.1.3

Convention/Coding Source: OECD

Element Attributes:

- (00) traffic controls issue or malfunction present but not a contributing factor
- (01) traffic controls issue or malfunction was the primary pre-crash factor
- (02) traffic controls issue or malfunction was a contributing factor
- (97) not applicable, no traffic control issue or malfunction
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

- Primary—scene inspection and police report
- Secondary—interview data

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Environmental Factors—Motorcycle

4. Temporary Traffic Obstruction Including Construction

OECD Reference: A.6.1.1.4

Convention/Coding Source: OECD

Element Attributes:

- (00) temporary traffic obstruction present but not a contributing factor
- (01) temporary traffic obstruction was the primary pre-crash factor
- (02) temporary traffic obstruction was a contributing factor
- (97) not applicable, no temporary traffic obstruction
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

- Primary—scene inspection and police report
- Secondary—interview data

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Environmental Factors—Motorcycle

5. Weather-Related Problem

OECD Reference: A.6.1.1.5

Convention/Coding Source: OECD

Element Attributes:

- (00) weather-related problem made no contribution to crash causation
- (01) weather-related problem was the primary pre-crash factor
- (02) weather-related problem was a contributing factor
- (97) not applicable, no weather-related problem
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

- Primary—scene inspection and police report
- Secondary—interview data

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Environmental Factors—Motorcycle

6. Visual Background of OV Along MC Rider's Line of Sight Prior to Crash

OECD Reference: A.6.1.1.6

Convention/Coding Source: OECD

Element Attributes:

- (00) visual background of OV made no contribution to conspicuity of OV
- (01) visual background had a positive effect on vehicle conspicuity, OV was more noticeable
- (02) visual background had a negative effect on vehicle conspicuity, OV was less noticeable (masked)
- (97) not applicable, no other vehicle involved
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

- Primary—scene inspection and police report
- Secondary—interview data

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Environmental Factors—Motorcycle

7. Did Insect Presence Affect Rider?

OECD Reference: A.6.1.1.7

Convention/Coding Source: OECD

Element Attributes:

- (00) insects were present but had no effect on rider
- (01) small insects affected rider vision and attention, no eye protection
- (02) insect contamination of eye protection, face shield, or windscreen
- (03) rider or passenger sustained insect bite or sting
- (97) not applicable, no insects
- (98) other (specify)
- (99) unknown

Range: 00–03, 97–99

Source:

- Primary—scene inspection and police report
- Secondary—interview data

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

8. MC Tire Size (Code Front Tire(s) and Rear Tire(s))

OECD Reference: A.6.2.1.1.

Convention/Coding Source: OECD

Element Attributes:

- (01) original equipment rear
- (02) not original equipment but specified size
- (03) proper rim size, oversize section
- (04) proper rim size, undersize section
- (05) improper rim size, too large
- (06) improper rim size, too small
- (98) other (specify)
- (99) unknown

Range: 01–06, 98, 99

Source: Primary—motorcycle inspection

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

9. MC Tire-Inflation Pressure (Code Front Tire(s) and Rear Tire(s))

OECD Reference: A.6.2.1.2

Convention/Coding Source: OECD

Element Attributes:

- (01) tire apparently sustained complete deflation during crash events rear
- (02) tire inflation within 15 percent of recommended pressure post-crash
- (03) tire inflation between 16 and 39 percent of recommended pressure post-crash
- (04) tire grossly underinflated, greater than 40 percent below recommended pressure post-crash
- (05) tire grossly overinflated, greater than 40 percent above recommended pressure post-crash
- (98) other (specify)
- (99) unknown

Range: 01–05, 98, 99

Source: Primary—motorcycle inspection

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

10. Crash Causation Related to MC's Front Tire or Wheel Condition

OECD Reference: A.6.2.1.3

Convention/Coding Source: OECD

Element Attributes:

- (00) no wheel or tire condition related to crash causation
- (01) tire puncture flat caused loss of control
- (02) tire beads unseated and caused loss of control
- (03) gross underinflation contributed to loss of tire traction and caused loss of control
- (04) gross overinflation caused loss of traction and caused loss of control
- (05) gross error of inflation contributed to stability problem and caused loss of control
- (06) massive loss of inflation due to valve failure
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source: Primary—motorcycle inspection and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

11. Crash Causation Related to MC Suspension Condition

OECD Reference: A.6.2.1.4

Convention/Coding Source: OECD

Element Attributes:

- (00) suspension condition made no contribution to crash causation
- (01) deteriorated suspension caused control distress, limiting collision avoidance
- (02) deteriorated suspension caused unstable dynamics, resulting in a loss of control
- (97) not applicable, rigid suspension
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source: Primary—motorcycle inspection and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

12. Crash Causation Related to MC Frame Condition

OECD Reference: A.6.2.1.5

Convention/Coding Source: OECD

Element Attributes:

- (00) frame condition made no contribution to crash causation
- (01) cracked or broken frame caused loss of control
- (02) loose motor-transmission mounting bolts or screws caused loss of control
- (03) general frame deterioration caused uncontrolled dynamic response
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source: Primary—motorcycle inspection and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

13. Crash Causation Related to MC Cornering Clearance

OECD Reference: A.6.2.1.6

Convention/Coding Source: OECD

Element Attributes:

- (00) cornering clearance made no contribution to crash causation
- (01) exhaust system grounded out first
- (02) foot pegs/foot rests grounded out first
- (03) side stand not retracted, grounded out first
- (04) side stand retracted but grounded out first
- (05) center stand grounded out first
- (06) accessory or cargo grounded out first
- (07) saddle bag/luggage carrier grounded out first
- (08) accessory or cargo limited ground clearance
- (09) passenger weight or extremities limited ground clearance
- (98) other (specify)
- (99) unknown

Range: 00–09, 98, 99

Source: Primary—motorcycle inspection, scene inspection, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

14. Crash or Injury Causation Related to MC Seat

OECD Reference: A.6.2.1.7

Convention/Coding Source: OECD

Element Attributes:

- (00) seat made no contribution to crash causation
- (01) seat came loose, distracted rider, and contributed to crash causation
- (02) seat came loose, caused rider loss of control, and contributed to crash causation
- (03) seat-cover material slippery, caused rider displacement, and loss of control
- (04) seat cover treated with slippery preservative and contributed to crash causation
- (05) seat cover and cushion severely deteriorated and contributed to crash causation
- (98) other seat condition that contributed to crash causation (specify)
- (99) unknown

Range: 00–05, 98, 99

Source: Primary—motorcycle inspection, scene inspection, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

15. Crash/Injury Causation Related to MC Gas-Tank Design/Orientation

OECD Reference: N/A

Convention/Coding Source: Westat

Element Attributes:

- (00) gas tank made no contribution to crash or injury causation
- (01) gas tank came loose, distracted rider, and contributed to crash causation
- (02) gas-tank design affected the rider's post-crash trajectory
- (03) gas-tank design contributed to rider's pelvic injuries
- (98) other gas-tank condition that contributed to crash or injury causation (specify)
- (99) unknown

Range: 00–03, 98, 99

Source: Primary—motorcycle inspection, scene inspection, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

16. Crash Causation Related to MC Drive-Chain, Belt, or Shaft Condition

OECD Reference: A.6.2.1.8

Convention/Coding Source: OECD

Element Attributes:

- (00) drive chain, belt, or shaft condition made no contribution to crash causation
- (01) chain or belt broken or derailed, drive failure related to crash causation
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source: Primary—motorcycle inspection, scene inspection, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

17. Crash or Injury Causation Related to MC Exhaust-System Condition

OECD Reference: A.6.2.1.9

Convention/Coding Source: OECD

Element Attributes:

- (00) exhaust system made no contribution to crash or injury causation
- (01) hot exhaust system caused contact burns resulting in control loss
- (02) hot exhaust-system components were fire ignition source, resulting in control loss
- (03) exhaust-system noise prevented motorcyclist from hearing critical traffic sounds
- (04) exhaust-system noise caused motorcyclist fatigue and inattention (as claimed by rider)
- (97) not applicable, no exhaust system
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—motorcycle inspection, scene inspection, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

18. Motorcycle-Vehicle Failure, Crash Causation–Related Defect

OECD Reference: A.6.2.1.10

Convention/Coding Source: OECD

Element Attributes:

- (00) no motorcycle-vehicle failure
- (01) tire or wheel failure
- (02) brake failure
- (03) steering failure
- (04) power-transmission failure
- (05) electrical failure
- (06) suspension failure
- (07) vehicle structural failure other than suspension, tire, or wheel
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—motorcycle inspection, scene inspection, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

19. Was MC Pre-Crash Fire Cause of Crash?

OECD Reference: A.6.2.1.11

Convention/Coding Source: OECD

Element Attributes:

- (00) pre-crash fire was present and was not the cause of the crash
- (01) yes, pre-crash fire was present and was the cause of the crash
- (97) not applicable, no pre-crash fire
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—motorcycle inspection, scene inspection, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle-Vehicle Factors

20. Did MC Cargo/Luggage Contribute to Crash Causation?

OECD Reference: A.6.2.1.12

Convention/Coding Source: OECD

Element Attributes:

- (00) cargo/luggage was present but made no contribution to crash causation
- (01) cargo/luggage came loose, caused rider loss of control, and contributed to crash causation
- (02) cargo/luggage interfered with controls, caused loss of control, and contributed to crash causation
- (03) cargo/luggage interfered with controls and prevented successful collision-avoidance action
- (04) cargo/luggage entrapped in rear suspension or wheel and contributed to crash causation
- (05) cargo/luggage entrapped in front suspension or wheel and contributed to crash causation
- (06) cargo/luggage against motor and exhaust system, heat damage or fire caused rider distraction and contributed to crash causation
- (07) cargo/luggage container began to spill contents, distracted rider, and contributed to crash causation
- (97) not applicable, no cargo/luggage
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source: Primary—motorcycle inspection, scene inspection, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

MC Driver Human-Performance Contributing Factors

21. Rider Unsafe Acts in This Crash

OECD Reference: A.6.3.1.1

Convention/Coding Source: OECD

Element Attributes:

- (00) no unsafe acts
- (01) major unsafe act, likely to cause crash
- (02) moderate unsafe act, likely to cause traffic conflict
- (03) minor unsafe act, possible to cause traffic conflict, indicator of unsafe condition
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source: Primary—motorcycle inspection, scene inspection, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

MC Rider Human-Performance Contributing Factors

22. Did MC Rider's Attention Failure/Distraction or Stress Contribute to Crash Causation?

OECD Reference: A.6.3.1.3

Convention/Coding Source: OECD

Element Attributes:

- (00) attention failure/distraction/stress present but did not contribute to crash causation
- (01) attention failure/distraction/stress contributed to crash causation
- (97) not applicable, no attention failure/distraction/stress
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

MC Rider Human-Performance Contributing Factors

23. Did MC Rider's Lane Choice Contribute to Crash Causation?

OECD Reference: A.6.3.1.4

Convention/Coding Source: OECD

Element Attributes:

- (00) lane choice made no contribution to crash causation
- (01) lane choice contributed to crash causation
- (97) not applicable, no lane choice
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

MC Rider Human-Performance Contributing Factors

24. Did MC Rider's Traffic Scan Contribute to Crash Causation?

OECD Reference: A.6.3.1.5

Convention/Coding Source: OECD

Element Attributes:

- (00) traffic scan made no contribution to crash causation
- (01) traffic scanning error contributed to crash cause
- (97) not applicable, no traffic present to scan
- (99) unknown if traffic scan contributed to crash

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

MC Rider Human-Performance Contributing Factors

25. Did MC Rider's Visual Obstructions Contribute to Crash Causation?

OECD Reference: A.6.3.1.6

Convention/Coding Source: OECD

Element Attributes:

- (00) view obstructions were present but did not contribute to crash causation
- (01) view obstructions were present and contributed to crash causation
- (97) not applicable, no view obstructions
- (99) unknown if view obstructions were present or if view obstruction contributed to crash

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

MC Rider Human-Performance Contributing Factors

26. Did MC Rider's Hazard-Detection Failure Contribute to Crash Causation?

OECD Reference: A.6.3.1.7

Convention/Coding Source: OECD

Element Attributes:

- (00) temporary traffic obstruction present but did not contribute to crash causation
- (01) temporary traffic obstruction present and contributed to crash causation
- (97) not applicable, no temporary traffic obstruction
- (99) unknown if temporary traffic obstruction present or if obstruction contributed to crash causation

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

MC Rider Human-Performance Contributing Factors

27. Did MC Rider's Faulty Traffic Strategy Contribute to Crash Causation?

OECD Reference: A.6.3.1.8

Convention/Coding Source: OECD

Element Attributes:

- (00) traffic strategy made no contribution to crash causation
- (01) traffic strategy contributed to crash causation
- (99) unknown if strategy was faulty or if faulty strategy contributed to crash causation

Range: 00, 01, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Post-Crash

28. Did Motorcycle Speed as Compared to Surrounding Traffic Contribute to Crash Causation?

OECD Reference: A.6.3.1.9

Convention/Coding Source: OECD

Element Attributes:

- (00) speed was unusual or unexpected but made no contribution to crash causation
- (01) slow or exceedingly high speed difference caused or contributed to crash causation
- (97) no unusual speed or no surrounding traffic
- (99) unknown if speed was appropriate or if improper speed contributed to crash causation

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Post-Crash

29. Did Motorcycle's Position With Respect to Other Traffic Contribute to Crash Causation?

OECD Reference: A.6.3.1.10

Convention/Coding Source: OECD

Element Attributes:

- (00) no, position relative to other traffic made no contribution to crash causation
- (01) yes, position relative to other traffic contributed to crash causation
- (97) not applicable, no other traffic
- (99) position relative to other traffic not known or if relative position contributed to crash causation

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Post-Crash

30. Was There a Motorcyclist's Loss of Control That Contributed to Crash Causation?

OECD Reference: A.6.3.1.11

Convention/Coding Source: OECD

Element Attributes:

- (00) no loss of control
- (01) ran wide on turn, ran off road, under cornering
- (02) lost wheelie
- (03) low-speed wobble
- (04) high-speed wobble
- (05) weave, no pitch
- (06) pitch weave, low speed
- (07) pitch weave, high-speed cornering
- (08) end-over, endo, reverse wheelie
- (09) overbraking/slide out
- (98) other (specify)
- (99) unknown

Range: 00–09, 98, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Post-Crash

31. Did Motorcyclist's Control Unfamiliarity Contribute to Crash Causation?

OECD Reference: A.6.3.1.12

Convention/Coding Source: OECD

Element Attributes:

- (00) control unfamiliarity present but not a contributing factor
- (01) yes, evidence of control unfamiliarity as a contributing factor
- (97) not applicable, no evidence of control unfamiliarity
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Post-Crash

32. Did Motorcyclist's Skills Deficiency Contribute to Crash Causation?

OECD Reference: A.6.3.1.13

Convention/Coding Source: OECD

Element Attributes:

- (00) skills deficiency present but not a contributing factor
- (01) skills deficiency present as a contributing factor
- (97) not applicable, no evidence of skills deficiency
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Post-Crash

33. Did Motorcyclist's Vehicle-Handling Unfamiliarity Contribute to Crash Causation?

OECD Reference: A.6.3.1.14

Convention/Coding Source: OECD

Element Attributes:

- (00) no, vehicle handling unfamiliarity present but not a contributing factor
- (01) yes, vehicle handling unfamiliarity present as a contributing factor
- (97) not applicable, no evidence of vehicle unfamiliarity
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Post-Crash

34. Did Motorcyclist's Control Operations Interfere With Driving Tasks?

OECD Reference: A.6.3.1.15

Convention/Coding Source: OECD

Element Attributes:

- (00) no interference
- (01) yes, directed attention away from traffic conflict
- (02) yes, directed attention away from temporary traffic obstruction
- (03) yes, directed attention away from traffic controls
- (97) not applicable, no control operation immediately prior to the crash
- (98) other (specify)
- (99) unknown

Range: 00–03, 97–99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Post-Crash

35. Did Motorcyclist Fail to Avoid Crash Due to:

OECD Reference: A.6.3.1.16

Convention/Coding Source: OECD

Element Attributes:

- (00) no failure by the motorcyclist
- (01) potential hazard-detection failure
- (02) impairment resulted in potential hazard-detection failure
- (03) incorrect reaction to potential hazard
- (04) incorrect action due to impairment
- (05) potential hazard detected, reaction-time failure
- (06) potential hazard detected, reaction-time failure due to impairment
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Post-Crash

36. Was Evasive Action the Proper Choice for the Situation?

OECD Reference: A.6.3.1.20

Convention/Coding Source: OECD

Element Attributes:

- (00) no, evasive action was not the proper choice for the situation
- (01) yes, evasive action was the proper choice for the situation
- (97) not applicable, no evasive action
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Post-Crash

37. Was the Action Properly Executed?

OECD Reference: A.6.3.1.21

Convention/Coding Source: OECD

Element Attributes:

- (00) no, evasive action was not properly executed
- (01) yes, evasive action was properly executed
- (97) not applicable, no evasive action
- (98) other (specify)
- (99) unknown if evasive action was taken or if evasive action was properly executed

Range: 00, 01, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Post-Crash

38. Motorcyclist Failed Collision Avoidance Due to:

OECD Reference: A.6.3.1.22

Convention/Coding Source: OECD

Element Attributes:

- (00) no avoidance or evasive action failure
- (01) decision failure, wrong choice of evasive action
- (02) reaction failure, poor execution of evasive action
- (03) inadequate time available to complete avoidance action
- (04) loss of control in attempting collision avoidance
- (98) other (specify)
- (99) unknown if there was a collision avoidance or cause for failed collision avoidance

Range: 00–04, 98, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcyclist Experience Deficiency

39. Did Motorcyclist Experience Language Barriers or Difficulty With Sign Comprehension?

OECD Reference: A.6.3.1.23

Convention/Coding Source: OECD

Element Attributes:

- (00) language problems, sign-comprehension problems present but did not contribute to crash causation
- (01) language problems or sign comprehension was contributing cause factor
- (97) not applicable, no language-distress or sign-comprehension problem present
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcyclist Experience Deficiency

40. Did Motorcyclist's Traffic-Knowledge Deficiency Contribute to Crash Causation?

OECD Reference: A.6.3.1.24

Convention/Coding Source: OECD

Element Attributes:

- (00) traffic-knowledge deficiency present but did not contribute to crash causation
- (01) traffic-knowledge deficiency contributed to crash causation
- (97) not applicable, no evidence of deficiency in traffic knowledge or strategy
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcyclist Experience Deficiency

41. Did Motorcyclist's Vehicle Control–Skill Deficiency Contribute to Crash Causation?

OECD Reference: A.6.3.1.25

Convention/Coding Source: OECD

Element Attributes:

- (00) vehicle control–skill deficiency present but did not contribute to crash causation
- (01) inadequate vehicle control–skills contributed to crash causation
- (97) not applicable, no evidence of vehicle control–skill deficiency
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcyclist Personality Evaluation

42. Did Motorcyclist's Aggressive Attitude Contribute to Crash Causation?

OECD Reference: A.6.3.1.26

Convention/Coding Source: OECD

Element Attributes:

- (00) aggressive attitude present but not a cause or contributing factor
- (01) yes, aggressive attitude contributed to crash causation
- (97) not applicable, no aggressive attitude observed
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcyclist Personality Evaluation

43. Did a Situation Incompatibility Contribute to Crash Causation?

OECD Reference: A.6.3.1.27

Convention/Coding Source: OECD

Element Attributes:

- (00) situation incompatibility present but did not contribute to crash causation
- (01) situation incompatibility contributed to crash causation
- (97) not applicable, no situation incompatibility present
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcyclist Personality Evaluation

44. Did Motorcyclist's Compensation Failure Contribute to Crash Causation?

OECD Reference: A.6.3.1.28

Convention/Coding Source: OECD

Element Attributes:

- (00) compensation failure present but not a contributing factor in crash causation
- (01) compensation failure did contribute to crash causation
- (97) not applicable, no compensation failure
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcyclist Risk-Taking Tendency

45. Did Motorcyclist's Unsafe Act Contribute to Crash Causation?

OECD Reference: A.6.3.1.29

Convention/Coding Source: OECD

Element Attributes:

- (00) unsafe act occurred but did not contribute to crash causation
- (01) yes, unsafe act contributed to crash causation
- (97) not applicable, no unsafe act
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcyclist Risk-Taking Tendency

46. Did Motorcyclist's Alcohol/Drug Involvement Contribute to Crash Causation?

OECD Reference: A.6.3.1.30

Convention/Coding Source: OECD

Element Attributes:

- (00) alcohol/drug involvement present but did not contribute to crash causation
- (01) yes, alcohol/drug involvement contributed to crash causation
- (97) not applicable, no alcohol/drug involvement
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcyclist Risk-Taking Tendency

47. Were Motorcyclist's Previously Recorded Violations Related to Current-Crash Contributions?

OECD Reference: A.6.3.1.31

Convention/Coding Source: OECD

Element Attributes:

- (00) unrelated violations on record
- (01) record of violations for actions similar to those in crash
- (97) not applicable, no violations on record
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcyclist Risk-Taking Tendency

48. Were Motorcyclist's Previous Crashes Related to Current-Crash Contributions?

OECD Reference: A.6.3.1.32

Convention/Coding Source: OECD

Element Attributes:

- (00) previous crashes present but are unrelated to this crash
- (01) record of previous crashes similar to this crash
- (97) not applicable, no previous crashes
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcyclist Personal Protective Equipment

49. Did Upper-Extremities and Upper-Torso Coverage Reduce or Prevent Injury?

OECD Reference: A.6.3.1.33

Convention/Coding Source: OECD

Element Attributes:

- (00) equipment present but had no effect on injury prevention
- (01) yes, equipment present and reduced injury
- (02) yes, equipment present and prevented injury
- (03) no injury-producing contact in region of equipment
- (04) equipment not present and injury occurred
- (97) not applicable, no upper-torso/extremity coverage
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—interviews and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcyclist Personal Protective Equipment

50. Did Lower-Extremities and Lower-Torso Coverage Reduce or Prevent Injury?

OECD Reference: A.6.3.1.34

Convention/Coding Source: OECD

Element Attributes:

- (00) equipment present but had no effect on injury prevention
- (01) yes, equipment present and reduced injury
- (02) yes, equipment present and prevented injury
- (03) no injury-producing contact in region of equipment
- (04) equipment not present and injury occurred
- (97) not applicable, no lower-torso/extremity coverage
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—interviews and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcyclist Personal Protective Equipment

51. Did Footwear Reduce or Prevent Injury?

OECD Reference: A.6.3.1.35

Convention/Coding Source: OECD

Element Attributes:

- (00) footwear present but had no effect on injury prevention
- (01) yes, footwear present and reduced injury
- (02) yes, footwear present and prevented injury
- (03) no injury-producing contact in region of footwear
- (04) footwear not present and injury occurred
- (97) not applicable, no footwear coverage
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—interviews and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcyclist Personal Protective Equipment

52. Did Gloves Reduce or Prevent Injury?

OECD Reference: A.6.3.1.36

Convention/Coding Source: OECD

Element Attributes:

- (00) gloves present but had no effect on injury prevention
- (01) yes, gloves present and reduced injury
- (02) yes, gloves present and prevented injury
- (03) no injury-producing contact in region of gloves
- (04) gloves not present and injury occurred
- (97) not applicable, no gloves
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—interviews and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcyclist Personal Protective Equipment

53. Did Eye Coverage Reduce or Prevent Injury?

OECD Reference: A.6.3.1.37

Convention/Coding Source: OECD

Element Attributes:

- (00) eyewear present but had no effect on injury prevention
- (01) yes, eyewear present and reduced injury
- (02) yes, eyewear present and prevented injury
- (03) no injury-producing contact in region of eyewear
- (04) eyewear not present and injury occurred
- (97) not applicable, no eyewear coverage
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—interviews and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcyclist Personal Protective Equipment

54. Did Eye or Face Protection Contribute to Crash Causation?

OECD Reference: A.6.3.1.38

Convention/Coding Source: OECD

Element Attributes:

- (00) protection worn but had no effect on pre-crash events
- (01) no detrimental effect on vision or attention, no failures to detect temporary traffic obstruction or traffic challenge
- (02) eye and face protection was deteriorated, reduced critical vision of temporary traffic obstruction or traffic challenge
- (03) absence of proper eye and face protection caused detection failure of temporary traffic obstruction or traffic challenge
- (04) no injury-producing contact in region, equipment may or may not have been present
- (97) not applicable, none worn
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcyclist Personal Protective Equipment

55. Did Helmet Reduce or Prevent Injury?

OECD Reference: A.6.3.1.39

Convention/Coding Source: OECD

Element Attributes:

- (00) helmet worn but injury occurred to head
- (01) helmet worn but no effect on head injury
- (02) yes, equipment present and reduced injury
- (03) yes, equipment present and prevented injury
- (04) no injury-producing contact in region
- (97) not applicable, no helmet present (skip to # 59)
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—helmet inspection and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcyclist Personal Protective Equipment

56. Did Helmet Contribute to Crash Causation?

OECD Reference: A.6.3.1.40

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—interviews and helmet inspection

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcyclist Personal Protective Equipment

57. What Was the Effect of the Helmet? (Code up to Two; Input 00 for Remaining Responses)

OECD Reference: A.6.3.1.41.1, A.6.3.1.41.2

Convention/Coding Source: OECD

Element Attributes:

- (00) no effect
- (01) helmet reduced attention to traffic and driving tasks
- (02) discomfort from helmet use interfered with driving tasks
- (03) fatigue from helmet use interfered with driving tasks
- (04) helmet prevented hearing critical traffic sounds
- (05) helmet limited peripheral vision
- (06) interfered with detection of traffic hazard
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–06, 97–99

Source: Primary—interviews and helmet inspection

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcyclist Personal Protective Equipment

58. If Helmet Was Ejected During Crash, What Was the Cause?

OECD Reference: A.6.3.1.42

Convention/Coding Source: OECD

Element Attributes:

- (00) helmet not ejected
- (01) ejected due to loose fastening
- (02) ejected due to helmet being too large, poor fit
- (03) ejected due to retention-system failure
- (04) ejection due to helmet-shell failure
- (05) ejection due to helmet-impact damage
- (06) ejection due to facial injury (i.e., jaw bone)
- (07) ejection due to roll-off, defective helmet design
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source: Primary—interviews and helmet inspection

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Effect of Apparel on Crash Causation

59. Conspicuity Contribution?

OECD Reference: A.6.3.1.43

Convention/Coding Source: OECD

Element Attributes:

- (00) no apparent contribution of upper- or lower-torso garment
- (01) bright color upper- and lower-torso garment enhanced conspicuity
- (02) bright upper-torso garment enhanced conspicuity
- (03) dull or dark upper- and lower-torso garment decreased conspicuity
- (04) dull or dark upper-torso garment decreased conspicuity
- (97) not applicable, no apparel worn or no OV involvement
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Effect of Apparel on Crash Causation

60. Did Apparel Contribute to Comfort, Fatigue, or Attention?

OECD Reference: A.6.3.1.44

Convention/Coding Source: OECD

Element Attributes:

- (00) apparel made no apparent contribution to comfort, fatigue, or attention
- (01) apparel protected rider from adverse weather, reduced fatigue, and preserved attention
- (02) apparel uncomfortable, contributed to fatigue and inattention
- (03) apparel very uncomfortable, distracted rider from driving tasks
- (97) no apparel worn
- (98) other (specify)
- (99) unknown

Range: 00–03, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Effect of Apparel on Crash Causation

61. Did Apparel Contribute to Control Interference?

OECD Reference: A.6.3.1.45

Convention/Coding Source: OECD

Element Attributes:

- (00) apparel did not interfere with motorcycle controls
- (01) apparel interfered with motorcycle control, caused distraction from traffic
- (02) apparel interfered with control, caused loss of control and crash
- (97) no apparel worn
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcycle Passengers (If No MC Passenger, Skip to # 70)

62. Did MC Passenger Contribute to Crash Causation?

OECD Reference: A.6.3.2.1

Convention/Coding Source: OECD

Element Attributes:

- (00) passenger present but did not contribute to crash causation
- (01) yes, passenger lost hold and caused rider loss of control
- (02) passenger fell from motorcycle and contributed to crash causation
- (03) passenger interfered with motorcycle balance, caused rider loss of control
- (04) passenger interfered with motorcycle controls and contributed to crash causation
- (05) passenger's lower extremities entrapped in rear suspension or wheel and contributed to crash causation
- (06) passenger action distracted MC rider and contributed to crash causation
- (97) not applicable, no passenger
- (98) other passenger action that contributed to crash causation (specify)
- (99) unknown

Range: 00–06, 97–99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Motorcycle Passengers

63. Effect of Rider/Passenger Interaction on Injury Causation (Code up to Two)

OECD Reference: A.6.3.1.2, A.6.3.2.2

Convention/Coding Source: OECD

Element Attributes:

- (00) passenger present but no interaction between rider and passenger
- (01) rider/passenger interaction increased rider injuries
- (02) rider/passenger interaction decreased rider injuries
- (03) rider/passenger interaction increased passenger injuries
- (04) rider/passenger interaction decreased passenger injuries
- (05) rider/passenger interaction had no effect on either rider or passenger injuries
- (97) not applicable, no passenger
- (99) unknown

Range: 00–05, 97, 99

Source: Primary—interviews and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle Passengers

64. Did MC Passenger's Upper-Extremities and Upper-Torso Coverage Reduce or Prevent Injury?

OECD Reference: A.6.3.2.33

Convention/Coding Source: OECD

Element Attributes:

- (00) equipment present but had no effect on injury prevention
- (01) yes, equipment present and reduced injury
- (02) yes, equipment present and prevented injury
- (03) no injury-producing contact in region of equipment
- (04) equipment not present and injury occurred
- (97) not applicable, no upper-torso/extremity coverage
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—interviews and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle Passengers

65. Did MC Passenger's Lower-Extremities and Lower-Torso Coverage Reduce or Prevent Injury?

OECD Reference: A.6.3.2.34

Convention/Coding Source: OECD

Element Attributes:

- (00) equipment present but had no effect on injury prevention
- (01) yes, equipment present and reduced injury
- (02) yes, equipment present and prevented injury
- (03) no injury-producing contact in region of equipment
- (04) equipment not present and injury occurred
- (97) not applicable, no lower-torso/extremity coverage
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—interviews and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle Passengers

66. Did MC Passenger's Footwear Reduce or Prevent Injury?

OECD Reference: A.6.3.2.35

Convention/Coding Source: OECD

Element Attributes:

- (00) footwear present but had no effect on injury prevention
- (01) yes, footwear present and reduced injury
- (02) yes, footwear present and prevented injury
- (03) no injury-producing contact in region of footwear
- (04) footwear not present and injury occurred
- (97) not applicable, no footwear coverage
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—interviews and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle Passengers

67. Did MC Passenger's Gloves Reduce or Prevent Injury?

OECD Reference: A.6.3.2.36

Convention/Coding Source: OECD

Element Attributes:

- (00) gloves present but had no effect on injury prevention
- (01) yes, gloves present and reduced injury
- (02) yes, gloves present and prevented injury
- (03) no injury-producing contact in region of gloves
- (04) gloves not present and injury occurred
- (97) not applicable, no gloves
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—interviews and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle Passengers

68. Did MC Passenger's Eye Coverage Reduce or Prevent Injury?

OECD Reference: A.6.3.2.37

Convention/Coding Source: OECD

Element Attributes:

- (00) eyewear present but had no effect on injury prevention
- (01) yes, eyewear present and reduced injury
- (02) yes, eyewear present and prevented injury
- (03) no injury-producing contact in region of eyewear
- (04) eyewear not present and injury occurred
- (97) not applicable, no eyewear coverage
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—interviews and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Motorcycle Passengers

69. Did MC Passenger's Helmet Reduce or Prevent Injury?

OECD Reference: A.6.3.2.39

Convention/Coding Source: OECD

Element Attributes:

- (00) helmet worn but injury occurred to head
- (01) helmet worn but had no effect on head injury
- (02) yes, equipment present and reduced injury
- (03) yes, equipment present and prevented injury
- (04) no injury-producing contact in region
- (97) not applicable, no helmet present
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—interviews, helmet inspection, and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

70. Other-Vehicle Number

OECD Reference: None

Convention/Coding Source: OECD

Element Attributes:

- | | |
|---------|---|
| (00) | no OV involved in crash (skip to # 105) |
| (01–09) | OV number |
| (96) | non-contact vehicle |

Range: 00–09, 96

Source: Primary—investigator

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

71. Other-Vehicle Roadway Design Issue

OECD Reference: A.6.1.2.1

Convention/Coding Source: OECD

Element Attributes:

- (00) roadway design issue present but not a contributing factor
- (01) roadway design issue was the primary pre-crash factor
- (02) roadway design issue was a contributing factor
- (97) not applicable, no roadway design issue
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

72. Other-Vehicle Roadway Maintenance Issue

OECD Reference: A.6.1.2.2

Convention/Coding Source: OECD

Element Attributes:

- (00) roadway maintenance issue present but not a contributing factor
- (01) roadway maintenance issue was the primary pre-crash factor
- (02) roadway maintenance issue was a contributing factor
- (97) not applicable, no roadway maintenance issue
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

73. Other-Vehicle Traffic Controls Issue or Malfunction

OECD Reference: A.6.1.2.3

Convention/Coding Source: OECD

Element Attributes:

- (00) traffic controls issue or malfunction present but not a contributing factor
- (01) traffic controls issue or malfunction was the primary pre-crash factor
- (02) traffic controls issue or malfunction was a contributing factor
- (97) not applicable, no traffic control issue or malfunction
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

74. Other-Vehicle Temporary Traffic Obstruction Including Construction?

OECD Reference: A.6.1.2.4

Convention/Coding Source: OECD

Element Attributes:

- (00) temporary traffic obstruction present but not a contributing factor
- (01) temporary traffic obstruction was the primary pre-crash factor
- (02) temporary traffic obstruction was a contributing factor
- (97) not applicable, no temporary traffic obstruction
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

75. Other-Vehicle Weather-Related Problem

OECD Reference: A.6.1.2.5

Convention/Coding Source: OECD

Element Attributes:

- (00) weather-related problem present but made no contribution to crash causation
- (01) weather-related problem was the primary pre-crash factor
- (02) weather-related problem was a contributing factor
- (97) not applicable, no weather-related problem
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

76. Visual Background of Motorcycle Along OV Driver's Line of Sight Prior to Crash

OECD Reference: A.6.1.2.6

Convention/Coding Source: OECD

Element Attributes:

- (00) visual background of motorcycle made no contribution to conspicuity of motorcycle
- (01) visual background of motorcycle made motorcycle more noticeable
- (02) visual background of motorcycle had negative effect on vehicle conspicuity, motorcycle was less noticeable
- (97) not applicable, no OV involved
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

77. Other-Vehicle Failure, Crash Cause–Related Defect

OECD Reference: A.6.2.1.13

Convention/Coding Source: OECD

Element Attributes:

- (00) OV present but had no apparent defects or failure
- (01) OV failure present but made no contribution to crash causation
- (02) OV tire or wheel failure contributed to crash causation
- (03) OV brake failure contributed to crash causation
- (04) OV steering failure contributed to crash causation
- (05) OV power transmission failure contributed to crash causation
- (06) OV electrical failure contributed to crash causation
- (07) OV suspension failure contributed to crash causation
- (08) OV structural failure other than suspension, tire, or wheel contributed to crash causation
- (97) not applicable, no OV involved
- (98) other (specify)
- (99) unknown

Range: 00–08, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

78. Did Other-Vehicle Passengers Contribute to Crash Causation?

OECD Reference: A.6.3.3.1

Convention/Coding Source: OECD

Element Attributes:

- (00) passenger(s) present but made no contribution to crash causation
- (01) passenger activities distracted driver and contributed to crash causation
- (02) passenger interfered with vehicle control and contributed to crash causation
- (03) no passengers
- (97) not applicable, no OV involved
- (98) OV passenger action that contributed to crash causation (specify)
- (99) unknown

Range: 00–03, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

79. Did OV Driver's Attention Failure/Distracted or Stress Contribute to Crash Causation?

OECD Reference: A.6.3.3.3

Convention/Coding Source: OECD

Element Attributes:

- (00) attention failure/distracted/stress present but did not contribute to crash causation
- (01) attention failure/distracted/stress contributed to crash causation
- (97) not applicable, no attention failure/distracted/stress
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

80. Did OV Driver's Lane Choice Contribute to Crash Causation?

OECD Reference: A.6.3.3.4

Convention/Coding Source: OECD

Element Attributes:

- (00) no, lane choice made no contribution to crash causation
- (01) yes, lane choice contributed to crash causation
- (97) not applicable, no lane choice
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

81. Did OV Driver's Traffic Scan Contribute to Crash Causation?

OECD Reference: A.6.3.3.5

Convention/Coding Source: OECD

Element Attributes:

- (00) traffic scan made no contribution to crash causation
- (01) traffic scanning error contributed to crash cause
- (97) not applicable, no traffic present to scan
- (99) unknown if traffic scan was proper

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

82. Did OV Driver's Visual Obstructions Contribute to Crash Causation?

OECD Reference: A.6.3.3.6

Convention/Coding Source: OECD

Element Attributes:

- (00) view obstructions were present but did not contribute to crash causation
- (01) view obstructions were present and contributed to crash causation
- (97) not applicable, no view obstructions
- (99) unknown if view obstructions were present or if view obstruction contributed to crash

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

83. Did OV Driver's Hazard-Detection Failure Contribute to Crash Causation?

OECD Reference: A.6.3.3.7

Convention/Coding Source: OECD

Element Attributes:

- (00) no, temporary traffic obstruction present but did not contribute to crash causation
- (01) yes, temporary traffic obstruction present and contributed to crash causation
- (97) not applicable, no temporary traffic obstruction
- (99) unknown if temporary traffic obstruction present or if obstruction contributed to crash causation

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

84. Did OV Driver's Faulty Traffic Strategy Contribute to Crash Causation?

OECD Reference: A.6.3.3.8

Convention/Coding Source: OECD

Element Attributes:

- (00) traffic strategy made no contribution to crash causation
- (01) traffic strategy contributed to crash causation
- (97) not applicable, no other traffic present
- (99) unknown if strategy was faulty or if faulty strategy contributed to crash causation

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

85. Did OV's Speed as Compared to Surrounding Traffic Contribute to Crash Causation?

OECD Reference: A.6.3.3.9

Convention/Coding Source: OECD

Element Attributes:

- (00) no, speed was slow or exceedingly high but made no contribution to crash causation
- (01) yes, slow- or exceedingly high-speed difference caused or contributed to crash causation
- (97) no unusual speed or no surrounding traffic
- (99) unknown if speed was appropriate or if improper speed contributed to crash causation

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

86. Did OV's Position With Respect to Other Traffic Contribute to Crash Causation?

OECD Reference: A.6.3.3.10

Convention/Coding Source: OECD

Element Attributes:

- (00) no, position relative to other traffic made no contribution to crash causation
- (01) yes, position relative to other traffic contributed to crash causation
- (97) not applicable, no other traffic
- (99) position relative to other traffic not known or if relative position contributed to crash causation

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

87. Did OV Driver's Control Unfamiliarity Contribute to Crash Causation?

OECD Reference: A.6.3.3.12

Convention/Coding Source: OECD

Element Attributes:

- (00) control unfamiliarity present but not a contributing factor
- (01) yes, evidence of control unfamiliarity as a contributing factor
- (97) not applicable, no evidence of control unfamiliarity
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

88. Did OV Driver's Skills Deficiency Contribute to Crash Causation?

OECD Reference: A.6.3.3.13

Convention/Coding Source: OECD

Element Attributes:

- (00) skills deficiency present but not a contributing factor
- (01) skills deficiency present as a contributing factor
- (97) not applicable, no evidence of skills deficiency
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

89. Did OV Driver's Vehicle-Handling Unfamiliarity Contribute to Crash Causation?

OECD Reference: A.6.3.3.14

Convention/Coding Source: OECD

Element Attributes:

- (00) vehicle-handling unfamiliarity present but not a contributing factor
- (01) vehicle-handling unfamiliarity present as a contributing factor
- (97) not applicable, no evidence of vehicle unfamiliarity
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

90. Did OV Driver's Control Operations Interfere With Driving Tasks?

OECD Reference: None

Convention/Coding Source: DSI/OECD

Element Attributes:

- (00) no interference
- (01) yes, directed attention away from traffic conflict
- (02) yes, directed attention away from temporary traffic obstruction
- (03) yes, directed attention away from traffic controls
- (97) not applicable, no control operation immediately prior to the crash
- (98) other (specify)
- (99) unknown

Range: 00–03, 97–99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

91. Did OV Driver Fail to Avoid Crash Due to:

OECD Reference: A.6.3.3.19

Convention/Coding Source: OECD

Element Attributes:

- (00) no failure by the OV driver
- (01) potential hazard-detection failure
- (02) impairment resulted in potential hazard-detection failure
- (03) incorrect reaction to potential hazard
- (04) incorrect action due to impairment
- (05) potential hazard detected, reaction time failure
- (06) potential hazard detected, reaction time failure due to impairment
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–06, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

92. Was Evasive Action the Proper Choice for the Situation?

OECD Reference: A.6.3.3.21

Convention/Coding Source: OECD

Element Attributes:

- (00) no, evasive action was not the proper choice for the situation
- (01) yes, evasive action was the proper choice for the situation
- (97) not applicable, no evasive action
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

93. Was the Action Properly Executed?

OECD Reference: A.6.3.3.22

Convention/Coding Source: OECD

Element Attributes:

- (00) no, evasive action was not properly executed
- (01) yes, evasive action was properly executed
- (97) not applicable, no evasive action
- (98) other (specify)
- (99) unknown if evasive action was taken or if evasive action was properly executed

Range: 00, 01, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

94. OV Driver Failed Collision Avoidance Due to:

OECD Reference: A.6.3.3.22

Convention/Coding Source: OECD

Element Attributes:

- (00) no avoidance or evasive action failure
- (01) decision failure, wrong choice of evasive action
- (02) reaction failure, poor execution of evasive action
- (03) inadequate time available to complete avoidance action
- (04) loss of control in attempting collision avoidance
- (97) not applicable
- (98) other (specify)
- (99) unknown if there was a collision avoidance or unknown cause for failed collision avoidance

Range: 00–04, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

95. Did OV Driver Experience Language Barriers or Difficulty With Sign Comprehension?

OECD Reference: A.6.3.3.23

Convention/Coding Source: OECD

Element Attributes:

- (00) language problems, sign-comprehension problems present but did not contribute to crash causation
- (01) language problems or sign comprehension was a contributing cause factor
- (97) not applicable, no language barrier or sign-comprehension problem present
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

96. Did OV Driver's Traffic-Knowledge Deficiency Contribute to Crash Causation?

OECD Reference: A.6.3.3.24

Convention/Coding Source: OECD

Element Attributes:

- (00) traffic-knowledge deficiency present but did not contribute to crash causation
- (01) traffic-knowledge deficiency contributed to crash causation
- (97) not applicable, no evidence of deficiency in traffic knowledge
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

97. Did OV Driver's Vehicle Control–Skill Deficiency Contribute to Crash Causation?

OECD Reference: A.6.3.3.25

Convention/Coding Source: OECD

Element Attributes:

- (00) vehicle control–skill deficiency present but did not contribute to crash causation
- (01) inadequate vehicle-control skills contributed to crash causation
- (97) not applicable, no evidence of vehicle control–skill deficiency
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

98. Did OV Driver's Aggressive Attitude Contribute to Crash Causation?

OECD Reference: A.6.3.3.26

Convention/Coding Source: OECD

Element Attributes:

- (00) aggressive attitude present but not a cause or contributing factor
- (01) yes, aggressive attitude contributed to crash causation
- (97) not applicable, no aggressive attitude observed
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

99. Did Situation Incompatibility Contribute to Crash Causation?

OECD Reference: A.6.3.3.27

Convention/Coding Source: OECD

Element Attributes:

- (00) situation incompatibility present but did not contribute to crash causation
- (01) situation incompatibility contributed to crash causation
- (97) not applicable, no situation incompatibility present
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Other-Vehicle Factors

100. Did OV Driver's Compensation Failure Contribute to Crash Causation?

OECD Reference: A.6.3.3.28

Convention/Coding Source: OECD

Element Attributes:

- (00) compensation failure present but not a contributing factor in crash causation
- (01) compensation failure did contribute to crash causation
- (97) not applicable, no compensation failure
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Risk Taking–Tendency Evaluation

101. Did OV Driver's Unsafe Act Contribute to Crash Causation?

OECD Reference: A.6.3.3.29

Convention/Coding Source: OECD

Element Attributes:

- (00) unsafe act occurred but did not contribute to crash causation
- (01) yes, unsafe act contributed to crash causation
- (97) not applicable, no unsafe act
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Risk Taking–Tendency Evaluation

102. Did OV Driver’s Alcohol/Drug Involvement Contribute to Crash Causation?

OECD Reference: A.6.3.3.30

Convention/Coding Source: OECD

Element Attributes:

- (00) alcohol/drug involvement present but did not contribute to crash causation
- (01) yes, alcohol/drug involvement contributed to crash causation
- (97) not applicable, no alcohol/drug involvement
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Risk Taking–Tendency Evaluation

103. Were OV Driver's Previously Recorded Violations Related to Current-Crash Contributions?

OECD Reference: A.6.3.3.31

Convention/Coding Source: OECD

Element Attributes:

- (00) unrelated violations on record
- (01) record of violations for actions similar to those in crash
- (97) not applicable, no violations on record
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Risk Taking–Tendency Evaluation

104. Were OV Driver's Previous Crashes Related to Current-Crash Contributions?

OECD Reference: A.6.3.3.32

Convention/Coding Source: OECD

Element Attributes:

- (00) previous crashes present but are unrelated to this crash
- (01) record of previous crashes similar to this crash
- (97) not applicable, no previous crashes
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

Summary

105. Primary Crash–Contributing Factor

OECD Reference: A.6.4.1.1

Convention/Coding Source: OECD

Element Attributes:

- (01) MC rider perception failure
- (02) MC rider comprehension failure
- (03) MC rider decision failure
- (04) MC rider reaction failure
- (05) OV driver perception failure
- (06) OV driver comprehension failure
- (07) OV driver decision failure
- (08) OV driver reaction failure
- (09) motorcycle failure including mechanical failure and defect
- (10) pre-existing motorcycle maintenance-related problem
- (11) OV failure including mechanical failure and defect
- (12) pre-existing OV maintenance-related problem
- (13) roadway design defect
- (14) roadway maintenance defect
- (15) traffic control problem, temporary traffic obstruction
- (16) view obstruction, mobile or stationary
- (17) roadside environment factor including animal and pedestrian involvement
- (18) adverse weather
- (19) OV vehicle not involved in the collision made some maneuver that might have been a primary contributing factor or contributing factor
- (20) OV post-crash motions from immediate prior collision
- (21) OV avoiding a different collision
- (22) motorcycle avoiding a different collision
- (23) MC rider failure, unknown type
- (24) OV driver failure, unknown type
- (98) other (specify)
- (99) unknown

Range: 01–24, 98, 99

Source: Primary—investigator’s judgment

Remarks: This variable is assigned by the investigator from the source.

CONTRIBUTING FACTORS FORM

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Summary

106. Crash-Contributing Factors (Code up to Three; Put Contributing-Factor Code in First Two Spaces and the Confidence Level in the Third Space)

OECD Reference: A.6.4.2

Convention/Coding Source: OECD

Element Attributes:

Confidence Level

- (A) definite contributing factor (95-percent confidence level)
- (B) probable contributing factor (80-percent confidence level)
- (C) possible contributing factor (less than 80-percent confidence level)

Contributing Factor

- (01) MC rider perception failure
- (02) MC rider comprehension failure
- (03) MC rider decision failure
- (04) MC rider reaction failure
- (05) OV driver perception failure
- (06) OV driver comprehension failure
- (07) OV driver decision failure
- (08) OV driver reaction failure
- (09) motorcycle failure including mechanical failure and defect
- (10) pre-existing motorcycle maintenance-related problem
- (11) OV failure including mechanical failure and defect
- (12) pre-existing OV maintenance-related problem
- (13) roadway design defect
- (14) roadway maintenance defect
- (15) traffic control problem, temporary traffic obstruction
- (16) view obstruction, mobile or stationary
- (17) roadside-environment factor including animal and pedestrian involvement
- (18) adverse weather
- (19) OV vehicle not involved in the collision made some maneuver that might have been a primary contributing factor or contributing factor
- (20) OV post-crash motions from immediate prior collision

CONTRIBUTING FACTORS FORM

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Summary

106. Crash-Contributing Factors (Continued)

Element Attributes (Continued):

- (21) OV avoiding a different collision
- (22) motorcycle avoiding a different collision
- (23) MC rider failure, unknown type
- (24) OV driver failure, unknown type
- (25) MC rider physical or physiological failure (heart attack, seizure, etc.)
- (26) MC rider drug/alcohol involvement
- (27) MC rider experience or exposure to similar situations
- (28) MC rider conflicting behaviors or pre-occupation
- (29) MC rider unsafe acts or risk-taking behavior
- (30) OV driver physical or physiological failure (heart attack, seizure, etc.)
- (31) OV driver drug/alcohol involvement
- (32) OV driver experience or exposure to similar situations
- (33) OV driver conflicting behaviors or pre-occupation
- (34) OV driver unsafe acts or risk-taking behavior
- (98) other (specify)
- (99) unknown

Range: A–C, 01–34, 98, 99

Source: Primary—motorcycle inspection, scene inspection, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Source: Primary—investigator's judgment

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE RIDER FORM

Case Number

OECD Reference: None

Convention/Coding Source: N/A

Element Attributes: Case Number

Range: 0001–2000

Source: Primary—case assignment chart

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE RIDER FORM

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1. How Were You Operating Your Motorcycle Immediately Prior to the Crash?

OECD Reference: None

Convention/Coding Source: OECD, NASS⁽⁴⁾

Element Attributes:

- (00) stopped in traffic, speed was zero
- (01) moving in a straight line, constant speed
- (02) moving in a straight line, throttle off
- (03) moving in a straight line, braking
- (04) moving in a straight line, accelerating
- (05) turning right, constant speed
- (06) turning right, throttle off
- (07) turning right, braking
- (08) turning right, accelerating
- (09) turning left, constant speed
- (10) turning left, throttle off
- (11) turning left, braking
- (12) turning left, accelerating
- (13) stopped at roadside or parked
- (14) backing up in a straight line
- (15) backing up steering left
- (16) backing up steering right
- (17) making a right U-turn
- (18) making a left U-turn
- (19) making a right Y-turn
- (20) making a left Y-turn
- (21) changing lanes to left
- (22) changing lanes to right
- (23) merging to left
- (24) merging to right
- (25) entering traffic from right shoulder, median, or parked
- (26) entering traffic from left shoulder, median, or parked
- (27) leaving traffic, turn out to right
- (28) leaving traffic, turn out to left
- (29) passing maneuver, passing on right
- (30) passing maneuver, passing on left
- (31) crossing opposing lanes of traffic
- (32) traveling wrong way, against opposing traffic
- (33) stripe-riding, filtering forward between lanes, longitudinal motion only
- (34) filtering forward between lanes, lateral motion only
- (35) filtering forward between lanes, both longitudinal and lateral motion

MOTORCYCLE RIDER FORM

Page 2 of 4

1. How Were You Operating Your Motorcycle Immediately Prior to the Crash? (Continued)

- (36) collision-avoidance maneuver to avoid a different collision
- (37) negotiating a curve, constant speed
- (38) negotiating a curve, throttle off
- (39) negotiating a curve, braking
- (40) negotiating a curve, accelerating
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–40, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the attribute that best describes this vehicle's activity prior to the rider's realization of an impending critical event or just prior to the precipitating event. For instance, if the precipitating event is a mechanical failure, these variables are intended to capture the movement or activity of the motorcycle just prior to the mechanical failure or precipitating event.

Note that a precipitating event is the failure or maneuver that immediately led to the accident. In addition, a Y-turn is a three-point turning maneuver that is commonly utilized to change directions.

stopped in traffic, speed is zero: Select if the motorcycle was stopped momentarily with the motor running within the traffic lane (e.g., stopped for traffic signal).

moving in a straight line: Select if the motorcycle's path of travel was straight ahead without any attempted or intended changes.

turning right: Select when the motorcycle was moving forward and turned right, changing lanes from one roadway to a different roadway (e.g., from or to a driveway, parking lot, or intersection).

turning left: Select when the motorcycle was moving forward and turned left, changing lanes from one roadway to a different roadway (e.g., from or to a driveway, parking lot, or intersection).

MOTORCYCLE RIDER FORM

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1. How Were You Operating Your Motorcycle Immediately Prior to the Crash? (Continued)

backing up (other than for parking position): Select when the motorcycle was traveling backward within the trafficway. Do not use this attribute if the vehicle was backing into a parking space (see attribute entering a parking position).

making a U-turn: Select when the motorcycle/vehicle was making a right or left U-turn on the trafficway.

making a Y-turn: This is a three-point turning maneuver that is commonly utilized to change directions.

changing lanes: Select when the motorcycle was traveling straight ahead and changed travel lanes to the right or left while on the same roadway.

merging: Select when the motorcycle was moving forward and merging from the left or right into a traffic lane (e.g., the roadway narrowed, exit/entrance ramps).

entering a parking position: Select when this motorcycle was leaving the travel lane to a parking area adjacent to the traffic lanes (i.e., in the process of parking).

leaving traffic: Select when the motorcycle was leaving the roadway by turning out to the right or left from the traffic lanes.

passing maneuver: Select when the motorcycle was traveling straight ahead and was in the process of passing another vehicle on the left or right.

filtering forward between lanes, lateral motion only: Select when the motorcycle was in the process of passing other vehicles on the left and right of the motorcycle.

filtering forward between lanes, both longitudinal and lateral motions: Select when the motorcycle was traveling between two vehicles and was in the process of passing other vehicles on the left and right of the motorcycle (i.e., splitting lanes or riding on or near the lane line that separate travel lanes).

MOTORCYCLE RIDER FORM

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1. How Were You Operating Your Motorcycle Immediately Prior to the Crash? (Continued)

negotiating a curve: Select when the motorcycle/vehicle was continuing along a roadway that curved to the right or left.

other (specify): This is used when the motorcycle's pre-crash movement is known, but none of the specified attributes are applicable.

unknown: This is used when the motorcycle's pre-crash movement prior to the rider's realization of an impending critical event is unknown.

MOTORCYCLE RIDER FORM

2. Where Were You Looking at the Start of the Crash Sequence?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) looking straight ahead
- (02) looking right
- (03) looking left
- (04) looking rearward
- (05) looking at own motorcycle
- (98) other (specify)
- (99) unknown

Range: 01–05, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the attribute that best describes where the rider was looking at the start of the crash sequence.

other (specify): This is used when the rider is looking somewhere, but none of the specified attributes are applicable.

unknown: This is used when it is not known where the rider was looking at the start of the crash sequence.

MOTORCYCLE RIDER FORM

3. Were Your Motorcycle Brakes Functioning Before the Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the attribute that best describes if the brakes on the motorcycle were functioning before the crash.

MOTORCYCLE RIDER FORM

4. Did You Have Your Hands/Fingers Positioned on the Front Brake Prior to the Crash Event?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no front brake or brake lever
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the attribute that best describes where the hands/fingers were positioned on the front brake prior to the crash.

MOTORCYCLE RIDER FORM

5. In Which Lane Were You Traveling Just Before the Precipitating Event?

OECD Reference: None

Convention/Coding Source: OECD

Element Attributes:

- (01) lane one (right curb lane)
- (02) lane two
- (03) lane three
- (04) lane four
- (05) designated right-turn lane
- (06) designated left-turn lane
- (07) lane splitting
- (08) wrong way in opposing traffic
- (97) not applicable, not in a travel lane
- (98) other (specify)
- (99) unknown

Range: 01–08, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The lane of travel for any vehicle is determined using a numbering system that considers the lane closest to the curb or roadway edge to be the number one lane. Each lane is then sequentially numbered from this initial lane designation.

MOTORCYCLE RIDER FORM

6. What Was Your Travel Speed Just Before the Precipitating Event?

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(00)	stopped
(01–95)	actual miles per hour
(96)	96 mph or greater
(98)	other (specify)
(99)	unknown

Range: 00–96, 98, 99

Source:

Primary—rider interview
Secondary—passenger interview

Remarks: This variable is assigned by the investigator from the sources.

Enter the travel speed for the motorcycle if it can be determined through all sources available. Enter the nearest miles per hour, or if the travel speed is reported as a range, enter the average.

stopped: Enter if the vehicle was stopped.

unknown: Select if the estimated travel speed is unknown.

MOTORCYCLE RIDER FORM

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7. What Were the Lateral Movements of Your Motorcycle Immediately Before Impact?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no movement/avoidance
- (01) lane departure, left side
- (02) lane return, left side
- (03) lane departure, right side
- (04) lane return, right side
- (05) road departure, left side
- (06) road return, left side
- (07) road departure, right side
- (08) road return, right side
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–08, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

This variable captures those situations in which the rider applied a lateral movement in an attempt to avoid impending danger. A lateral movement is defined as a sideways direction in the path of the motorcycle as a result of turning actions. A rider may apply a lateral movement to avoid a pothole, an animal in the roadway, or a vehicle encroaching on the motorcycle's lane of travel.

lane departure, left side: This is used when the rider applied a left lateral movement to avoid an impending danger and left the original travel lane.

lane return, left side: This is used when the rider applied a right lateral movement to avoid an impending danger and returned to the original travel lane.

lane departure, right side: This is used when the rider applied a right lateral movement to avoid an impending danger and left the original travel lane.

MOTORCYCLE RIDER FORM

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7. What Were the Lateral Movements of Your Motorcycle Immediately Before Impact? (Continued)

lane return, right side: This is used when the rider applied a left lateral movement to avoid an impending danger and returned to the original travel lane.

road departure, left side: This is used when the rider applied a left lateral movement to avoid an impending danger and left the roadway.

road return, left side: This is used when the rider applied a right lateral movement to avoid an impending danger and returned to the roadway.

road departure, right side: This is used when the rider applied a right lateral movement to avoid an impending danger and left the roadway.

road return, right side: This is used when the rider applied a left lateral movement to avoid an impending danger and returned to the roadway.

not applicable: Select when a lateral movement was not applied.

unknown: Select when there is not enough information available to determine whether a lateral movement was applied.

MOTORCYCLE RIDER FORM

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8. What Collision-Avoidance Actions Were You Taking (If Any)? (Code up to Four)

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) no avoidance actions
- (01) braking
- (02) downshifting
- (03) releasing brakes
- (04) steering left
- (05) steering right
- (06) accelerating
- (07) laid the bike down
- (08) use of horn
- (09) flashing headlamp
- (10) drag feet
- (11) jump or bail out
- (12) disengaged clutch
- (98) other (specify)
- (99) unknown

Range: 00–12, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record up to four attributes that best describe what collision-avoidance actions were taken prior to the crash.

This variable describes attempted avoidance actions taken by the rider within a critical crash envelope in response to a critical pre-crash event. Attempted avoidance actions occur after the rider has a realization of impending danger. This variable assesses what the rider's actions were in response to his or her realization.

MOTORCYCLE RIDER FORM

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8. What Collision-Avoidance Actions Were You Taking (If Any)? (Continued)

Most crashes have only one critical crash envelope and, thus, only one critical pre-crash event; however, multiple critical crash envelopes with respective critical pre-crash events can exist.

This variable may be used independently of (1) any actions associated with the rider's crash type and (2) the motorcycle's first associated crash event.

Select the element value that best describes the actions taken by the rider in response to the critical pre-crash event within the critical crash envelope that occurred just prior to the motorcycle's impact. When there is a known action (e.g., braking), but it cannot be determined whether there was more than one action (e.g., braking and steering left), default to the known action (e.g., braking).

no avoidance actions: Select when the rider did not attempt any evasive (pre-impact) actions.

other (specify): Select when the rider has taken collision action(s), but none of the specified attributes are applicable.

unknown: Select when it is not known what avoidance action(s) were taken by the rider in response to the critical pre-crash event.

MOTORCYCLE RIDER FORM

Page 1 of 4

9. Did You Lose Control of the Motorcycle?

OECD Reference: None

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no loss of control (skip to # 11)
- (01) capsized or fell over
- (02) braking slide out, low side
- (03) braking slide out, high side
- (04) cornering slide out, low side
- (05) cornering slide out, high side
- (06) ran wide on turn, ran off road
- (07) lost wheelie
- (08) low-speed wobble
- (09) high-speed wobble
- (10) weave, no pitch
- (11) pitch weave, low speed
- (12) pitch weave, high-speed cornering
- (13) end over, flying W
- (14) continuation, no control actions
- (15) lost stoppie
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–15, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable records the attitude of the motorcycle as the rider lost control of the motorcycle.

9. Did You Lose Control of the Motorcycle? (Continued)

capsized or fell over: This is a simple rotation of the motorcycle around the axis defined by the points in which the tires come into contact with the ground. It is used to describe a bike falling over without oscillation. An uncontrolled front wheel usually steers in the direction of the lean during the capsize until a very high lean angle is reached, at which point the steering may turn in the opposite direction. A capsize can happen very slowly if the bike is moving forward rapidly. Because the capsize instability is so slow, within seconds, it is easy for the rider to control and is actually used by the rider to initiate the lean necessary for a turn.

breaking slide out, high side: This is a motorcycle sideward upset involving an extreme rolling and capsizing motion where the upper part of the vehicle rolls toward the direction of travel. A high-side crash usually involves either an over-throttle application into a curve or an aggressive rear-braking input. Both situations result in the rear tire losing traction and initiating a yaw. The lateral motion regains traction or trips the motorcycle and initiates the capsizing motion. The rider typically exits on the high side of the bike or the side not closest to the ground. In a high-side crash, the vehicle is leading with the top or upper surface of the bike with relation to its direction of travel. High-side crashes usually result in more severe injuries to the rider because the rider is essentially being ejected over the top side of the vehicle.

breaking slide out, low side: This is a vehicle upset involving an extreme rolling and capsizing motion where the upper part of the vehicle rolls away from the direction of travel (e.g., a lay down). A low side is simply where the bike loses traction and skids on the ground with the rider remaining on the low side of the bike or the side closest to the ground.

cornering slide out, low side: This is a type of motorcycle crash that usually occurs on a curve and is most often caused by either locking a wheel due to excessive braking or accelerating too hard out of or through a corner.

cornering slide out, high side: This is a type of motorcycle crash that is caused by a rear wheel gaining traction when it is not facing the direction of travel. For a highsider to take place, the rear wheel must first lose traction and drift out of the motorcycle's line of travel. The initial traction loss may be caused by a locked rear wheel due to excessive braking or by applying too much throttle when exiting a corner.

lost wheelie: This is a large amplitude, pitch-up condition where the front wheel lifts off the ground for a period of time. This is usually caused by a combination of the rider's throttle control and body movement fore and aft.

9. Did You Lose Control of the Motorcycle? (Continued)

lost stoppie: This is a large amplitude, pitch-forward condition where the rear wheel lifts off the ground for a period of time. This is usually caused by a combination of the rider's front wheel braking control and body movement fore and aft.

To perform a stoppie, the rider gets up to speed, applies the front brake while leaning forward, and rides on the front wheel until the bike stops. The trick is straightforward in theory but is difficult to perform. A front-wheel skid due to excessive braking on unstable ground (such as dirt or gravel) or letting the back wheel rise too high will cause a crash that may result in the motorcycle landing on the rider. Front-brake control during the stoppie is essential.

The force of forward motion needs to be transferred because without the bike's full weight on the front tire, the braking force will be greater than the tire's stopping power, and the bike will start to slide. Stopping power (traction) is proportional to the weight of the tire. When the rear wheel begins to rise, the bike's full weight is on the front tire.

wobble (low speed; high speed): Wobbling occurs when the front wheel and handlebars suddenly start shaking from side to side. This malfunction can occur at any speed. There are two types of wobbles: low and high speed. A low-speed wobble is usually in the 30- to 50-mph range. A high-speed wobble usually occurs at 65 mph and up. These types of wobbles are different but have one source and can have several causes.

A wobble is a motion of the fork assembly about the steer axis. It can be lightly damped with a natural frequency in the range of 6 to 10 Hz, depending on fork-assembly properties and other design and operating parameters. The damping can vary significantly with speed and fork-assembly properties, even becoming oscillatory or unstable under unusual conditions.

hertz (Hz): One Hz simply means one cycle per second (typically that which is being counted is a complete cycle), 100 Hz means 100 cycles per second, and so on.

A wobble, shimmy, tank slapper, speed wobble, and even death wobble are all used to describe a quick (4–10 Hz) oscillation of primarily the front end (front wheel, fork, and handlebars). The rest of the bike will remain mostly unaffected.

pitch weave (low speed, high-speed cornering): This is a type of movement in which the front of the motorcycle moves vertically up or down relative to the rear.

9. Did You Lose Control of the Motorcycle? (Continued)

weave, no pitch: This is the word used to describe a slow (0–4 Hz) oscillation between leaning left and steering right and vice versa. The entire bike is affected with significant changes in steering angle, lean angle (roll), and heading angle (yaw). The steering is 180 degrees out of phase with the heading and 90 degrees out of phase with the leaning.

For most bikes, depending on geometry and mass distribution, weave is unstable at low speeds and becomes less pronounced as speed increases until it is no longer unstable. While the amplitude may decrease, the frequency actually increases with speed.

end over, flying W: This involves pitching the rear of the motorcycle over its front, end over end. A flying W is a maneuver that occurs when the rider's legs are suddenly kicked into the air above the seat while the rider maintains hold of the handlebars.

MOTORCYCLE RIDER FORM

10. Was There Any Control Loss Due to Weather, Roadway, or Mechanical Problems?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no control loss due to weather, roadway, or mechanical problems
- (01) yes, control loss due to weather
- (02) yes, control loss due to mechanical problems
- (03) yes, control loss due to both weather and mechanical problems
- (04) yes, control loss due to roadway problems
- (05) yes, control loss due to roadway and weather problems
- (06) yes, control loss due to roadway and mechanical problems
- (07) yes, control loss due to all three
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

11. Where Was the Other Vehicle Coming From in Relation to You?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) 180 degrees opposed (oncoming)
- (02) from left front
- (03) from left
- (04) from left rear
- (05) from right front
- (06) from right
- (07) from right rear
- (08) from behind
- (09) directly in front
- (97) not applicable, no other vehicle
- (98) other (specify)
- (99) unknown

Range: 01–09, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

12. Was Your Line of Sight to the Other Vehicle Clear?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) yes, clear
- (02) no, view obstructed by road curvature
- (03) no, view obstructed by roadway grade
- (04) no, view obstructed by roadside objects (e.g., shrubs, vehicles, buildings)
- (05) other vehicle in blind spot of mirror
- (06) obscured by traffic
- (97) not applicable, no other vehicle
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

13. Was Your View of the Other Vehicle Obscured?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no, not obscured
- (01) yes, obscured by sun glare
- (02) yes, obscured by headlight glare
- (03) yes, obscured by other glare (specify)
- (04) yes, obscured by darkness
- (05) yes, obscured by nighttime and color of vehicle
- (06) obscured by dust, smoke, smog, or fog
- (07) obscured by condition of windscreen or eyewear (dirt, condensation, etc.)
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

14. What Was Your Position on the Motorcycle at the Time of the Collision?

OECD Reference: A.5.1.1.42

Convention/Coding Source: DSI

Element Attributes:

- (00) not on motorcycle
- (01) normal seating position
- (02) standing on footrests, foot pegs
- (03) seated, head down
- (04) shoulder check, left
- (05) shoulder check, right
- (06) dismounting, jumping to side
- (07) dismounting, jumping upward
- (08) dragging feet, foot down
- (09) abnormal seating position
- (10) standing on seat
- (98) other (specify)
- (99) unknown

Range: 00–10, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

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15. Were You Distracted by Any of the Following?

OECD Reference: A.5.1.1.44

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) attentive and not distracted
- (01) looked but did not see distractions
- (02) by other occupants (specify)
- (03) by moving object in vehicle (specify)
- (04) while talking or listening to cellular phone/intercom/shortwave radio (specify location and type of device)
- (05) while dialing cellular phone/intercom/shortwave radio (specify location and type of device)
- (06) while adjusting climate controls
- (07) while adjusting radio/cassette/CD (specify)
- (08) while using other device/controls integral to vehicle (specify)
- (09) while using/reaching for device/object brought into vehicle (specify)
- (10) sleepy or fell asleep
- (11) distracted by outside person/object/event (specify)
- (12) eating or drinking
- (13) smoking-related
- (14) while listening to or adjusting GPS device
- (96) distracted, details unknown
- (98) other (specify)
- (99) unknown

Range: 00–14, 96, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

attentive and not distracted: Select if it is known that the rider was completely attentive to driving prior to the realization of impending danger.

MOTORCYCLE RIDER FORM

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15. Were You Distracted by Any of the Following? (Continued)

looked but did not see distractions: Select if the rider was paying attention to driving, but did not see the relevant vehicle, object, etc. This attribute should be used when a rider had an opportunity to take some action prior to impact, but the rider took no action, and no other distractions apply. This situation frequently occurs when an overtaking vehicle is in the rider's blind spot or at an intersection where the rider looks both ways but does not notice a crossing vehicle. If the rider saw the vehicle, object, etc., but did not consider it a danger at that point, and no other distractions apply, then select attentive and not distracted.

by other occupants (specify): Select if the rider was distracted by another occupant on the motorcycle prior to the realization of impending danger. Examples of other occupant distraction include conversing with or looking at another occupant. Specify the occupant distraction in the provided space.

by moving object in vehicle (specify): Select if the rider was distracted by a moving object on the motorcycle prior to the realization of impending danger. Examples include a dropped object, insect, or cargo. The specific object must be recorded in the specify box.

while talking or listening to cellular phone/intercom/shortwave radio (specify location and type of device): Select if the rider was talking on or listening to a cellular phone. Specify the type of phone (hands off, hand phone) and the location of the phone (installed on motorcycle, held in the hand, etc.)

while dialing cellular phone/intercom/shortwave radio (specify location and type of device): Select if the rider was dialing a cellular phone. Specify the type of phone used (hands off, hand phone, etc.) and indicate where it was located (installed on the motorcycle, held in the hand, etc.).

while adjusting climate controls: Select if the rider was distracted from the driving task while adjusting the air conditioner, heater, etc.

while adjusting radio/cassette/CD (specify): Select if the rider was distracted from the driving task while adjusting or using the radio, a cassette, or a CD player mounted in the vehicle.

while using other device/controls integral to vehicle (specify): Select if the rider was distracted while using a device on the motorcycle including adjusting side-view mirrors, using the vehicle's cigarette lighter, etc. (Included here is all original equipment manufacturer (OEM) equipment.)

while using/reaching for device/object brought into vehicle (specify): Select if the rider was distracted while using or reaching for a device brought onto the motorcycle including radar detectors, citizens band radio (CB) radios, portable CD players, headphones, etc. The use of

MOTORCYCLE RIDER FORM

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15. Were You Distracted by Any of the Following? (Continued)

another device to light a cigarette other than the vehicle's cigarette lighter should be coded under smoking related. Specify the device in the provided space.

sleepy or fell asleep: Select if the rider was sleeping or dozing prior to the realization of impending danger or just prior to the impact if realization did not occur.

distracted by outside person/object/event (specify): Select if the rider was distracted by an outside person, object, or event prior to the realization of impending danger. Examples of distractions include animals on the roadside or a previous crash. The specific outside person, object, or event must be recorded in the provided space. Do not use this attribute for a person, object, or event that the rider recognized and for which the rider took some action (e.g., avoiding a pedestrian on the roadway).

eating or drinking: Select if the rider was eating or drinking or was involved in an activity related to these actions (i.e., picking food from a carton placed on the passenger's seat, reaching to throw out a used food wrapper, etc.).

smoking-related: Select if the rider was smoking or involved in an activity related to smoking, such as lighting a cigarette, putting ashes in the ash tray, etc. For the act of using the cigarette lighter of the vehicle, select the attribute while using other device/controls integral to vehicle.

while listening to or adjusting GPS device: Select if the rider was listening to a GPS or was distracted from the driving task while adjusting the GPS unit.

distracted, details unknown: Select if it is known that the rider was inattentive prior to the realization of impending danger but details of the distraction are unknown.

other (specify): Select if details regarding the rider's inattention are known but none of the specified attributes are applicable. The other distraction must be recorded in the provided space. This attribute includes incapacitating illnesses.

unknown: Select if it is unknown if the rider was fully attentive to driving prior to the realization of impending danger. Use this attribute if no interview is obtained and there is no other source of information regarding this rider's attention to driving prior to the realization of impending danger.

MOTORCYCLE RIDER FORM

16. Where Did Your Trip Begin Today?

OECD Reference: A.5.1.1.27

Convention/Coding Source: DSI

Element Attributes:

- (01) home
- (02) work, business
- (03) recreation/social
- (04) school
- (05) errand, shopping
- (06) family, friends, relatives
- (07) meals, restaurant, café, etc.
- (08) transport someone
- (09) medical/dental
- (10) bar/pub
- (11) religious activity
- (12) personal business/obligations
- (98) other (specify)
- (99) unknown

Range: 01–12, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

17. Did You Do Any Safety or Maintenance Checks on Your Motorcycle Before Leaving for This Trip? (Code up to Four)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) none
- (01) exterior, visual inspection only
- (02) checked fluids
- (03) checked lights
- (04) checked brakes
- (05) checked tire pressure
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

18. What Was Your Trip Destination?

OECD Reference: A.5.1.1.28

Convention/Coding Source: DSI

Element Attributes:

- (01) home
- (02) work, business
- (03) recreation/social
- (04) school
- (05) errand, shopping
- (06) family, friends, relatives
- (07) meals, restaurant, café, etc.
- (08) transport someone
- (09) medical/dental
- (10) bar/pub
- (11) religious activity
- (12) personal business/obligations
- (98) other (specify)
- (99) unknown

Range: 01–12, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

19. About How Many Miles Would the Trip Have Been One Way?

OECD Reference: A.5.1.1.29

Convention/Coding Source: OECD

Element Attributes:

(001)	1 mile or less
(002–995)	actual number of miles
(996)	996 miles or greater
(997)	not applicable
(999)	unknown

Range: 001–997, 999

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The trip length is the length of the trip measured in miles.

trip: A trip is defined as any time in which the motorcycle rider operates the vehicle and comes to a complete stop and dismounts from the vehicle.

For example, travelling from the rider's home to the store and back to the rider's home would constitute two trips.

MOTORCYCLE RIDER FORM

20. How Frequently Do You Travel This Road on/in Any Vehicle?

OECD Reference: A.5.1.1.30

Convention/Coding Source: DSI

Element Attributes:

- (01) first time
- (02) daily use (i.e., once per day)
- (03) weekly use (i.e., once per week)
- (04) monthly use (i.e., once per month)
- (05) quarterly (i.e., once per quarter)
- (06) annually (i.e., once per year)
- (07) less than annually
- (99) unknown

Range: 01–07, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

21. How Long Had You Been Riding Today Prior to the Crash? (Use Zeros to Fill in Blanks)

_____ hours _____ minutes

OECD Reference: A.5.1.1.31

Convention/Coding Source: DSI

Element Attributes:

(00–24)	hours
(00–59)	minutes
(97–97)	not applicable
(98–98)	other (specify)
(99–99)	unknown

Range: 00–59, 97–97–99–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

A 30-minute ride would be coded as 00 hours and 30 minutes. A ride lasting 1 hour and 8 minutes would be coded as 01 hours and 08 minutes.

MOTORCYCLE RIDER FORM

22. How Many Miles Had You Ridden Before the Crash Occurred?

OECD Reference: None

Convention/Coding Source: OECD

Element Attributes:

(001)	1 mile or less
(002–995)	actual number of miles
(997)	not applicable, not yet begun trip
(998)	other (specify)
(999)	unknown

Range: 001–995, 997–999

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The trip length is the length of the trip measured in miles.

MOTORCYCLE RIDER FORM

23. At the Time of the Crash, Were You Wearing a Helmet?

OECD Reference: A.5.3.1.11

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes (skip to # 26)
- (02) helmet available but not used
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

24. What Is Your Reason for Not Wearing a Helmet?

OECD Reference: C.5.2.1.1.10

Convention/Coding Source: DSI

Element Attributes:

- (01) not required by law
- (02) no expectation of accident involvement
- (03) helmets are too expensive
- (04) helmets are inconvenient and uncomfortable
- (05) helmets reduce traffic awareness, limit hearing and vision
- (06) helmets are ineffective in reducing head injury
- (07) helmets cause neck injury
- (08) helmets cannot be used, physical or religious reasons
- (09) do not own a helmet
- (10) forgot to bring helmet today
- (97) not applicable, rider is wearing a helmet
- (98) other (specify)
- (99) unknown

Range: 01–10, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

25. Do You Ever Wear a Helmet?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 37)
- (01) yes (skip to # 35)
- (02) occasionally (skip to # 35)
- (97) not applicable, rider is wearing a helmet
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

26. Was Your Helmet Properly Adjusted on Your Head?

OECD Reference: A.5.3.1.12

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

yes: This applies if the helmet was properly oriented on the wearer's head to provide maximum field of vision and maximum impact protection.

no: This applies if the helmet was on the wearer's head at the time of the crash/accident; however, it was oriented in such a fashion as to reduce the field of vision or the protective capacity of the helmet.

An example of an improperly adjusted helmet is a full-face helmet that has been partially donned and is resting on top of the wearer's head at the time of the accident. The retention system may or may not be fastened. Another example is an oversized helmet relative to the wearer's head that is rotated backward and secured with a loose retention strap at the time of the accident.

not applicable, no helmet: Select if no helmet was worn.

unknown: Select if the investigator is unable to determine if the helmet was properly adjusted. This response may also be used if the investigator is not sure if a helmet was worn.

MOTORCYCLE RIDER FORM

27. Was Your Helmet Securely Fastened to Your Head?

OECD Reference: A.5.3.1.13

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

28. What Type of Helmet Is It?

OECD Reference: A.5.3.1.14

Convention/Coding Source: DSI

Element Attributes:

- (00) not a motorcycle helmet
- (01) half/police motor vehicle, motorcycle helmet
- (02) open-face motor vehicle, motorcycle helmet
- (03) full-face motor vehicle, motorcycle helmet
- (04) novelty or beanie helmet
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

half/police motor vehicle, motorcycle helmet: These helmets are built with an energy-absorbing liner (usually expanded polystyrene) and are USDOT compliant. These are the least intrusive style of motorcycle helmets, covering only the top half of the cranium. They weigh the least, do not block the ears, and offer the least wind resistance. They are also most likely to come off in a crash, even if properly fastened.

open-face motor vehicle, motorcycle helmet: This style is similar to a full-face helmet, but it does not wrap around the face. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A chinstrap secures the helmet, sometimes in the form of a chin cup. This type of helmet may have a flexible chin protector that resembles the chin bar of a full-face helmet and that snaps on and off. These removable chin bars (or gravel guards) are sometimes attached to helmets used in dirt bike riding. Such a flimsy attachment does not make it a full-face helmet as it is still an open-face helmet with an accessory attachment.

28. What Type of Helmet Is It? (Continued)

full-face motor vehicle, motorcycle helmet: These helmets cover the entire head and most of the face. The hard shell extends from the brow over the cranium to the base of the skull at the top of the neck. The shell rides forward along the cheekbones to encompass the jaws and chin, leaving a wrap-around view port. A transparent visor slides over the view port to block out wind blasts, rain, and dust and to ease eye fatigue. Most full-face motorcycle helmets are vented at the chin and within the shell. Vents normally have sliding doors for use in cold weather. The inner shell is highly padded, and the helmet has a chinstrap for securing. This style includes helmets with a moveable chin bar that can be unlatched to pivot upward, exposing the wearer's entire face.

novelty or beanie helmet: This is a helmet that does not comply with USDOT regulations and offers no head protection. It only has comfort pads inside the shell and no energy-absorbing liner material. The manufacturer is almost never identified.

MOTORCYCLE RIDER FORM

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29. What Is the Type of Helmet Coverage?

OECD Reference: A.5.3.1.15

Convention/Coding Source: DSI

Element Attributes:

- (01) partial coverage
- (02) full coverage
- (03) full-facial coverage, integral chin bar but no face shield
- (04) full-facial coverage, removable chin bar
- (05) full-facial coverage, retractable chin bar
- (06) full-facial coverage, integral chin bar and face shield
- (07) open-face helmet with flat wraparound face shield
- (08) open-face helmet with bubble-type face shield
- (09) open-face helmet with visor/face-shield combo
- (10) open-face helmet with removable gravel guard
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 01–10, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

partial coverage: These are the least intrusive style of motorcycle helmets, covering only the top half of the cranium. They are USDOT compliant and have an energy-absorbing liner (usually expanded polystyrene and at least .75” thick). They weigh the least, do not block the ears, and offer the least wind resistance. They also afford the least protection.

full coverage: This style is similar to a full-face helmet, but it does not wrap around the face. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A chinstrap secures the helmet, sometimes in the form of a chin cup.

29. What Is the Type of Helmet Coverage? (Continued)

full facial coverage, integral chin bar but no face shield: This style is similar to a full-face helmet, but it wraps around the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A full chin bar is incorporated into the design.

full facial coverage, removable chin bar: This style is similar to a full-face helmet, but it has a removable chin bar that extends across the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears.

full facial coverage, retractable chin bar: This style is similar to a full-face helmet, but it has a retractable chin bar that wraps across the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears.

full facial coverage, integral chin bar and face shield: This helmet shell extends from the brow over the cranium to the base of the neck, and across the front of the face at the chin level. In addition, a transparent face shield covers the eye, nose, and mouth areas.

open-face helmet with flat wrap around face shield: This is a removable transparent covering that may extend over some portion of the eye, nose, and mouth areas. It can be attached to helmets at the sides of the head.

open-face helmet with bubble-type face shield: This is a large transparent covering in a curved bubble shape that attaches to the front of an open-face helmet. It generally provides full facial protection.

open-face helmet with visor/face shield combo: This can be attached to helmets to provide transparent facial protection with a visor overhang at the top of the unit.

MOTORCYCLE RIDER FORM

30. What Is the Predominant Color of Your Helmet?

OECD Reference: A.5.3.1.16

Convention/Coding Source: DSI

Element Attributes:

- (01) no dominating color, multicolored
- (02) white
- (03) yellow
- (04) black
- (05) red
- (06) blue
- (07) green
- (08) silver, grey
- (09) orange
- (10) brown, tan
- (11) purple
- (12) gold
- (13) chrome, metallic
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 01–13, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

31. What Is the Color of the Face Shield?

OECD Reference: A.5.3.1.17

Convention/Coding Source: N/A

Element Attributes:

- (01) clear
- (02) green
- (03) grey, smoke
- (04) amber, yellow
- (05) blue
- (06) reflective (any color)
- (97) not applicable, no face shield
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

32. Do You Own This Helmet?

OECD Reference: A.5.3.1.18

Convention/Coding Source: None

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

33. How Well Does This Helmet Fit?

OECD Reference: A.5.3.1.19

Convention/Coding Source: OECD

Element Attributes:

- (01) acceptable fit
- (02) too large, too loose
- (03) too small, too tight
- (04) contour mismatch
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 01–04, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The following definitions may be applied in order to assist in the determination of proper helmet fit.

acceptable fit: This applies to a helmet that is of the correct size for the wearer. An acceptable fitting helmet will not move excessively when properly adjusted and retained on the wearer's head.

too large, too loose: This applies to a helmet that is too large given the size for the wearer's head. A helmet that is too large and too loose will move excessively on the wearer's head during normal use. The investigator should look for helmet-induced injuries as a result of excessive helmet movement in order to assist in the identification of a helmet that is too large. Typical helmet-induced injuries due to excessive helmet motion may include lacerations to the bridge of the nose or to the maxillary region. Helmet ejection in the presence of a fastened retention system is also evidence that suggests that the helmet was too large for the wearer.

33. How Well Does This Helmet Fit? (Continued)

too small, too tight: This applies to a helmet that is too small given the size of the wearer's head. A helmet that is too small and too tight may remain on the wearer's head even if the retention system is not properly fastened. It may also rest higher on the wearer's head given the fact that it cannot be fully donned due to its small size.

contour mismatch: This applies to a helmet size that is correct for rider's head circumference, but the rider's head is long and narrow or short and wide or otherwise unusual.

not applicable, no helmet: This applies if no helmet was worn.

MOTORCYCLE RIDER FORM

34. Was the Helmet Retained in Place on Your Head During the Crash?

OECD Reference: A.5.3.1.30

Convention/Coding Source: DSI

Element Attributes:

- (00) no helmet
- (01) no, helmet ejected from head during pre-crash time period
- (02) no, helmet ejected from head during crash
- (03) no, helmet ejected from head after collision
- (04) yes, helmet retained in place through to completion of crash
- (05) yes, helmet moved on head but was retained
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

35. What Percentage of Time Do You Wear Your Helmet When Riding? (Code 000–100 Percent)

OECD Reference: A.5.3.1.20

Convention/Coding Source: DSI

Element Attributes:

(000–100)	percent helmet worn
(997)	not applicable, no helmet
(999)	unknown

Range: 000–100, 997, 999

Source:

Primary—rider interview
Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the percentage of time that the rider wears a helmet while riding. If the rider does not wear a helmet, 000 is the correct response for the variable. If the rider wears a helmet all the time while riding a motorcycle, then the percent should be 100. If the rider's response was that he or she does not wear a helmet 25 percent of the time, then code 75 as the percentage of time the rider does wear the helmet.

MOTORCYCLE RIDER FORM

36. Under What Conditions Do You Usually Wear Your Helmet? (Code up to Four; Input 97 for Remaining Responses)

OECD Reference: A.5.3.1.21.1, A.5.3.1.21.2, A.5.3.1.21.3, A.5.3.1.21.4

Convention/Coding Source: DSI

Element Attributes:

- (00) never uses helmet
- (01) mostly on long trips
- (02) mostly in high-speed highway or freeway traffic
- (03) in adverse weather
- (04) usually, but not in hot weather
- (05) always
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

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37. Do You Have Any of the Following Permanent Physical Conditions? (Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.5.1.1.39.1, A.5.1.1.39.2, A.5.1.1.39.3

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) vision reduction or loss
- (02) hearing reduction or loss
- (03) respiratory, cardiovascular condition
- (04) paraplegia
- (05) amputee
- (06) neurological, epilepsy, stroke
- (07) endocrine system, diabetes, digestive system
- (08) infirmity, arthritis, senility
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

respiratory system: The respiratory system consists of airways, lungs, and respiratory muscles that mediate the movement of air in and out of the body.

cardiovascular condition: The cardiovascular system is made up of blood vessels, also known as the circulatory system, that work in conjunction with the beating heart. Cardiovascular (heart and circulatory) diseases are diseases of the heart and blood vessel system such as coronary heart disease, heart attacks, high blood pressure, peripheral vascular disease, and strokes.

paraplegia: This is an impairment in motor and/or sensory function of the lower extremities. It is usually the result of a spinal cord injury or a congenital condition such as spina bifida, which affects the neural elements of the spinal canal. If the arms are also affected by paralysis, tetraplegia is the proper terminology.

amputee: Amputation is the removal of a body extremity by trauma or surgery.

MOTORCYCLE RIDER FORM

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37. Do You Have Any of the Following Permanent Physical Conditions? (Continued)

neurological: The nervous system is a highly specialized network in which principal components are cells called neurons. Neurons are interconnected in complex arrangements and use electrochemical signals to conduct a great variety of stimuli both within the nervous tissue as well as from and toward most other tissues. Thus, neurons coordinate multiple functions in organisms.

epilepsy: This is a brain disorder that causes recurring seizures. Seizures happen when clusters of nerve cells, or neurons, in the brain send out the wrong signals. People may have strange sensations and emotions, behave strangely, have violent muscle spasms, or lose consciousness.

stroke: Strokes happen when blood flow to the brain stops. There are two kinds of strokes. The more common stroke, ischemic, is caused by a blood clot that blocks or plugs a blood vessel in the brain. The other stroke, hemorrhagic, is caused by a blood vessel that breaks and bleeds into the brain. Ministrokes or transient ischemic attacks (TIAs) occur when the blood supply to the brain is briefly interrupted.

endocrine system: The glands and parts of glands that produce endocrine secretions help to integrate and control bodily metabolic activity. This includes the pituitary, thyroid, parathyroids, adrenals, islets of Langerhans, ovaries, and testes.

diabetes: This is a disease in which your blood glucose, or sugar, levels are too high.

digestive system: This refers to the bodily system concerned with the ingestion, digestion, and absorption of food.

infirmary: This is a bodily ailment or weakness, especially one brought on by old age. Examples include frailty and feebleness. Infirmary is a condition or disease producing weakness.

arthritis: If a person feels pain and stiffness in the body or has trouble moving around, he or she might have arthritis. Most kinds of arthritis cause pain and swelling in the joints. Joints are places where two bones meet, such as the elbow or knee. Over time, a swollen joint can become severely damaged. Some kinds of arthritis might also cause problems in organs such as eyes or skin.

senility: Now more commonly referred to as “dementia,” senility is characterized by a decrease in cognitive abilities. This may include the person’s ability to concentrate, recall information, and properly judge a situation. In addition, the personality of someone with senility may change. A person in the advanced stages of senility may be unsure of who he or she is.

MOTORCYCLE RIDER FORM

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38. At the Time of the Crash, Were You Experiencing Any of the Following? (Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.5.1.1.40.1, A.5.1.1.40.2, A.5.1.1.40.3

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) fatigue
- (02) hunger
- (03) thirst
- (04) elimination urgency
- (05) muscle spasm, cramp, itch
- (06) headache, minor malaise, fever
- (07) siesta syndrome (tired in the afternoon)
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

fatigue: This is a feeling of weariness, tiredness, or lack of energy.

hunger: This is a craving or urgent need for food or a specific nutrient. Hunger is an uneasy sensation and/or a weakened condition brought about by prolonged lack of food.

thirst: This is a sensation of dryness in the mouth and throat associated with a desire for liquids. The bodily condition known as dehydration induces this sensation. Thirst is also a basic desire or need to drink.

elimination urgency: This is the state in which the individual experiences a disturbance in urine elimination.

muscle spasm, cramp, itch: This is an involuntary contraction of a muscle. Muscle cramps are involuntary and often painful contractions (movements) of the muscles.

MOTORCYCLE RIDER FORM

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38. At the Time of the Crash, Were You Experiencing Any of the Following? (Continued)

headache: The most common type of headache is a tension headache. Tension headaches are due to tight muscles in your shoulders, neck, scalp, and jaw. They are often related to stress, depression, or anxiety.

minor malaise: This is a generalized feeling of discomfort, illness, or lack of wellbeing. It can be associated with a disease. Malaise can be accompanied by a feeling of exhaustion or not having enough energy to accomplish usual activities.

fever: This is a body temperature that is higher than normal.

siesta syndrome (tired in the afternoon): This can be best described as the tired, groggy feeling we experience in the afternoon. Some people call it a “food coma” or “afternoon lull.”

MOTORCYCLE RIDER FORM

**39. Were You Concerned About Any of the Following Issues on the Day of the Crash?
(Code up to Three; Input 00 for Remaining Responses)**

OECD Reference: A.5.1.1.41.1, A.5.1.1.41.2, A.5.1.1.41.3

Convention/Coding Source: DSI

Element Attributes:

- (00) no problems
- (01) conflict with friends, relatives, divorce, separation
- (02) work-related problems
- (03) financial distress
- (04) school problems
- (05) legal, police problems
- (06) reward stress
- (07) traffic conflict, road rage
- (08) death of family or friend
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

40. How Many Hours of Sleep Did You Have in the 24 Hours Prior to the Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00)	no sleep
(01–24)	number of hours slept
(98)	other (specify)
(99)	unknown

Range: 00–24, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

41. Did You Drink Any Alcohol or Take Any Drugs or Medication in the 24 Hours Prior to the Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 44)
- (01) alcohol use only (skip to # 44)
- (02) drug/medication use only
- (03) combined alcohol and drug/medication use
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

42. What Is the Type of Drugs Other Than Alcohol?

OECD Reference: A.5.1.1.37

Convention/Coding Source: NASS,⁽⁴⁾ DSI

Element Attributes:

- (00) no drugs other than alcohol
- (01) stimulant
- (02) depressant
- (03) drugs taken, type unknown
- (04) multiple drugs taken
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

stimulant: This is a drug that temporarily quickens some vital processes.

depressant: This includes any drug that reduces or tends to reduce the function of a system or organ of the body.

MOTORCYCLE RIDER FORM

43. What Is the Source of Drugs Other Than Alcohol? (Code up to Three)

OECD Reference: A.5.1.1.38

Convention/Coding Source: DSI

Element Attributes:

- (00) no drugs other than alcohol
- (01) prescription
- (02) nonprescription, over the counter
- (03) illegal
- (97) not applicable
- (99) unknown

Range: 00–03, 97, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

prescription drug: This is a licensed medicine that is regulated by legislation to require a prescription before it can be obtained.

MOTORCYCLE RIDER FORM

44. Are You the Owner of This Motorcycle?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 47)
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

45. Where Did You Purchase this Motorcycle?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) dealership (store front or internet)
- (02) family, friend, or neighbor
- (03) newspaper ad or internet ad
- (04) motorcycle was a gift
- (97) not applicable, rider does not own this motorcycle
- (98) other (specify)
- (99) unknown

Range: 01–04, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

46. How Long Have You Owned the Crash-Involved Motorcycle? (Use Zeros to Fill in Blanks)

_____ years ____ months

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(00-96)	years
(97-97)	not applicable, rider does not own this motorcycle
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 98-98, 99-99

Source:

Primary—rider interview
Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

47. How Long Have You Operated a Street Motorcycle? (Use Zeros to Fill in Blanks)

_____ years ____ months

OECD Reference: A.5.1.1.16

Convention/Coding Source: DSI

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(00-96)	years
(97-97)	not applicable
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 97-97-99-99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

48. How Long Have You Operated the Crash-Involved Motorcycle? (Use Zeros to Fill in Blanks)

_____ years ____ months

OECD Reference: A.5.1.1.17

Convention/Coding Source: DSI

Element Attributes:

(00-00)	this is the first time
(00-11)	months
(00-96)	years
(97-97)	not applicable
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 97-97-99-99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

49. What Is the Average Number of Days per Year That You Ride Motorcycles?

OECD Reference: A.5.1.1.18

Convention/Coding Source: DSI

Element Attributes:

(001–365)	actual number of days per year
(997)	not applicable, first time
(998)	other (specify)
(999)	unknown

Range: 001–365, 997–999

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

50. About How Many Miles per Year Do You Ride a Motorcycle?

OECD Reference: A.5.1.1.19

Convention/Coding Source: DSI

Element Attributes:

(00000)	none
(00001–99995)	actual number of miles
(99996)	99,996 miles or greater
(99998)	other (specify)
(99999)	unknown

Range: 00000–99996, 99998, 99999

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

51. What Kind of Motorcycle Training Have You Had?

OECD Reference: A.5.1.1.20

Convention/Coding Source: DSI

Element Attributes:

- (00) none (skip to # 53)
- (01) State-recognized entry-level motorcycle course
- (02) experienced-rider course
- (03) high-performance/competitive-track course
- (04) self-taught
- (05) taught by family and/or friends
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

entry-level motorcycle course: Examples of entry-level motorcycle courses include sponsored courses from the Motorcycle Safety Foundation such as BRC, MRC, or RSS. State-sponsored courses, such as those offered through TEAM Oregon, would also qualify.

experienced-rider course: This course includes instruction like that found in the MSF Rider's Edge course or North Carolina's BikeSafe program.

high-performance/competitive-track course: These include classes such as the Pridgemore California Super Bike School.

MOTORCYCLE RIDER FORM

52. In What Years Have You Taken Any Formal Motorcycle Training? (Code up to Three, and Skip to # 54)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(1900–2100)	actual year of training
(9997)	not applicable
(9999)	unknown

Range: 1900–2100, 9997, 9999

Source:

Primary—rider interview
Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Note that the entries should begin with most recent course and work backward.

MOTORCYCLE RIDER FORM

53. Please Tell Me the Reason for Not Taking Motorcycle Safety Training?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) not offered
- (02) enrolled for future date
- (03) tried unsuccessfully to enroll
- (04) not interested/do not need it
- (05) cost
- (97) not applicable, took training
- (98) other (specify)
- (99) unknown

Range: 01–05, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

54. How Old Were You When You First Began to Ride a Street Motorcycle? (Code Actual Age in Years)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00)	never rode before or barely ever rides
(01–96)	actual age in years
(98)	other (specify)
(99)	unknown

Range: 00–96, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

55. Were There Years in Which You Did Not Ride a Motorcycle?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 57)
- (01) yes
- (97) not applicable, never rode before
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

56. How Many Years Was Your Most Recent Hiatus?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00)	never stopped riding
(01–96)	actual number of years
(97)	not applicable, never rode before
(98)	other (specify)
(99)	unknown

Range: 00–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

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57. When You Ride or Drive, What Is the Percentage of Time You Ride a Motorcycle Versus Driving Another Type of Vehicle? (Indicate Percent of Total Riding/Driving Time for Each Category)

Motorcycle _____
Other-Vehicle Type _____
100%

OECD Reference: A.5.1.1.21.1

Convention/Coding Source: OECD

Element Attributes:

(000)	first-time use
(001–100)	percent
(997)	not applicable
(999)	unknown

Range: 000–100, 997, 999

Source:

Primary—rider interview
Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

58. When You Ride a Motorcycle, What Is the Percentage of Time It Is for Each of These Categories? (Indicate Percent of Total Riding/Driving Time for Each Category)

Recreation _____
Basic Transportation _____
100%

OECD Reference: A.5.1.1.21.2, A.5.1.1.21.3

Convention/Coding Source: OECD

Element Attributes:

(000)	first-time use
(001–100)	percent
(997)	not applicable
(999)	unknown

Range: 000–100, 997, 999

Source:

Primary—rider interview
Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the percentage of time or use that the motorcycle is used for recreational purposes (i.e., riding for pleasure) and the percentage of time or use that the motorcycle is used for basic transportation purposes (i.e., work, school, shopping, etc.). If the person does not use the motorcycle for recreation or basic transportation, code 000 in the appropriate category. The total percent usage for any one person must total 100 percent.

For example, if the motorcycle operator uses the motorcycle to run errands and commute to and from work approximately 40 percent of the time, the motorcycle is used for recreational purposes for the remaining 60 percent of the time.

MOTORCYCLE RIDER FORM

59. How Long Have You Been Driving Any Kind of Motor Vehicle?

_____ years _____ months

OECD Reference: A.5.1.1.15

Convention/Coding Source: DSI

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(01-96)	years
(97-97)	not applicable, never operated a motorcycle
(99-99)	unknown

Range: 00-96, 00-00, 97-97, 99-99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

60. About How Many Miles per Year Do You Drive a Car or Truck?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00000)	none
(00001–99995)	actual number of miles
(99996)	99,996 miles or greater
(99998)	other (specify)
(99999)	unknown

Range: 00000–99996, 99998, 99999

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

61. Have You Had Any Car or Truck Driver Training?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no training
- (01) self-taught
- (02) taught by friends and/or family
- (03) official driver-training class
- (04) voluntary driver's education
- (05) compulsory driver's education
- (06) professional training for commercial license
- (07) compulsory motor-vehicle training ordered by judge, police, etc.
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

62. How Many Moving Traffic Convictions Have You Had in the Previous 5 Years? (Code the Total Number of Moving Traffic Convictions—Any Vehicle)

OECD Reference: A.5.1.1.24

Convention/Coding Source: DSI

Element Attributes:

(00)	none
(01–96)	actual number of convictions
(99)	unknown

Range: 00–96, 99

Source:

Primary—rider interview
Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

**63. How Many Motorcycle Moving Traffic Crashes Have You Had in the Past 5 Years?
(Code the Total Number of Previous Motorcycle Crashes)**

OECD Reference: A.5.1.1.25

Convention/Coding Source: DSI

Element Attributes:

(00)	none
(01–96)	actual number of crashes
(99)	unknown

Range: 00–96, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

64. How Many Car or Truck Traffic Crashes Have You Had in the Past 5 Years? (Code the Total Number of Previous Car or Truck Crashes)

OECD Reference: A.5.1.1.26

Convention/Coding Source: DSI

Element Attributes:

(00)	none
(01–96)	actual number of crashes
(99)	unknown

Range: 00–96, 99

Source:

Primary—rider interview
Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

65. How Much Experience Do You Have Riding With Passengers on a Motorcycle?

OECD Reference: A.5.1.1.22

Convention/Coding Source: OECD

Element Attributes:

- (00) never carry passenger(s)
- (01) first time carrying passenger(s)
- (02) very little experience
- (03) moderate experience
- (04) extensive experience
- (97) not applicable
- (99) unknown

Range: 00–04, 97, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The following definitions may be applied to determine the amount of experience that the rider has riding with a passenger or multiple passengers on motorcycles.

never carry passenger(s): The rider has no previous experience riding with a passenger prior to this crash.

first time carrying passenger(s): This was the rider's first time riding with a passenger or multiple passengers.

very little experience: The rider's experience riding with passengers on motorcycles is between 1 and 10 percent of the time that he or she rides.

moderate experience: The rider's experience riding with passengers on motorcycles is between 11 and 50 percent of the time that he or she rides.

extensive experience: The rider's experience riding with passengers on motorcycles is over 50 percent of the time that he or she rides.

MOTORCYCLE RIDER FORM

66. How Much Experience Do You Have Riding With Cargo/Luggage?

OECD Reference: A.5.1.1.23

Convention/Coding Source: OECD

Element Attributes:

- (00) no experience with cargo/luggage
- (01) first time
- (02) seldom carries similar cargo/luggage
- (03) frequently carries similar cargo/luggage
- (04) always carries similar cargo/luggage
- (97) not applicable
- (99) unknown

Range: 00–04, 97, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The following definitions may be applied to determine the amount of experience that the rider has riding with cargo/luggage on motorcycles:

no experience with cargo/luggage: The rider has no previous experience riding with cargo/luggage prior to this crash.

first time: This was the rider's first time riding with cargo/luggage.

seldom carries similar cargo/luggage: The rider's experience riding with similar cargo/luggage on motorcycles is between 1 and 10 percent of the time that he or she rides.

frequently carries similar cargo/luggage: The rider's experience riding with similar cargo/luggage on motorcycles is between 11 and 50 percent of the time that he or she rides.

always carries similar cargo/luggage: The rider's experience riding with similar cargo/luggage on motorcycles is 100 percent of the time that he or she rides.

MOTORCYCLE RIDER FORM

67. Are You a Motorcycle Club Member?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00) no
(01) yes
(99) unknown

Range: 00, 01, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

68. Were You Riding With Other Motorcyclists at the Time of the Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 72)
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source:

Primary—rider interview

Secondary— passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

69. How Many Other Motorcycles Were in the Group?

OECD Reference: None

Convention/Coding Source: N/A

Element Attributes:

(00)	none, no group
(01–95)	actual number of motorcycles
(96)	96 motorcycles or greater
(98)	other (specify)
(99)	unknown

Range: 00–96, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

70. Was the Group Riding in a Specific Formation?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no group
- (01) single file
- (02) staggered
- (03) side by side
- (04) no formation (skip to # 72)
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

71. If in a Formation, Where Was Your Motorcycle Placed in That Formation?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) not in formation
- (01) front area
- (02) middle area
- (03) rear area
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–03, 97–99

Source:

- Primary—rider interview
- Secondary— passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

72. What Kind of Clothing Was on Your Upper Body?

OECD Reference: A.5.3.1.1

Convention/Coding Source: DSI

Element Attributes:

- (00) none (skip to # 74)
- (01) light cloth garment (e.g., thin cotton)
- (02) medium cloth garment (e.g., denim, nylon)
- (03) heavy cloth garment (e.g., imitation leather)
- (04) leather garment
- (05) Kevlar
- (06) armored nylon mesh
- (07) off-road, molded body armor
- (08) armored leather
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

73. Was This Upper-Body Clothing Motorcycle Oriented?

OECD Reference: A.5.3.1.2

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Motorcycle-oriented upper-torso and upper-extremity clothing is any clothing sold exclusively or primarily for motorcycle riding.

MOTORCYCLE RIDER FORM

74. What Kind of Clothing Was on Your Lower Body?

OECD Reference: A.5.3.1.3

Convention/Coding Source: DSI

Element Attributes:

- (00) none (skip to # 76)
- (01) light cloth garment (e.g., thin cotton)
- (02) medium cloth garment (e.g., denim, nylon)
- (03) heavy cloth garment (e.g., imitation leather)
- (04) leather garment
- (05) Kevlar
- (06) armored nylon mesh
- (07) off-road, molded body armor
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

75. Was This Lower-Body Clothing Motorcycle Oriented?

OECD Reference: A.5.3.1.4

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Motorcycle-oriented lower-torso and lower-extremity clothing is any clothing sold exclusively or primarily for motorcycle riding.

MOTORCYCLE RIDER FORM

76. Were You Wearing an Inflatable Safety Vest?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

A body-protection device in the form of an inflatable vest includes an inflation mechanism that is actuated in response to the separation or removal of the wearer from a vehicle such as a motorcycle, ski-mobile, or personal water craft. Attached to the outside of the vest is a compressed gas cartridge that communicates with the interior of the vest through a cartridge actuation mechanism and an inflation tube. The cartridge actuation mechanism includes a triggering device that can be actuated to open the cartridge by means of an actuation lever. The actuation lever actuates the triggering device in response to a pulling force of predetermined magnitude, and in doing so, detaches from the actuation mechanism. The actuation lever is connected to the vehicle by a lanyard. When a wearer of the vest is forcibly separated from the vehicle, the lanyard exerts an actuation force on the actuation lever, which actuates the triggering device before detaching from the actuation mechanism, thereby opening the cartridge and allowing gas from the cartridge to inflate the vest. The vest is advantageously provided with a deflation tube and a deflation valve.

MOTORCYCLE RIDER FORM

77. What Kind of Shoes or Boots Were You Wearing?

OECD Reference: A.5.3.1.5

Convention/Coding Source: OECD

Element Attributes:

- (00) no shoes or boots, barefoot (skip to # 80)
- (01) light sandal
- (02) medium street shoe, loafer
- (03) athletic, training shoe
- (04) heavy shoe or boot
- (05) reinforced work boot or motorcycle boot
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The following definitions may be applied to determine the footwear material/type.

no shoes or boots, barefoot: The rider was not wearing footwear at the time of the crash.

light sandal: This applies to any open-toed shoe.

medium street shoe, loafer: This is a walking shoe with a leather sole and a leather upper covering

athletic, training shoe: This is a shoe used for athletic or training purposes, typically fabricated from nylon or leather with an elastomeric sole.

heavy shoe or boot: This is a strong boot or sturdy shoe typically composed of leather or heavy-duty nylon with a thick, solid sole.

reinforced work boot or motorcycle boot: This is a boot with some form of reinforcement that increases the stiffness and durability of the boot.

MOTORCYCLE RIDER FORM

78. Did This Footwear Go up Over Your Ankle?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no footwear worn
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

79. Was the Footwear Motorcycle Oriented?

OECD Reference: A.5.3.1.6

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no footwear worn
- (99) unknown

Range: 00, 01, 97, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Motorcycle-oriented footwear is any footwear that is sold exclusively or primarily for motorcycle riding.

MOTORCYCLE RIDER FORM

80. What Kind of Gloves Were You Wearing?

OECD Reference: A.5.3.1.7

Convention/Coding Source: DSI

Element Attributes:

- (00) none (skip to # 82)
- (01) light cloth garment (e.g., thin cotton)
- (02) medium cloth garment (e.g., denim, nylon)
- (03) heavy cloth garment (e.g., imitation leather)
- (04) leather garment
- (05) Kevlar
- (06) armored nylon mesh
- (07) off-road, molded body armor
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

81. Are the Gloves Motorcycle Oriented?

OECD Reference: A.5.3.1.8

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes, full-fingered
- (02) yes, shorties
- (97) not applicable, no gloves worn
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Motorcycle-oriented gloves are any gloves that are sold exclusively or primarily for motorcycle riding.

MOTORCYCLE RIDER FORM

82. Is Any of This Clothing Retroreflective? (Code up to Three Responses)

OECD Reference: None

Convention/Coding Source: DSI, MSF

Element Attributes:

- (00) no retroreflective clothing or gloves
- (01) upper body (shirt/jacket/vest)
- (02) lower body (pants/shorts)
- (03) gloves
- (04) special arm bands or similar items
- (97) not applicable, no clothing or gloves worn
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

retroreflective: This pertains to a surface, material, or device (retroreflector) that reflects light or other radiation back to its source, i.e., it is reflective. It also refers to materials that have been added to the item in order to increase nighttime conspicuity.

Retroreflective material used on clothing, the helmet, and the motorcycle helps to make the rider visible to other motorists, especially at night.

MOTORCYCLE RIDER FORM

83. What Is the Clothing Color of the Following?

Upper-Body Clothing _____
Lower-Body Clothing _____
Footwear _____
Gloves _____

OECD Reference: C.5.3.1.13, C.5.3.1.14, C.5.3.1.15, C.5.3.1.16

Convention/Coding Source: DSI

Element Attributes:

- (01) no dominating color, multicolored
- (02) white
- (03) yellow
- (04) black
- (05) red
- (06) blue
- (07) green
- (08) silver
- (09) orange
- (10) brown
- (11) purple
- (12) gold
- (13) grey
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 01–13, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

84. Are You Required to Wear Corrective Lenses When Riding/Driving?

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) no
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

no: Corrective eyeglasses/sunglasses or contact lenses are not required by the operator licensing agency for this rider.

yes: Corrective eyeglasses/sunglasses or contacts are required by the operator licensing agency for this rider.

unknown: It is not known if the rider is required to wear corrective eyewear while operating his or her motorcycle.

MOTORCYCLE RIDER FORM

85. What Kind of Eye Protection Were You Wearing at the Time of the Crash?

OECD Reference: A.5.1.1.14, A.5.3.1.9

Convention/Coding Source: DSI

Element Attributes:

- (00) none (skip to # 87)
- (01) clear, nonprescription glasses
- (02) clear, prescription glasses
- (03) nonprescription sunglasses
- (04) prescription sunglasses
- (05) goggles, nonprescription
- (06) goggles, prescription
- (07) industrial safety glasses
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The rider must have been wearing the glasses/lenses at the time of the crash.

MOTORCYCLE RIDER FORM

86. What Color Was the Eye-Coverage Lens?

OECD Reference: A.5.3.1.10

Convention/Coding Source: DSI

Element Attributes:

- (01) clear
- (02) green
- (03) grey, smoke
- (04) amber, yellow
- (05) blue
- (06) reflective (any color)
- (97) not applicable, not wearing eye coverage
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

87. Were You Injured in This Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no injuries (skip to # 89)
- (01) yes
- (99) unknown

Range: 00, 01, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the Rider/Occupant Injury Data Form described in Volume 1: Data Collection and Variable Naming.

MOTORCYCLE RIDER FORM

88. What Kind of Medical Treatment Did You Receive?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no treatment
- (01) on-scene emergency care only
- (02) treated and released at hospital/trauma center
- (03) admitted to hospital/trauma center
- (04) walk-in clinic
- (05) private physician
- (97) not applicable, no injury
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

89. How Old Were You at the Time of the Crash?

OECD Reference: A.5.1.1.3

Convention/Coding Source: DSI

Element Attributes:

(01–98)	actual age in years
(99)	unknown

Range: 01–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

90. What State/Country Issued Your Current Driver's License?

OECD Reference: A.5.1.1.4

Convention/Coding Source: DSI

Element Attributes:

- (00) no license
- (01) Canada
- (02) California
- (03) other State (list) _____
- (04) military
- (97) no license required (49cc scooter)
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

91. What Kind of Operator's License Is It? (Code up to Four; Input 00 for Remaining Responses)

OECD Reference: A.5.1.1.5.1, A.5.1.1.5.2, A.5.1.1.5.3, A.5.1.1.5.4

Convention/Coding Source: DSI

Element Attributes:

- (00) no license
- (01) learner's permit only
- (02) motorcycle license
- (03) automobile license
- (04) commercial license
- (05) motorcycle driver and competition license
- (06) license to transport people
- (07) heavy-truck license
- (08) no license required (49cc scooter)
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

92. What Year Was/Were the License(s) Issued? (List in the Same Order as Licenses in # 91)

OECD Reference: A.5.1.1.6.1, A.5.1.1.6.2, A.5.1.1.6.3, A.5.1.1.6.4

Convention/Coding Source: N/A

Element Attributes:

(1900–2100)	year of issuance
(9997)	not applicable
(9999)	unknown

Range: 1900–2100, 9997, 9999

Source:

Primary—rider interview
Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

93. How Many Times Have You Acquired a Motorcycle Learner's Permit?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00)	never
(01–96)	actual number of times
(97)	not applicable
(98)	other (specify)
(99)	unknown

Range: 00–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

94. How Long Have You Held a Motorcycle License? (Use Zeros to Fill in Blanks)

_____ years _____ months

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(00-96)	years
(97-97)	not applicable, no license held
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 97-97-99-99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

95. Are You of Hispanic or Latino Origin?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (02) refused to answer
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Primary—rider interview

Remarks: This variable is assigned by the investigator from the source.

Note that this variable is self-identified by the rider.

MOTORCYCLE RIDER FORM

96. What Is Your Race? (Code up to Three; Input 97 for Remaining Responses)

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) White
- (02) Black or African American
- (03) Asian
- (04) Native Hawaiian or other Pacific Islander
- (05) American Indian or Alaskan Native
- (06) refused to answer
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source: Primary—rider interview

Remarks: This variable is assigned by the investigator from the source.

Note that this variable is self-identified by the rider.

MOTORCYCLE RIDER FORM

97. What Is Your Height?

___ feet ___ inches

OECD Reference: A.5.1.1.9

Convention/Coding Source: DSI

Element Attributes:

(01-12) actual number of feet and inches
(09-99) unknown

Range: 01-12, 09-99

Source:

Primary—rider interview
Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

98. What Is Your Weight in Pounds?

OECD Reference: A.5.1.1.10

Convention/Coding Source: DSI

Element Attributes:

(001–996)	actual weight in pounds
(999)	unknown

Range: 001–996, 999

Source:

Primary—rider interview
Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

99. What Is Your Gender?

OECD Reference: A.5.1.1.11

Convention/Coding Source: DSI

Element Attributes:

- (01) male
- (02) female
- (99) unknown

Range: 01, 02, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

unknown: Select when the gender of the rider cannot be determined.

MOTORCYCLE RIDER FORM

100. How Much Formal Education Have You Had?

OECD Reference: A.5.1.1.12

Convention/Coding Source: OECD

Element Attributes:

- (00) no formal schooling
- (01) less than high school diploma
- (02) high school diploma or GED
- (03) partial college/university
- (04) college/university graduate
- (05) graduate school, advanced degree, professional degree
- (06) specialty/technical school
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

If permissible, compute the number of years of formal education that the rider has received. Include all schooling during the rider's early years of life (i.e., up to age 18) as well as any schooling at a college, university, or technical school.

101. What Is Your Current Occupation?

OECD Reference: A.5.1.1.13

Convention/Coding Source: U.S. Department of Labor

Element Attributes:

- (01) management
- (02) business and financial
- (03) computer and mathematical
- (04) architecture and engineering
- (05) life, physical, and social sciences
- (06) community and social services
- (07) legal
- (08) education, training, or library
- (09) arts, design, entertainment, sports, or media
- (10) healthcare practitioners and technical jobs
- (11) healthcare support
- (12) protective services
- (13) food preparation, serving, and related
- (14) building and grounds maintenance
- (15) personal care and services
- (16) sales and related
- (17) office and administrative support
- (18) farming, fishing, or forestry
- (19) construction or extraction
- (20) installation, maintenance, or repair
- (21) transportation and material moving
- (22) military
- (23) full-time student
- (97) not applicable, not in workforce at present
- (98) other (specify)
- (99) unknown

Range: 01–23, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The following descriptions may be used as a guideline to code this variable.

101. What Is Your Current Occupation? (Continued)

management: This group comprises the following occupations: chief executives; general and operations managers; legislators; advertising and promotions managers; marketing managers; sales managers; public relations managers; administrative services managers computer and information systems managers; financial managers; compensation and benefits managers; training and development managers; human resources managers, all other; industrial production managers; purchasing managers; transportation, storage, and distribution managers; farm, ranch, and other agricultural managers; farmers and ranchers construction managers; education administrators, preschool and child care center/program; education administrators, elementary and secondary school; education administrators, postsecondary; education administrators, all other; engineering managers; food service managers; funeral directors; gaming managers; lodging managers; medical and health services managers; natural sciences managers; postmasters and mail superintendents; property, real estate, and community association managers; social and community service managers; and managers, all other.

business and financial: This group comprises the following occupations: accountants and auditors; appraisers and assessors of real estate; budget analysts; claims adjusters, appraisers, examiners, and investigators; cost estimators; financial analysts and personal financial advisors; insurance underwriters; loan officers; management analysts; meeting and convention planners; tax examiners, collectors, and revenue agents.

architecture and engineering: This group comprises the following occupations: architects, except landscape and naval; landscape architects; cartographers and photogrammetrists; surveyors; aerospace engineers; agricultural engineers; biomedical engineers; chemical engineers; civil engineers; computer hardware engineers; electrical engineers; electronics engineers, except computer; environmental engineers; health and safety engineers, except mining safety engineers and inspectors; industrial engineers; marine engineers and naval architects; materials engineers; mechanical engineers; mining and geological engineers, including mining safety engineers; nuclear engineers; petroleum engineers; engineers, all other; architectural and civil drafters; electrical and electronics drafters; mechanical drafters; drafters, all other; aerospace engineering and operations technicians; civil engineering technicians; electrical and electronic engineering technicians; electro-mechanical technicians; environmental engineering technicians; industrial engineering technicians; mechanical engineering technicians; engineering technicians, except drafters, all other; and surveying and mapping technicians.

101. What Is Your Current Occupation? (Continued)

life, physical, and social sciences: This group comprises the following occupations: animal scientists; food scientists and technologists; soil and plant scientists; biochemists and biophysicists; microbiologists; zoologists and wildlife biologists; biological scientists, all other; conservation scientists; foresters; epidemiologists; medical scientists, except epidemiologists; life scientists, all other; astronomers; physicists; atmospheric and space scientists; chemists; materials scientists; environmental scientists and specialists, including health; geoscientists, except hydrologists and geographers; hydrologists; physical scientists, all other; economists; market research analysts; survey researchers; clinical, counseling, and school psychologists; industrial-organizational psychologists; psychologists, all other; sociologists; urban and regional planners; anthropologists and archeologists; geographers; historians; political scientists; social scientists and related workers, all other; agricultural and food science technicians; biological technicians chemical technicians; geological and petroleum technicians; nuclear technicians; social sciences research assistants; environmental science and protection technicians, including health; forensic science technicians; forest and conservation technicians; and life, physical.

community and social services: This group comprises the following occupations: substance abuse and behavioral disorder counselors; educational, vocational, and school counselors; marriage and family therapists; mental health counselors; rehabilitation counselors; counselors, all other; child, family, and school social workers; medical and public health social workers mental health and substance abuse social workers; social workers, all other; health educators; probation officers and correctional treatment specialists; social and human service assistants; community and social service specialists, all other; clergy; and directors, religious activities and education.

legal: This group comprises the following occupations: lawyers; administrative law judges, adjudicators, and hearing officers; arbitrators, mediators, and conciliators; judges, magistrate judges, and magistrates; paralegals and legal assistants; court reporters; law clerks; title examiners, abstractors, and searchers; and legal support workers, all other.

education, training, or library: This group comprises the following occupations: business teachers, postsecondary; computer science teachers, postsecondary; mathematical science teachers, postsecondary; architecture teachers, postsecondary; engineering teachers, postsecondary; agricultural sciences teachers, postsecondary; biological science teachers, postsecondary; forestry and conservation science teachers, postsecondary; atmospheric, earth, marine, and space sciences teachers, postsecondary; chemistry teachers, postsecondary; environmental science teachers, postsecondary; physics teachers, postsecondary; anthropology and archeology teachers, postsecondary; area, ethnic, and cultural studies teachers, postsecondary; economics teachers, postsecondary; geography teachers, postsecondary; political science teachers, postsecondary; psychology teachers, postsecondary; sociology teachers, postsecondary; social sciences teachers, postsecondary, all other; health specialties teachers, postsecondary; nursing instructors and teachers, postsecondary;

101. What Is Your Current Occupation? (Continued)

education teachers, postsecondary; library science teachers, postsecondary; criminal justice and law enforcement teachers, postsecondary; law teachers, postsecondary; social work teachers, postsecondary; art, drama, and music teachers, postsecondary; communications teachers, postsecondary; English language and literature teachers, postsecondary; foreign language and literature teachers, postsecondary; history teachers, postsecondary; philosophy and religion teachers, postsecondary; graduate teaching assistants; home economics teachers, postsecondary; recreation and fitness studies teachers, postsecondary; vocational education teachers, postsecondary; postsecondary teachers, all other; preschool teachers, except special education; kindergarten teachers, except special education; elementary school teachers, except special education; middle school teachers, except special and vocational education; vocational education teachers, middle school; secondary school teachers, except special and vocational education; vocational education teachers, secondary school; special education teachers, preschool, kindergarten, and elementary school; special education teachers, middle school; special education teachers, secondary school; adult literacy, remedial education, and GED teachers and instructors; self-enrichment education teachers; teachers and instructors, all other; archivists; curators; museum technicians and conservators; librarians; library technicians; audiovisual collections specialists; farm and home management advisors; instructional coordinators; teacher assistants; and education, training, and library workers, all other.

arts, design, entertainment, sports, or media: This group comprises the following occupations: art directors; craft artists; fine artists, including painters, sculptors, and illustrators; multimedia artists and animators; artists and related workers, all other; commercial and industrial designers; fashion designers; floral designers; graphic designers; interior designers; merchandise displayers and window trimmers; set and exhibit designers; designers, all other; actors producers and directors; athletes and sports competitors; coaches and scouts; umpires, referees, and other sports officials; dancers; choreographers; music directors and composers; musicians and singers; entertainers and performers, sports and related workers, all other; radio and television announcers; public address system and other announcers; broadcast news analysts; reporters and correspondents; public relations specialists; editors; technical writers; writers and authors; interpreters and translators; media and communication workers, all other; audio and video equipment technicians; broadcast technicians; radio operators; sound engineering technicians; photographers; camera operators, television, video, and motion picture; film and video editors; and media and communication equipment workers.

healthcare support: This group comprises the following occupations: home health aides; nursing aides, orderlies, and attendants; psychiatric aides; occupational therapist assistants; occupational therapist aides; physical therapist assistants; physical therapist aides; massage therapists; dental assistants; medical assistants; medical equipment preparers; medical transcriptionists; pharmacy aides; veterinary assistants and laboratory animal caretakers; and healthcare support workers.

101. What Is Your Current Occupation? (Continued)

protective services: This group comprises the following occupations: first-line supervisors/managers of correctional officers; first-line supervisors/managers of police and detectives; first-line supervisors/managers of firefighting and prevention workers; first-line supervisors/managers, protective service workers, all other; firefighters; fire inspectors and investigators; forest fire inspectors and prevention specialists; bailiffs; correctional officers and jailers; detectives and criminal investigators; fish and game wardens; parking enforcement workers; police and sheriff's patrol officers; transit and railroad police; animal control workers; private detectives and investigators; gaming surveillance officers and gaming investigators; security guards; crossing guards; lifeguards, ski patrol, and other recreational protective service workers; and protective service workers, all other.

food preparation, serving, and related: This group comprises the following occupations: chefs and head cooks; first-line supervisors/managers of food preparation and serving workers; cooks, fast food; cooks, institution and cafeteria; cooks, private household; cooks, restaurant; cooks, short order; cooks, all other; food preparation workers; bartenders; combined food preparation and serving workers, including fast food; counter attendants, cafeteria, food concession, and coffee shop; waiters and waitresses; food servers, nonrestaurant; dining room and cafeteria attendants and bartender helpers; dishwashers; hosts and hostesses, restaurant, lounge, and coffee shop; and food preparation and serving-related workers.

building and grounds maintenance: This group comprises the following occupations: first-line supervisors/managers of housekeeping and janitorial workers; first-line supervisors/managers of landscaping, lawn service, and groundskeeping workers; janitors and cleaners, except maids and housekeeping cleaners; maids and housekeeping cleaners; building cleaning workers, all other; pest control workers; landscaping and groundskeeping workers; pesticide handlers, sprayers, and applicators, vegetation; tree trimmers and pruners; and grounds maintenance workers, all other

personal care and service: This group comprises the following occupations: gaming supervisors; slot key persons; first-line supervisors/managers of personal service workers; animal trainers; nonfarm animal caretakers; gaming dealers; gaming and sports book writers and runners; gaming service workers, all other; motion picture projectionists; ushers, lobby attendants, and ticket takers; amusement and recreation attendants; costume attendants; locker room, coatroom, and dressing room attendants; entertainment attendants and related workers, all other; embalmers; funeral attendants; barbers ; hairdressers, hairstylists, and cosmetologists; makeup artists, theatrical and performance; manicurists and pedicurists; shampooers; skincare specialists; baggage porters and bellhops; concierges; tour guides and escorts; travel guides; flight attendants; transportation attendants, except flight attendants and baggage porters; childcare workers; personal and home care aides; fitness trainers and aerobics instructors; recreation workers; residential advisors; and personal care and service workers, all other.

101. What Is Your Current Occupation? (Continued)

sales and related: This group comprises the following occupations: advertising sales agents; cashiers; counter and rental clerks; demonstrators, product promoters, and models; insurance sales agents; real estate brokers and sales agents; retail salespersons; sales engineers; sales representatives, wholesale and manufacturing; sales worker supervisors; securities, commodities, and financial services sales agents; and travel agents.

office and administrative support: This group comprises the following occupations: financial clerks and bill and account collectors; billing and posting clerks and machine operators; bookkeeping, accounting, and auditing clerks; gaming cage workers; payroll and timekeeping clerks; procurement clerks; tellers, information and record clerks, and brokerage clerks; credit authorizers, checkers, and clerks; customer service representatives; file clerks; hotel, motel, and resort desk clerks; human resources assistants, except payroll and timekeeping; interviewers; library assistants, clerical; order clerks; receptionists and information clerks; reservation and transportation ticket agents and travel clerks; material recording, scheduling, dispatching, and distributing occupations and cargo and freight agents; couriers and messengers; dispatchers; meter readers, utilities; postal service workers; production, planning, and expediting clerks; shipping, receiving, and traffic clerks; stock clerks and order fillers; weighers, measurers, checkers, and samplers, recordkeeping; other office and administrative support occupations and communications equipment operators; computer operators; data entry and information processing workers; desktop publishers; office and administrative support worker supervisors and managers; office clerks, general; and secretaries and administrative assistants.

farming, fishing, or forestry: This group comprises the following occupations: agricultural workers; fishers and fishing vessel operators; and forest, conservation, and logging workers.

construction or extraction: This group comprises the following occupations: first-line supervisors/managers of construction trades and extraction workers; boilermakers; brickmasons and blockmasons; stonemasons; carpenters; carpet installers; floor layers, except carpet, wood, and hard tiles; floor sanders and finishers; tile and marble setters; cement masons and concrete finishers; terrazzo workers and finishers; construction laborers; paving, surfacing, and tamping equipment operators; pile-driver operators; operating engineers and other construction equipment operators; drywall and ceiling tile installers; tapers; electricians glaziers; insulation workers, floor, ceiling, and wall; insulation workers, mechanical; painters construction and maintenance; paperhangers; pipelayers; plumbers, pipefitters, and steamfitters; plasterers and stucco masons; reinforcing iron and rebar workers; roofers; sheet metal workers; structural iron and steel workers; helpers—brickmasons, blockmasons, stonemasons, and tile and marble setters; helpers—carpenters; helpers—electricians; helpers—painters, paperhangers, plasterers, and stucco masons; helpers—pipelayers, plumbers, pipefitters, and steamfitters; helpers—roofers; helpers, construction trades, all other; construction and building inspectors; elevator installers and repairers; fence erectors; hazardous materials removal workers;

101. What Is Your Current Occupation? (Continued)

highway maintenance workers; rail-track laying and maintenance equipment operators; septic tank servicers and sewer pipe cleaners; segmental pavers; construction and related workers, all other; derrick operators, oil and gas; rotary drill operators, oil and gas; service unit operators, oil, gas, and mining; earth drillers, except oil and gas; explosives workers, ordnance handling experts, and blasters; continuous mining machine operators; mine cutting and channeling machine operators; mining machine operators, all other; rock splitters, quarry; roof bolters, mining; roustabouts, oil and gas; helpers—extraction workers; and extraction workers, all other.

installation, maintenance, and repair: This group comprises the following occupations: electrical and electronic equipment mechanics, installers, and repairers and computer, automated teller, and office machine repairers; electrical and electronics installers and repairers; electronic home entertainment equipment installers and repairers; radio and telecommunications equipment installers and repairers; vehicle and mobile equipment mechanics, installers, and repairers and aircraft and avionics equipment mechanics and service technicians; automotive body and related repairers; automotive service technicians and mechanics; diesel service technicians and mechanics; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; other installation, maintenance, and repair occupations and coin, vending, and amusement machine servicers and repairers; heating, air-conditioning, and refrigeration mechanics and installers; home appliance repairers; industrial machinery mechanics and maintenance workers; line installers and repairers; maintenance and repair workers, general; millwrights; and precision instrument and equipment repairers.

transportation and material moving: This group comprises the following occupations: air transportation occupations—air traffic controllers; aircraft pilots and flight engineers; material moving occupations; motor vehicle operators—bus drivers; taxi drivers and chauffeurs; truck drivers and driver/sales workers; rail transportation occupations; and water transportation occupations.

MOTORCYCLE RIDER FORM

102. Are You Married?

OECD Reference: A.5.2.1.1.1

Convention/Coding Source: DSI

Element Attributes:

- (01) single
- (02) married
- (03) separated
- (04) divorced
- (05) widowed
- (06) cohabitating
- (98) other (specify)
- (99) unknown

Range: 01–06, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

103. How Many Children Do You Have?

OECD Reference: A.5.2.1.1.2

Convention/Coding Source: DSI

Element Attributes:

- (00) none
- (01) one
- (02) two
- (03) three
- (04) four
- (05) five
- (06) six or more
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE RIDER FORM

104. Blood Alcohol Concentration (BAC)? (Code Results in mg/100 ml)

OECD Reference: A.5.1.1.34

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(000)	negative BAC
(001–900)	test results in mg/100 ml
(995)	BAC tested, results not known
(996)	BAC not tested
(998)	other (specify)
(999)	unknown

Range: 000–900, 995, 996, 998, 999

Source: Primary—breath sample administered by investigator, police accident report, and medical records

Remarks: This variable is assigned by the investigator from the sources.

Blood Alcohol Concentration (BAC) analytically measures the mass of alcohol per unit volume of blood. The standard measure is expressed as the number of milligrams per deciliter (10th of a liter) expressed as a decimal (e.g., 0.05 = 50 mg/100 ml; 0.15 = 150 mg/100 ml).

When coding, for example, a BAC of 117 mg/dl is coded as 0.117.

MOTORCYCLE RIDER FORM

105. Source of BAC Information?

OECD Reference: A.5.1.1.35

Convention/Coding Source: DSI

Element Attributes:

- (00) not tested
- (01) breath testing
- (02) unknown if tested
- (03) tested, results unknown
- (04) tested, results not available
- (05) official records/ER/autopsy/PAR
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source:

Primary—rider interview

Secondary—passenger interview, police crash report, and medical records

Remarks: This variable is assigned by the investigator from the sources.

CONTROL MOTORCYCLE RIDER FORM

Case Number

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes: Case Number

Range: 0001–2000

Source: Primary—case assignment chart

Remarks: This variable is assigned by the investigator from the source.

Note that the assigned case number for this Control Motorcycle Rider Form will be the case number that has been assigned to the crash that is being investigated at the control study location.

CONTROL MOTORCYCLE RIDER FORM

Control Motorcycle Rider Number

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes: 001–900

Range: 001–900

Source: The source is assigned by the investigator.

Remarks: The control motorcycle rider number is assigned starting with 001 for the control study location based on the case number being investigated.

CONTROL MOTORCYCLE RIDER FORM

1. Where Did Your Trip Begin Today?

OECD Reference: A.5.1.1.1.25

Convention/Coding Source: DSI

Element Attributes:

- (01) home
- (02) work, business
- (03) recreation/social
- (04) school
- (05) errand, shopping
- (06) family, friends, relatives
- (07) meals, restaurant, café, etc.
- (08) transport someone
- (09) medical/dental
- (10) bar/pub
- (11) religious activity
- (12) personal business/obligations
- (98) other (specify)
- (99) unknown

Range: 01–12, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

2. Did You Do Any Safety or Maintenance Checks on Your Motorcycle Before Leaving for This Trip? (Code up to Four)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) none
- (01) exterior visual inspection only
- (02) checked fluids
- (03) checked lights
- (04) checked brakes
- (05) checked tire pressure
- (06) checked chain
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

3. Where Was Your Trip Destination?

OECD Reference: A.5.1.1.26

Convention/Coding Source: DSI

Element Attributes:

- (01) home
- (02) work, business
- (03) recreation/social
- (04) school
- (05) errand, shopping
- (06) family, friends, relatives
- (07) meals, restaurant, café, etc.
- (08) transport someone
- (09) medical/dental
- (10) bar/pub
- (11) religious activity
- (12) personal business/obligations
- (98) other (specify)
- (99) unknown

Range: 01–12, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

4. About How Many Miles Would the Trip Be One Way?

OECD Reference: A.5.1.1.27

Convention/Coding Source: OECD

Element Attributes:

(001)	1 mile or less
(002–995)	actual number of miles
(996)	996 miles or greater
(997)	not applicable
(999)	unknown

Range: 001–997, 999

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

A trip is defined as any time in which the motorcycle rider operates the vehicle and comes to a complete stop and dismounts from the vehicle. For example, travelling from the rider's home to the store and back to the rider's home would constitute two trips.

The trip length is the length of the trip as measured in miles.

CONTROL MOTORCYCLE RIDER FORM

5. How Frequently Do You Travel This Road on/in Any Vehicle?

OECD Reference: A.5.1.1.1.28

Convention/Coding Source: DSI

Element Attributes:

- (01) first time
- (02) daily use (i.e., once per day)
- (03) weekly use (i.e., once per week)
- (04) monthly use (i.e., once per month)
- (05) quarterly (i.e., once per quarter)
- (06) annually (i.e., once per year)
- (07) less than annually
- (99) unknown

Range: 01–07, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

6. How Long Have You Been Riding Today Since Your Trip Departure? (Use Zeros to Fill in Blanks)

_____ hours _____ minutes

OECD Reference: A.5.1.1.1.29

Convention/Coding Source: OECD

Element Attributes:

(00–24)	hours
(00–59)	minutes
(97–97)	not applicable
(98–98)	other (specify)
(99–99)	unknown

Range: 00–59, 97–97–99–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

A trip is defined as any time in which the motorcycle rider operates the vehicle and comes to a complete stop and dismounts from the vehicle. For example, travelling from the rider's home to the store and back to the rider's home would constitute two trips.

CONTROL MOTORCYCLE RIDER FORM

7. How Many Miles Have You Gone Since Your Trip Departure?

OECD Reference: None

Convention/Coding Source: OECD, DSI

Element Attributes:

(001)	1 mile or less
(002–995)	actual number of miles
(996)	996 miles or greater
(997)	not applicable, had not yet begun trip
(998)	other (specify)
(999)	unknown

Range: 001–999

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

A trip is defined as any time in which the motorcycle rider operates the vehicle and comes to a complete stop and dismounts from the vehicle. For example, travelling from the rider's home to the store and back to the rider's home would constitute two trips.

The trip length is the length of the trip as measured in miles.

CONTROL MOTORCYCLE RIDER FORM

8. What Was Your Travel Speed Just Before You Stopped for This Interview?

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(00)	stopped
(01–95)	actual miles per hour
(96)	96 mph or greater
(98)	other (specify)
(99)	unknown

Range: 00–96, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

Enter the travel speed for the motorcycle if it can be determined through all sources available. Enter the nearest miles per hour, or if the travel speed is reported as a range, enter the average.

stopped: Entered if the vehicle is stopped or indicated by the police as traveling less than 0.5 mph.

unknown: Select if the estimated travel speed is unknown.

CONTROL MOTORCYCLE RIDER FORM

9. When You Were Just Riding, Were You Wearing a Helmet?

OECD Reference: A.5.3.1.1.9

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes (skip to # 12)
- (02) helmet available but not used
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

10. What Is Your Reason for Not Wearing a Helmet?

OECD Reference: D.5.2.1.1.13

Convention/Coding Source: DSI

Element Attributes:

- (01) not required by law
- (02) no expectation of accident involvement
- (03) helmets are too expensive
- (04) helmets are inconvenient and uncomfortable
- (05) helmets reduce traffic awareness, limit hearing and vision
- (06) helmets are ineffective in reducing head injury
- (07) helmets cause neck injury
- (08) helmets cannot be used, physical or religious reasons
- (09) do not own a helmet
- (10) forgot to bring helmet today
- (97) not applicable, rider is wearing a helmet
- (98) other (specify)
- (99) unknown

Range: 01–10, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

11. Do You Ever Wear a Helmet?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 22)
- (01) yes (skip to # 20)
- (02) occasionally (skip to # 20)
- (97) not applicable, rider is wearing a helmet
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTROL MOTORCYCLE RIDER FORM

12. Was/Is Your Helmet Properly Adjusted on Your Head?

OECD Reference: A.5.3.1.1.10

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from source.

yes: The helmet was properly oriented on the wearer's head to provide maximum field of vision and maximum impact protection.

no: The helmet was on the rider's or passenger's head at the time of the crash/accident; however, it was oriented in such a fashion as to reduce the field of vision or the protective capacity of the helmet.

An example of an improperly adjusted helmet is a full-face helmet that has been partially donned and is resting on top of the wearer's head at the time of the accident. The retention system may or may not be fastened. Another example is an oversized helmet relative to the wearer's head that is rotated backward and secured with a loose retention strap.

not applicable, no helmet: There was no rider involvement in this accident, or no helmet was worn.

unknown: The investigator is unable to determine if the helmet was properly adjusted. This response may also be used if the investigator is not sure if a helmet was worn.

CONTROL MOTORCYCLE RIDER FORM

13. Was/Is Your Helmet Securely Fastened to Your Head?

OECD Reference: A.5.3.1.1.11

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

14. What Type of Helmet Is It?

OECD Reference: A.5.3.1.1.12

Convention/Coding Source: DSI

Element Attributes:

- (00) not a motorcycle helmet
- (01) half/police motor vehicle, motorcycle helmet
- (02) open-face motor vehicle, motorcycle helmet
- (03) full-face motor vehicle, motorcycle helmet
- (04) novelty or beanie helmet
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

half/police motor vehicle, motorcycle helmet: These helmets are built with an energy-absorbing liner (usually expanded polystyrene) and are certified as meeting the USDOT standard. These are the least intrusive style of motorcycle helmets, covering only the top half of the cranium. They weigh the least, do not block the ears, and offer the least wind resistance. They also afford the least protection and are the most likely to come off in a crash, even when properly fastened.

open-face motor vehicle, motorcycle helmet: This style is similar to that of a full-face helmet, but it does not wrap around the face. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A chinstrap secures the helmet, sometimes in the form of a chin cup. This type of helmet may have a flexible chin protector that resembles the chin bar of a full-face helmet and that snaps on and off. These removable chin bars (or gravel guards) are sometimes attached to helmets used in dirt bike riding. Such a flimsy attachment does not make it a full-face as it is still an open-face helmet with an accessory attachment.

14. What Type of Helmet Is It? (Continued)

full-face motor vehicle, motorcycle helmet: These helmets cover the entire head and most of the face. The hard shell extends from the brow over the cranium to the base of the skull at the top of the neck. The shell rides forward along the cheekbones to encompass the jaws and chin, leaving a wraparound view port. A transparent visor slides over the view port to block out wind blasts, rain, and dust and to ease eye fatigue. Most full-face motorcycle helmets are vented at the chin and within the shell. Vents normally have sliding doors for use in cold weather. The inner shell is highly padded, and the helmet has a chinstrap for securing. This style includes helmets with a moveable chin bar that can be unlatched to pivot upward, exposing the wearer's entire face.

novelty or beanie helmet: These helmets do not comply with USDOT regulations or any other performance requirements. Novelty helmets have only soft, comfort padding (similar to the comfort padding of USDOT-compliant helmets) inside the shell but no energy-absorbing foam. Riders may add what appears to be a USDOT sticker to the back in order to fool police, but that should not fool an investigator. Energy-absorbing foam is absolutely essential to passing the USDOT standard. Also, novelty helmets almost never identify the manufacturer, model, or date of manufacture.

CONTROL MOTORCYCLE RIDER FORM

14(A). Conformity to Which Qualification? (Code All That Apply; Input 97 for Remaining Responses)

OECD Reference: A.5.3.1.25.1, A.5.3.1.25.2, A.5.3.1.25.3, A.5.3.1.25.4

Convention/Coding Source: OECD

Element Attributes:

- (01) no standards labeled
- (02) ISO
- (03) ECE-22-02
- (04) ECE-22-03
- (05) ECE-22-04
- (06) E04 (EU)
- (07) BS6658A
- (08) BS6658B
- (09) JIS-A
- (10) JIS-B
- (11) JIS-C
- (12) FMVSS 218
- (13) SNELL M85
- (14) SNELL M90
- (15) ANSI Z90.1
- (16) CSA D230
- (17) TUV
- (18) DGM (Italy)
- (19) NF (France)
- (20) ASA (Australia)
- (21) CEN
- (22) FIM
- (23) SEI
- (24) M6.1 (Malay)
- (25) NZS (1214, 1215)
- (26) SSA # 9 (Singapore)
- (27) USDOT
- (98) other (specify)
- (99) unknown

Range: 01–27, 98, 99

Source: Primary—helmet

Remarks: This variable is assigned by the investigator from the source.

15. What Is the Type of Helmet Coverage?

OECD Reference: A.5.3.1.1.13

Convention/Coding Source: OECD

Element Attributes:

- (01) partial coverage
- (02) full coverage
- (03) full-facial coverage, integral chin bar but no face shield
- (04) full-facial coverage, removable chin bar
- (05) full-facial coverage, retractable chin bar
- (06) full-facial coverage, integral chin bar and face shield
- (07) open-face helmet with flat wraparound face shield
- (08) open-face helmet with bubble-type face shield
- (09) open-face helmet with visor/face-shield combo
- (10) open-face helmet with removable gravel guard
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 01–10, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

full coverage: This style is similar to that of a full-face helmet, but it does not wrap around the face. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A chinstrap secures the helmet, sometimes in the form of a chin cup.

15. What Is the Type of Helmet Coverage? (Continued)

full-facial coverage, integral chin bar but no face shield: This style is similar to that of a full-face helmet, but it does wrap around the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A full chin bar is incorporated into the design.

full-facial coverage, removable chin bar: This style is similar to that of a full-face helmet, but it has a removable chin bar that extends across the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears.

full-facial coverage, retractable chin bar: This style is similar to that of a full-face helmet, but it has a retractable chin bar that wraps across the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears.

full-facial coverage, integral chin bar and face shield: This helmet shell extends from the brow over the cranium to the base of the neck, and across the front of the face at the chin level. In addition, a transparent face shield covers the eye, nose, and mouth areas.

A wraparound face shield is a removable transparent covering that may extend over some portion of the eye, nose, and mouth areas. It can be attached to helmets at the sides of the head.

A bubble-type face shield is a large transparent covering in a curved, “bubble” shape that attaches to the front of an open-face helmet. It generally provides full facial protection.

open- face helmet with visor/face shield combo: This can be attached to helmets and provides transparent facial protection, with a visor overhang at the top of the unit.

CONTROL MOTORCYCLE RIDER FORM

16. What Is the Predominant Color of Your Helmet?

OECD Reference: A.5.3.1.1.14

Convention/Coding Source: DSI

Element Attributes:

- (01) no dominating color, multicolored
- (02) white
- (03) yellow
- (04) black
- (05) red
- (06) blue
- (07) green
- (08) silver, grey
- (09) orange
- (10) brown, tan
- (11) purple
- (12) gold
- (13) chrome, metallic
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 01–13, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

17. What Is the Color of the Face Shield?

OECD Reference: A.5.3.1.1.15

Convention/Coding Source: DSI

Element Attributes:

- (01) clear
- (02) green
- (03) grey, smoke
- (04) amber, yellow
- (05) blue
- (06) reflective (any color)
- (97) not applicable, no face shield
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

18. Do You Own This Helmet?

OECD Reference: A.5.3.1.1.16

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

19. How Well Does This Helmet Fit?

OECD Reference: A.5.3.1.1.17

Convention/Coding Source: OECD

Element Attributes:

- (01) acceptable fit
- (02) too large, too loose
- (03) too small, too tight
- (04) contour mismatch
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 01–04, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

The following definitions may be applied in order to assist in the determination of proper helmet fit.

acceptable fit: This refers to a helmet that is the correct size for the wearer. An acceptable fitting helmet will not move excessively when properly adjusted and retained on the wearer's head.

too large, too loose: This refers to a helmet that is too large given the size for the wearer's head. A helmet that is too large and too loose will move excessively on the wearer's head during normal use. The investigator should look for helmet-induced injuries as a result of excessive helmet movement in order to assist in the identification of a helmet that is too large. Typical helmet-induced injuries due to excessive helmet motion may include lacerations to the bridge of the nose or to the maxillary region. Helmet ejection in the presence of a fastened retention system is also evidence that suggests the helmet was too large for the wearer.

CONTROL MOTORCYCLE RIDER FORM

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19. How Well Does This Helmet Fit? (Continued)

too small, too tight: This refers to a helmet that is too small given the size of the wearer's head. A helmet that is too small and too tight may remain on the wearer's head even if the retention system is not properly fastened. It may also rest higher on the wearer's head given the fact that it cannot be fully donned due to its small size.

contour mismatch: The helmet size is correct for the rider's head circumference, but the rider's head is long and narrow or short and wide or otherwise unusual.

not applicable, no helmet: No helmet was worn.

CONTROL MOTORCYCLE RIDER FORM

20. What Percentage of Time Do You Wear Your Helmet When Riding? (Code 001–100%)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(000)	never wear a helmet (skip to # 22)
(001–100)	percent helmet worn
(997)	not applicable, no helmet
(999)	unknown

Range: 000–100, 997, 999

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

Record the percentage of time that the rider wears a helmet while riding. If the rider does not wear a helmet, 000 is the correct response for the variable. If the rider wears a helmet all the time while riding a motorcycle, then the percent should be 100. If the rider's response was that he or she does not wear a helmet 25 percent of the time, then code 75 as the percent of time the rider does wear the helmet.

CONTROL MOTORCYCLE RIDER FORM

21. Under What Conditions Do You Usually Wear Your Helmet? (Code up to Four; Input 97 for Remaining Responses)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) never uses helmet
- (01) mostly on long trips
- (02) mostly in high-speed highway or freeway traffic
- (03) in adverse weather
- (04) usually, but not in hot weather
- (05) always
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

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22. Do You Have Any of the Following Permanent Physical Conditions? (Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.5.1.1.1.35.1, A.5.1.1.1.35.2, A.5.1.1.1.35.3

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) vision reduction or loss
- (02) hearing reduction or loss
- (03) respiratory, cardiovascular condition
- (04) paraplegia
- (05) amputee
- (06) neurological, epilepsy, stroke
- (07) endocrine system, diabetes, digestive system
- (08) infirmity, arthritis, senility
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

respiratory system: The respiratory system consists of airways, lungs, and respiratory muscles that mediate the movement of air in and out of the body.

cardiovascular condition: The cardiovascular system is made up of blood vessels, also known as the circulatory system, that work in conjunction with the beating heart. Cardiovascular (heart and circulatory) diseases are diseases of the heart and blood vessel system; examples include coronary heart disease, heart attack, high blood pressure, peripheral vascular disease, and stroke. All of these relate to the circulatory system as well.

paraplegia: This is an impairment in motor and/or sensory function of the lower extremities. It is usually the result of a spinal cord injury or a congenital condition such as spina bifida, which affects the neural elements of the spinal canal. The area of the spinal canal, which is affected in paraplegia, is either the thoracic, lumbar, or sacral regions. If the arms are also affected by paralysis, tetraplegia is the proper terminology.

amputee: Amputation is the removal of a body extremity by trauma or surgery.

CONTROL MOTORCYCLE RIDER FORM

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22. Do You Have Any of the Following Permanent Physical Conditions? (Continued)

neurological: The nervous system is a highly specialized network in which principal components are cells called neurons. Neurons are interconnected in complex arrangements and use electrochemical signals to conduct a great variety of stimuli both within the nervous tissue as well as from and toward most other tissues. Thus, neurons coordinate multiple functions in organisms.

epilepsy: This is a brain disorder that causes recurring seizures. Seizures happen when clusters of nerve cells, or neurons, in the brain send out the wrong signals. People may have strange sensations and emotions, behave strangely, have violent muscle spasms, or lose consciousness.

stroke: Strokes happen when blood flow to the brain stops. There are two kinds of strokes. The more common stroke, ischemic, is caused by a blood clot that blocks or plugs a blood vessel in the brain. The other stroke, hemorrhagic, is caused by a blood vessel that breaks and bleeds into the brain. Ministrokes or transient ischemic attacks (TIAs) occur when the blood supply to the brain is briefly interrupted.

endocrine system: The glands and parts of glands that produce endocrine secretions help to integrate and control bodily metabolic activity. This includes the pituitary, thyroid, parathyroids, adrenals, islets of Langerhans, ovaries, and testes.

diabetes: This is a disease in which blood glucose, or sugar, levels are too high. Glucose comes from food. Insulin is a hormone that helps glucose get into cells to give them energy. With Type 1 diabetes, the body does not make insulin. With Type 2 diabetes, the more common type, the body does not make or use insulin well. Without enough insulin, glucose stays in the blood.

digestive system: This refers to the bodily system concerned with the ingestion, digestion, and absorption of food.

infirmity: This is a bodily ailment or weakness, especially one brought on by old age, frailty or feebleness, a condition or disease producing weakness, or a failing or defect in a person's character.

arthritis: Pain and stiffness or having trouble moving around might indicate arthritis. Most kinds of arthritis cause pain and swelling in the joints. Joints are places where two bones meet, such as the elbow or knee. Over time, a swollen joint can become severely damaged. Some kinds of arthritis might also cause problems in organs such as eyes or skin.

senility: More commonly referred to as "dementia," senility is characterized by a decrease in cognitive abilities. This may include the person's ability to concentrate, recall information, and properly judge a situation. In addition, the personality of someone with senility may change. A person in the advanced stages of senility may be unsure of whom he or she is.

CONTROL MOTORCYCLE RIDER FORM

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23. When You Were Riding, Were You Experiencing Any of the Following? (Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.5.1.1.1.36.1, A.5.1.1.1.36.2, A.5.1.1.1.36.3

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) fatigue
- (02) hunger
- (03) thirst
- (04) elimination urgency
- (05) muscle spasm, cramp, itch
- (06) headache, minor malaise, fever
- (07) siesta syndrome (tired in the afternoon)
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

fatigue: This is a feeling of weariness, tiredness, or lack of energy.

hunger: This is a craving or urgent need for food or a specific nutrient. Hunger is an uneasy sensation and/or a weakened condition brought about by prolonged lack of food.

thirst: This is a sensation of dryness in the mouth and throat associated with a desire for liquids. The bodily condition known as dehydration induces this sensation. Thirst is also a basic desire or need to drink.

elimination urgency: This is the state in which the individual experiences a disturbance in urine elimination.

muscle spasm, cramp, itch: This is an involuntary contraction of a muscle. Muscle cramps are involuntary and often painful contractions (movements) of the muscles.

headache: The most common type of headache is a tension headache. Tension headaches are due to tight muscles in the shoulders, neck, scalp, and jaw. They are often related to stress, depression, or anxiety. Tension headaches are more likely for those who work too much, miss meals, use alcohol, or do not get enough sleep.

CONTROL MOTORCYCLE RIDER FORM

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23. At the Time of the Crash, Were You Experiencing Any of the Following? (Continued)

minor malaise: This is a generalized feeling of discomfort, illness, or lack of well-being. It can be associated with a disease. Malaise can be accompanied by a feeling of exhaustion or not having enough energy to accomplish usual activities.

fever: This is a body temperature that is higher than normal. It is not an illness. It is part of the body's defense against infection. Most bacteria and viruses that cause infections do well at the body's normal temperature (98.6 °F), and a slight fever can make it harder for them to survive because a fever also activates the body's immune system.

siesta syndrome (tired in the afternoon): This can be best described as the tired, groggy feeling experienced in the afternoon. Some people call it a "food coma" or "afternoon lull."

CONTROL MOTORCYCLE RIDER FORM

**24. When You Were Riding, Were You Concerned About Any of the Following Issues?
(Code up to Three; Input 00 for Remaining Responses)**

OECD Reference: A.5.1.1.1.37.1, A.5.1.1.1.37.2, A.5.1.1.1.37.3

Convention/Coding Source: DSI

Element Attributes:

- (00) no problems
- (01) conflict with friends, relatives, divorce, separation
- (02) work-related problems
- (03) financial distress
- (04) school problems
- (05) legal, police problems
- (06) reward stress
- (07) traffic conflict, road rage
- (08) death of family or friend
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

25. How Many Hours of Sleep Did You Have in the Past 24 Hours?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00)	no sleep
(01–24)	number of hours slept
(98)	other (specify)
(99)	unknown

Range: 00–24, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

26. Did You Drink Any Alcohol or Take Any Drugs or Medications Within the Past 24 Hours?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 29)
- (01) alcohol use only (skip to # 29)
- (02) drug/medication use only
- (03) combined alcohol and drug/medication use
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

27. What Is the Type of Drugs Other Than Alcohol?

OECD Reference: A.5.1.1.37

Convention/Coding Source: NASS,⁽⁴⁾ DSI

Element Attributes:

- (00) no drugs other than alcohol
- (01) stimulant
- (02) depressant
- (03) drugs taken, type unknown
- (04) multiple drugs taken
- (05) blood pressure/blood thinner
- (06) insulin/diabetes medicine
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–06, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

stimulant: This is a drug that temporarily quickens some vital processes.

depressant: This includes any drug that reduces or tends to reduce the function of a system or organ of the body.

The phrase “other drug present” includes all prescription and over-the-counter medications, as well as illicit substances (e.g., marijuana, cocaine, heroin). Also, “other drug present” means that the driver had ingested another drug prior to the crash, but it is not an indication that the drug usage was in any way the cause of the crash, even though it may have been. Finding other drugs on the motorcycle does not constitute presence by itself.

CONTROL MOTORCYCLE RIDER FORM

28. What Is the Source of Drugs Other Than Alcohol? (Code Three Responses)

OECD Reference: A.5.1.1.38

Convention/Coding Source: DSI

Element Attributes:

- (00) no drugs other than alcohol
- (01) prescription
- (02) nonprescription, over the counter
- (03) illegal
- (97) not applicable
- (99) unknown

Range: 00–03, 97, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

prescription drug: This is a licensed medicine that is regulated by legislation to require a prescription before it can be obtained.

CONTROL MOTORCYCLE RIDER FORM

29. Are You the Owner of This Motorcycle?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 32)
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

30. Where Did You Purchase This Motorcycle?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) dealership (store front or internet)
- (02) family, friend, or neighbor
- (03) newspaper ad or internet ad
- (04) motorcycle was a gift
- (05) salvage/junkyard
- (06) private party
- (97) not applicable, rider does not own this motorcycle
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

31. How Long Have You Owned the Motorcycle? (Use Zeros to Fill in Blanks)

_____ years ____ months

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(00-96)	years
(97-97)	not applicable, rider does not own this motorcycle
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 97-97-99-99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

32. How Long Have You Operated a Street Motorcycle? (Use Zeros to Fill in Blanks)

_____ years _____ months

OECD Reference: A.5.1.1.1.12

Convention/Coding Source: DSI

Element Attributes:

(00-00)	this is the first time
(00-11)	months
(00-96)	years
(97-97)	not applicable
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 97-97-99-99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

33. How Long Have You Operated the Motorcycle You Were Just Riding? (Use Zeros to Fill in Blanks)

_____ years _____ months

OECD Reference: A.5.1.1.1.13

Convention/Coding Source: DSI

Element Attributes:

(00-00)	this is the first time
(00-11)	months
(00-96)	years
(97-97)	not applicable
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 97-97-99-99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

34. What Is the Average Number of Days per Year That You Ride Motorcycles?

OECD Reference: A.5.1.1.1.14

Convention/Coding Source: DSI

Element Attributes:

(001–365)	actual number of days per year
(998)	other (specify)
(999)	unknown

Range: 001–365, 998, 999

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

35. About How Many Miles per Year Do You Ride a Motorcycle?

OECD Reference: A.5.1.1.1.16

Convention/Coding Source: DSI

Element Attributes:

(00000)	none
(00001–99995)	actual number of miles
(99996)	99,996 miles and greater
(99998)	other (specify)
(99999)	unknown

Range: 00000–99996, 99998, 99999

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

36. What Kind of Motorcycle Training Have You Had?

OECD Reference: A.5.1.1.1.16

Convention/Coding Source: DSI

Element Attributes:

- (00) none (after all other responses, skip to # 38)
- (01) State-recognized, entry-level motorcycle course
- (02) experienced-rider course
- (03) high-performance/competitive-track course
- (04) self-taught
- (05) taught by family and/or friends
- (06) multiple courses
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

state-recognized, entry-level course: Examples of entry-level motorcycle courses include sponsored courses from the Motorcycle Safety Foundation such as BRC, MRC, or RSS. State-sponsored courses, such as those offered through TEAM Oregon, would also qualify.

experienced-rider course: This course includes instruction like that found in the MSF Rider's Edge course or North Carolina's BikeSafe program.

high-performance/competitive-track course: These include classes such as the Pridgemore California Super Bike School.

CONTROL MOTORCYCLE RIDER FORM

37. Please Tell Me the Reason for Not Taking Motorcycle Safety Training? (Then Skip to # 39)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) not offered
- (02) enrolled for future date
- (03) tried unsuccessfully to enroll
- (04) not interested/do not need it
- (05) cost
- (97) not applicable, took training
- (98) other (specify)
- (99) unknown

Range: 01–05, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

38. In What Years Have You Taken Any Formal Motorcycle Training? (Code up to Three)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(1900–2100)	actual year of training
(9997)	not applicable
(9999)	unknown

Range: 1900–2100, 9997, 9999

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

Begin with the most recent course and work backward.

CONTROL MOTORCYCLE RIDER FORM

39. How Old Were You When You First Began to Ride a Street Motorcycle? (Code Actual Age in Years)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00)	never rode before or barely rides
(01–96)	actual age in years
(98)	other (specify)
(99)	unknown

Range: 00–96, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

40. Were There Years in Which You Did Not Ride a Motorcycle?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 42)
- (01) yes
- (97) not applicable, never rode before
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

41. How Many Years Was Your Most Recent Hiatus?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00)	never stopped riding
(01–96)	actual number of years
(97)	not applicable, never rode before
(98)	other (specify)
(99)	unknown

Range: 00–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

42. When You Ride or Drive, What Is the Percentage of Time You Ride a Motorcycle Versus Driving Another Type of Vehicle? (Indicate Percent of Total Riding/Driving Time for Each Category)

Motorcycle _____
Other-Vehicle Type _____
100%

OECD Reference: A.5.1.1.21.2, A.5.1.1.21.3

Convention/Coding Source: OECD

Element Attributes:

(000)	first-time use
(001–100)	percent
(997)	not applicable
(999)	unknown

Range: 000–100, 997, 999

Source:

Primary—control rider interview
Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

When you ride or drive, what is the percentage of time you ride an MC versus driving another type of vehicle?

Record the percentage of time or use that the motorcycle is used for recreational purposes (i.e., riding for pleasure) and the percentage of time or use that the motorcycle is used for basic transportation purposes (i.e., work, school, shopping, etc.). If the person does not use the motorcycle for recreation or basic transportation, code 000 in the appropriate category. The total percent usage for any one person must total 100 percent.

For example, if the motorcycle operator uses the motorcycle to run errands and commute to and from work approximately 40 percent of the time, the motorcycle is used for recreational purposes for the remaining 60 percent of the time.

CONTROL MOTORCYCLE RIDER FORM

43. When You Ride a Motorcycle, What Is the Percentage of Time You Use It for Each of These Categories? (Indicate Percent of Total Riding/Driving Time for Each Category)

Recreation _____
Basic Transportation _____
100%

OECD Reference: A.5.1.1.21.2, A.5.1.1.21.3

Convention/Coding Source: OECD

Element Attributes:

(000)	first-time use
(001–100)	percent
(997)	not applicable
(999)	unknown

Range: 000–100, 997, 999

Source:

Primary—control rider interview
Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the percentage of time or use that the motorcycle is used for recreational purposes (i.e., riding for pleasure) and the percentage of time or use that the motorcycle is used for basic transportation purposes (i.e., work, school, shopping, etc.). If the person does not use the motorcycle for recreation or basic transportation, code 000 in the appropriate category. The total percent usage for any one person must total 100 percent.

For example, if the motorcycle operator uses the motorcycle to run errands and commute to and from work approximately 40 percent of the time, the motorcycle is used for recreational purposes for the remaining 60 percent of the time.

CONTROL MOTORCYCLE RIDER FORM

44. How Long Have You Been Driving Any Kind of Motor Vehicle?

_____ years ____ months

OECD Reference: A.5.1.1.1.11

Convention/Coding Source: DSI

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(00-96)	years
(97-97)	not applicable, never operated a motorcycle
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 97-97-99-99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

45. How Many Miles per Year Do You Drive a Car or Truck?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00000)	none, do not drive a car or truck
(00001–99995)	actual number of miles
(99996)	99,996 miles and greater
(99998)	other (specify)
(99999)	unknown

Range: 00000–99996, 99998, 99999

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

46. Have You Ever Had Any Car or Truck Driver Training?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no training
- (01) self-taught
- (02) taught by family or friends
- (03) official driver-training class
- (04) voluntary driver's education
- (05) compulsory driver's education
- (06) professional training for commercial license
- (07) compulsory motor-vehicle training ordered by judge, police, etc.
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

47. How Many Moving Traffic Convictions Have You Had in the Previous 5 Years? (Code the Total Number of Moving Traffic Convictions From—Any Vehicle)

OECD Reference: A.5.1.1.1.24

Convention/Coding Source: DSI

Element Attributes:

(00)	none
(01–96)	actual number of convictions
(99)	unknown

Range: 00–96, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

**48. How Many Motorcycle Moving Traffic Crashes Have You Had in the Past 5 Years?
(Code the Total Number of Previous Motorcycle Crashes)**

OECD Reference: A.5.1.1.1.23

Convention/Coding Source: DSI

Element Attributes:

(00)	none
(01–96)	actual number of crashes
(99)	unknown

Range: 00–96, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

49. How Many Car or Truck Traffic Crashes Have You Had in the Past 5 Years? (Code the Total Number of Previous Car or Truck Crashes)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00)	none
(01–96)	actual number of crashes
(99)	unknown

Range: 00–96, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

50. How Much Experience Do You Have Riding With Passengers on a Motorcycle?

OECD Reference: A.5.1.1.1.18

Convention/Coding Source: OECD

Element Attributes:

- (00) never carry passenger(s)
- (01) first time carrying passenger(s)
- (02) very little experience
- (03) moderate experience
- (04) extensive experience
- (97) not applicable, no passenger
- (99) unknown

Range: 00–04, 97, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

The following definitions may be applied to determine the amount of experience that the rider has riding with a passenger or multiple passengers on motorcycles.

never carry passenger(s): The rider has no previous experience riding with a passenger prior to this crash.

first time carrying passenger(s): This was the rider's very first time riding with a passenger or multiple passengers.

very little experience: The rider's experience riding with passengers on motorcycles is between 1 and 10 percent of the time that he or she rides.

moderate experience: The rider's experience riding with passengers on motorcycles is between 11 and 50 percent of the time that he or she rides.

extensive experience: The rider's experience riding with passengers on motorcycles is over 50 percent of the time that he or she rides.

not applicable, no passenger: There was no passenger involvement in this crash.

CONTROL MOTORCYCLE RIDER FORM

51. How Much Experience Do You Have Riding With Cargo/Luggage?

OECD Reference: A.5.1.1.1.20

Convention/Coding Source: OECD

Element Attributes:

- (00) no experience with cargo/luggage
- (01) first time
- (02) seldom carries similar cargo/luggage
- (03) frequently carries similar cargo/luggage
- (04) always carries similar cargo/luggage
- (97) not applicable
- (99) unknown

Range: 00–04, 97, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

The following definitions may be applied in order to assist in the determination of the amount of experience that the passenger has riding as a passenger on motorcycles:

no experience with cargo/luggage: The rider has no previous experience riding with cargo/luggage prior to this crash.

first time: This was the rider's first time riding with cargo/luggage.

seldom carries similar cargo/luggage: The rider's experience riding with similar cargo/luggage on motorcycles is between 1 and 10 percent of the time that he or she rides.

frequently carries similar cargo/luggage: The rider's experience riding with similar cargo/luggage on motorcycles is between 11 and 50 percent of the time that he or she rides.

always carries similar cargo/luggage: The rider's experience riding with similar cargo/luggage on motorcycles is 100 percent of the time that he or she rides.

not applicable: There was no cargo/luggage involvement in this crash.

CONTROL MOTORCYCLE RIDER FORM

52. Are You a Motorcycle Club Member?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (99) unknown

Range: 00, 01, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

53. Were You Riding With Other Motorcyclists?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 57)
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

54. How Many Other Motorcycles Were in the Group?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00)	none, no group
(01–95)	actual number of motorcycles
(96)	96 motorcycles or greater
(98)	other (specify)
(99)	unknown

Range: 00–96, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

55. Was the Group Riding in a Specific Formation?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) none, no group (skip to # 57)
- (01) single file
- (02) staggered
- (03) side by side
- (04) no formation
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

56. If in a Formation, Where Was Your Motorcycle in That Formation?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) not in formation
- (01) front area
- (02) middle area
- (03) rear area
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–03, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

57. What Kind of Clothing Was on Your Upper Body?

OECD Reference: A.5.3.1.1.1

Convention/Coding Source: DSI

Element Attributes:

- (00) none (skip to # 59)
- (01) light cloth garment (e.g., thin cotton)
- (02) medium cloth garment (e.g., denim, nylon)
- (03) heavy cloth garment (e.g., imitation leather)
- (04) leather garment
- (05) Kevlar
- (06) armored nylon mesh
- (07) off-road, molded body armor
- (08) armored leather
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

58. Is This Upper-Body Clothing Motorcycle Oriented?

OECD Reference: A.5.3.1.1.2

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

Motorcycle-oriented upper-torso and upper-extremity clothing is any clothing sold exclusively or primarily for motorcycle riding.

CONTROL MOTORCYCLE RIDER FORM

59. What Kind of Clothing Is on Your Lower Body?

OECD Reference: A.5.3.1.1.3

Convention/Coding Source: DSI

Element Attributes:

- (00) none (skip to # 61)
- (01) light cloth garment (e.g., thin cotton)
- (02) medium cloth garment (e.g., denim, nylon)
- (03) heavy cloth garment (e.g., imitation leather)
- (04) leather garment
- (05) Kevlar
- (06) armored nylon mesh
- (07) off-road, molded body armor
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

60. Is This Lower-Body Clothing Motorcycle Oriented?

OECD Reference: A.5.3.1.1.4

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

Motorcycle-oriented lower-torso and lower-extremity clothing is any clothing sold exclusively or primarily for motorcycle riding.

CONTROL MOTORCYCLE RIDER FORM

61. Are You Wearing an Inflatable Safety Vest?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

A body-protection device in the form of an inflatable vest includes an inflation mechanism that is actuated in response to the separation or removal of the wearer from a vehicle such as a motorcycle, skimobile, or personal water craft. Attached to the outside of the vest is a compressed gas cartridge that communicates with the interior of the vest through a cartridge actuation mechanism and an inflation tube. The cartridge actuation mechanism includes a triggering device that can be actuated to open the cartridge by means of an actuation lever. The actuation lever actuates the triggering device in response to a pulling force of predetermined magnitude, and in doing so, detaches from the actuation mechanism. The actuation lever is connected to the vehicle by a lanyard. When a wearer of the vest is forcibly separated from the vehicle, the lanyard exerts an actuation force on the actuation lever, which actuates the triggering device before detaching from the actuation mechanism, thereby opening the cartridge and allowing gas from the cartridge to inflate the vest. The vest is advantageously provided with a deflation tube and a deflation valve. A motorcycle inflatable safety vest provides a cushion of air around the wearer's torso.

CONTROL MOTORCYCLE RIDER FORM

62. What Kind of Shoes or Boots Are You Wearing?

OECD Reference: A.5.3.1.1.5

Convention/Coding Source: OECD

Element Attributes:

- (00) no shoes or boots, barefoot (skip to # 65)
- (01) light sandal
- (02) medium street shoe, loafer
- (03) athletic, training shoe
- (04) heavy shoe or boot
- (05) reinforced work boot or motorcycle boot
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

The following definitions may be applied to determine the footwear material/type.

no shoes or boots, barefoot: The rider was not wearing footwear at the time of the crash.

light sandal: This is any open-toed shoe.

medium street shoe, loafer: This is a walking shoe with a leather sole and a leather upper.

athletic, training shoe: This is a shoe used for athletic or training purposes, typically fabricated from nylon or leather with an elastomeric sole.

heavy shoe or boot: This is a strong boot or sturdy shoe typically composed of leather or heavy-duty nylon with a thick, solid sole.

reinforced work boot or motorcycle boot: This is a boot with some form of reinforcement to increase the stiffness and durability of the boot.

CONTROL MOTORCYCLE RIDER FORM

63. Does This Footwear Go up Over Your Ankle?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no footwear worn
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

64. Is the Footwear Motorcycle Oriented?

OECD Reference: A.5.3.1.1.6

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no footwear worn
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

Motorcycle-oriented footwear is any footwear that is sold exclusively or primarily for motorcycle riding.

CONTROL MOTORCYCLE RIDER FORM

65. What Kind of Gloves Are You Wearing?

OECD Reference: A.5.3.1.1.7

Convention/Coding Source: DSI

Element Attributes:

- (00) none (skip to # 67)
- (01) light cloth garment (e.g., thin cotton)
- (02) medium cloth garment (e.g., denim, nylon)
- (03) heavy cloth garment (e.g., imitation leather)
- (04) leather garment
- (05) Kevlar
- (06) armored nylon mesh
- (07) off-road, molded body armor
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

66. Are the Gloves Motorcycle Oriented?

OECD Reference: A.5.3.1.1.8

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) yes, full-fingered
- (02) yes, shorties
- (97) not applicable, no gloves worn
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

Motorcycle-oriented gloves are any gloves that are sold exclusively or primarily for motorcycle riding.

CONTROL MOTORCYCLE RIDER FORM

67. Is Any of This Clothing Retroreflective? (Code up to Three Responses)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no retroreflective clothing or gloves
- (01) upper body (shirt/jacket/vest)
- (02) lower body (pants/shorts)
- (03) gloves
- (04) special arm bands or similar items
- (97) not applicable, no clothing or gloves worn
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

retroreflective: This refers to a surface, material, or device (retroreflector) that reflects light or other radiation back to its source (reflective).

CONTROL MOTORCYCLE RIDER FORM

68. What Is the Clothing Color of the Following?

Upper-Body Clothing _____
Lower-Body Clothing _____
Footwear _____
Gloves _____

OECD Reference: D.5.3.1.6.1, D.5.3.1.6.2, D.5.3.1.6.3, D.5.3.1.6.4

Convention/Coding Source: DSI

Element Attributes:

- (01) no dominating color, multicolored
- (02) white
- (03) yellow
- (04) black
- (05) red
- (06) blue
- (07) green
- (08) silver
- (09) orange
- (10) brown
- (11) purple
- (12) gold
- (13) grey
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 01–13, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

69. Are You Required to Wear Corrective Lenses When Riding/Driving?

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) no
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

The rider must be wearing the glasses/lenses at the time of the crash.

no: No corrective eyeglasses/sunglasses or contact lenses were worn by this rider.

yes: corrective eyeglasses/sunglasses or contact lenses were worn by this rider

unknown: It is not known if the rider was wearing eyewear at the time of crash.

CONTROL MOTORCYCLE RIDER FORM

70. What Kind of Eye Protection Are You Wearing Now?

OECD Reference: A.5.1.1.1.10

Convention/Coding Source: DSI

Element Attributes:

- (00) none (skip to # 72)
- (01) clear, nonprescription glasses
- (02) clear, prescription glasses
- (03) nonprescription sunglasses
- (04) prescription sunglasses
- (05) goggles, nonprescription
- (06) goggles, prescription
- (07) industrial safety glasses
- (08) contacts
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

The rider must be wearing the glasses/lenses at the time of the time of the interview.

CONTROL MOTORCYCLE RIDER FORM

71. What Color Is the Eye-Coverage Lens?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) clear
- (02) green
- (03) grey, smoke
- (04) amber, yellow
- (05) blue
- (06) reflective (any color)
- (97) not applicable, not wearing eye coverage
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

72. How Old Are You? (Code Actual Age in Years)

OECD Reference: A.5.1.1.1.2

Convention/Coding Source: DSI

Element Attributes:

(01–95)	actual age in years
(96)	96 years or greater
(99)	unknown

Range: 01–96, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

73. What State/Country Issued Your Current Driver's License?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no license
- (01) Canada
- (02) California
- (03) other State (list)
- (04) military
- (97) no license required (49cc scooter)
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

74. What Kind of Operator's License Is It? (Code up to Four; Input 97 for Remaining Responses)

OECD Reference: A.5.1.1.2.3.1, A.5.1.1.2.3.2, A.5.1.1.2.3.3, A.5.1.1.2.3.4

Convention/Coding Source: DSI

Element Attributes:

- (00) no license
- (01) learner's permit only
- (02) motorcycle license
- (03) automobile license
- (04) commercial license
- (05) motorcycle driver and competition license
- (06) license to transport people
- (07) heavy-truck license
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

75. What Year Was/Were the License(s) Issued? (List in the Same Order as # 74)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(1900–2100)	actual year
(9997)	not applicable
(9999)	unknown

Range: 1900–2100, 9997, 9999

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

76. How Many Times Have You Acquired a Motorcycle Learner's Permit?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00)	never
(01–96)	actual number of times
(97)	not applicable
(98)	other (specify)
(99)	unknown

Range: 00–99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

77. How Long Have You Held a Motorcycle License? (Use Zeros to Fill in Blanks)

_____ years _____ months

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(00-96)	years
(97-97)	not applicable, no license held
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 97-97-99-99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

78. Are You of Hispanic or Latino Origin?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (02) refused to answer
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Primary—control rider interview

Remarks: This variable is self-identified by the rider.

CONTROL MOTORCYCLE RIDER FORM

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79. What Is Your Race? (Code up to Three; Input 97 for Remaining Responses)

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) White
- (02) Black or African American
- (03) Asian
- (04) Native Hawaiian or other Pacific Islander
- (05) American Indian or Alaskan Native
- (06) refused to answer
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source: Primary—control rider interview

Remarks: This variable is based solely on an interview.

This variable is self-identified by the rider. The concept of race as used by the U.S. Census Bureau reflects self-identification; it does not denote any clear-cut scientific definition of biological stock. Self-identification represents self-classification by people according to the race with which they identify themselves.

White: This is selected for riders who consider themselves having origins in any of the original peoples of Europe, the Middle East, or North Africa.

Black or African American: This is selected for riders who consider themselves having origins in any of the black racial groups of Africa. Terms such as “Haitian” or “Negro” can be used in addition to “Black or African American.”

Asian: This is selected for riders who consider themselves having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Native Hawaiian or other Pacific Islander: This is selected for riders who consider themselves having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

CONTROL MOTORCYCLE RIDER FORM

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79. What Is Your Race? (Continued)

American Indian or Alaska Native: This is selected for riders who consider themselves having origins in any of the original peoples of North and South America (including Central America) and who maintain tribal affiliation or community attachment.

other (specify): This is selected for riders who consider themselves to be of a race not described above. Use this attribute for descriptions such as Eurasian, Cosmopolitan, interracial, etc.

unknown: This is selected when the sources available do not provide sufficient information to classify the rider's race.

CONTROL MOTORCYCLE RIDER FORM

80. What Is Your Height?

___ feet ___ inches

OECD Reference: A.5.1.1.1.5

Convention/Coding Source: DSI

Element Attributes:

(01-12) actual number of feet and inches
(09-99) unknown

Range: 01-12, 09-99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

81. What Is Your Weight in Pounds?

OECD Reference: A.5.1.1.1.6

Convention/Coding Source: DSI

Element Attributes:

(001–995)	actual weight in pounds
(999)	unknown

Range: 001–995, 999

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

82. What Is Your Gender?

OECD Reference: A.5.1.1.1.7

Convention/Coding Source: DSI

Element Attributes:

- (01) male
- (02) female
- (99) unknown

Range: 01, 02, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

unknown: This is used when the sex of the rider cannot be determined.

CONTROL MOTORCYCLE RIDER FORM

83. How Much Formal Education Have You Had?

OECD Reference: A.5.1.1.1.8

Convention/Coding Source: OECD

Element Attributes:

- (00) no formal schooling
- (01) less than high school diploma
- (02) high school diploma or GED
- (03) partial college/university
- (04) college/university graduate
- (05) graduate school, advanced degree, professional degree
- (06) specialty/technical school
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

If permissible, compute the number of years of formal education that the rider has received. Include all schooling during the rider's early years of life (i.e., up to age 18) as well as any schooling at a college, university, or technical school.

84. What Is Your Current Occupation?

OECD Reference: A.5.1.1.13

Convention/Coding Source: U.S. Department of Labor

Element Attributes:

- (01) management
- (02) business and financial
- (03) computer and mathematical
- (04) architecture and engineering
- (05) life, physical, and social sciences
- (06) community and social services
- (07) legal
- (08) education, training, or library
- (09) arts, design, entertainment, sports, or media
- (10) healthcare practitioners and technical jobs
- (11) healthcare support
- (12) protective services
- (13) food preparation, serving, and related
- (14) building and grounds maintenance
- (15) personal care and services
- (16) sales and related
- (17) office and administrative support
- (18) farming, fishing, or forestry
- (19) construction or extraction
- (20) installation, maintenance, or repair
- (21) transportation and material moving
- (22) military
- (23) full-time student
- (97) not applicable, not in workforce at present
- (98) other (specify)
- (99) unknown

Range: 01–23, 97–99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The following descriptions may be used as a guideline to code this variable.

84. What Is Your Current Occupation? (Continued)

management: This group comprises the following occupations: chief executives; general and operations managers; legislators; advertising and promotions managers; marketing managers; sales managers; public relations managers; administrative services managers; computer and information systems managers; financial managers; compensation and benefits managers; training and development managers; human resources managers, all other; industrial production managers; purchasing managers; transportation, storage, and distribution managers; farm, ranch, and other agricultural managers; farmers and ranchers construction managers; education administrators, preschool and childcare center/program; education administrators, elementary and secondary school; education administrators, postsecondary; education administrators, all other; engineering managers; food service managers; funeral directors; gaming managers; lodging managers; medical and health services managers; natural sciences managers; postmasters and mail superintendents; property, real estate, and community association managers; social and community service managers; and managers, all other.

business and financial: This group comprises the following occupations: accountants and auditors; appraisers and assessors of real estate; budget analysts; claims adjusters, appraisers, examiners, and investigators; cost estimators; financial analysts and personal financial advisors; insurance underwriters; loan officers; management analysts; meeting and convention planners; and tax examiners, collectors, and revenue agents.

architecture and engineering: This group comprises the following occupations: architects, except landscape and naval; landscape architects; cartographers and photogrammetrists; surveyors; aerospace engineers; agricultural engineers; biomedical engineers; chemical engineers; civil engineers; computer hardware engineers; electrical engineers; electronics engineers, except computer; environmental engineers; health and safety engineers, except mining safety engineers and inspectors; industrial engineers; marine engineers and naval architects; materials engineers; mechanical engineers; mining and geological engineers, including mining safety engineers; nuclear engineers; petroleum engineers; engineers, all other; architectural and civil drafters; electrical and electronics drafters; mechanical drafters; drafters; all other; aerospace engineering and operations technicians; civil engineering technicians; electrical and electronic engineering technicians; electro-mechanical technicians; environmental engineering technicians; industrial engineering technicians; mechanical engineering technicians; engineering technicians, except drafters, all other; and surveying and mapping technicians.

84. What Is Your Current Occupation? (Continued)

life, physical, and social sciences: This group comprises the following occupations: animal scientists; food scientists and technologists; soil and plant scientists; biochemists and biophysicists; microbiologists; zoologists and wildlife biologists; biological scientists, all other; conservation scientists; foresters; epidemiologists; medical scientists, except epidemiologists; life scientists, all other; astronomers; physicists; atmospheric and space scientists; chemists; materials scientists; environmental scientists and specialists, including health; geoscientists, except hydrologists and geographers; hydrologists; physical scientists, all other; economists; market research analysts; survey researchers; clinical, counseling, and school psychologists; industrial-organizational psychologists; psychologists, all other; sociologists; urban and regional planners; anthropologists and archeologists; geographers; historians; political scientists; social scientists and related workers, all other; agricultural and food science technicians; biological technicians chemical technicians; geological and petroleum technicians; nuclear technicians; social sciences research assistants; environmental science and protection technicians, including health; forensic science technicians; forest and conservation technicians; and life, physical.

community and social services: This group comprises the following occupations: substance abuse and behavioral disorder counselors; educational, vocational, and school counselors; marriage and family therapists; mental health counselors; rehabilitation counselors; counselors, all other; child, family, and school social workers; medical and public health social workers; mental health and substance abuse social workers; social workers, all other; health educators; probation officers and correctional treatment specialists; social and human service assistants; community and social service specialists, all other; clergy; and directors, religious activities and education.

legal: This group comprises the following occupations: lawyers; administrative law judges, adjudicators, and hearing officers; arbitrators, mediators, and conciliators; judges, magistrate judges, and magistrates; paralegals and legal assistants; court reporters; law clerks; title examiners, abstractors, and searchers; and legal support workers, all other.

education, training, or library: This group comprises the following occupations: business teachers, postsecondary; computer science teachers, postsecondary; mathematical science teachers, postsecondary; architecture teachers, postsecondary; engineering teachers, postsecondary; agricultural sciences teachers, postsecondary; biological science teachers, postsecondary; forestry and conservation science teachers, postsecondary; atmospheric, earth, marine, and space sciences teachers, postsecondary; chemistry teachers, postsecondary; environmental science teachers, postsecondary; physics teachers, postsecondary; anthropology and archeology teachers, postsecondary; area, ethnic, and cultural studies teachers, postsecondary; economics teachers, postsecondary; geography teachers, postsecondary; political science teachers, postsecondary; psychology teachers, postsecondary; sociology teachers,

84. What Is Your Current Occupation? (Continued)

postsecondary; social sciences teachers, postsecondary, all other; health specialties teachers, postsecondary; nursing instructors and teachers, postsecondary; education teachers, postsecondary; library science teachers, postsecondary; criminal justice and law enforcement teachers, postsecondary; law teachers, postsecondary; social work teachers, postsecondary; art, drama, and music teachers, postsecondary; communications teachers, postsecondary; English language and literature teachers, postsecondary; foreign language and literature teachers, postsecondary; history teachers, postsecondary; philosophy and religion teachers, postsecondary; graduate teaching assistants; home economics teachers, postsecondary; recreation and fitness studies teachers, postsecondary; vocational education teachers, postsecondary; postsecondary teachers, all other; preschool teachers, except special education; kindergarten teachers, except special education; elementary school teachers, except special education; middle school teachers, except special and vocational education; vocational education teachers, middle school; secondary school teachers, except special and vocational education; vocational education teachers, secondary school; special education teachers, preschool, kindergarten, and elementary school; special education teachers, middle school; special education teachers, secondary school; adult literacy, remedial education, and GED teachers and instructors; self-enrichment education teachers; teachers and instructors, all other; archivists; curators; museum technicians and conservators; librarians; library technicians; audio-visual collections specialists; farm and home management advisors; instructional coordinators; teacher assistants; and education, training, and library workers, all other.

arts, design, entertainment, sports, or media: This group comprises the following occupations: art directors; craft artists; fine artists, including painters, sculptors, and illustrators; multimedia artists and animators; artists and related workers, all other; commercial and industrial designers; fashion designers; floral designers; graphic designers; interior designers; merchandise displayers and window trimmers; set and exhibit designers; designers, all other; actors producers and directors; athletes and sports competitors; coaches and scouts; umpires, referees, and other sports officials; dancers; choreographers; music directors and composers; musicians and singers; entertainers and performers, sports and related workers, all other; radio and television announcers; public address system and other announcers; broadcast news analysts; reporters and correspondents; public relations specialists; editors; technical writers; writers and authors; interpreters and translators; media and communication workers, all other; audio and video equipment technicians; broadcast technicians; radio operators; sound engineering technicians; photographers; camera operators, television, video, and motion picture; film and video editors; and media and communication equipment workers.

84. What Is Your Current Occupation? (Continued)

healthcare support: This group comprises the following occupations: home health aides; nursing aides, orderlies, and attendants; psychiatric aides; occupational therapist assistants; occupational therapist aides; physical therapist assistants; physical therapist aides; massage therapists; dental assistants; medical assistants; medical equipment preparers; medical transcriptionists; pharmacy aides; veterinary assistants and laboratory animal caretakers; and healthcare support workers.

protective services: This group comprises the following occupations: first-line supervisors/managers of correctional officers; first-line supervisors/managers of police and detectives; first-line supervisors/managers of firefighting and prevention workers; first-line supervisors/managers, protective service workers, all other; firefighters; fire inspectors and investigators; forest fire inspectors and prevention specialists; bailiffs; correctional officers and jailers; detectives and criminal investigators; fish and game wardens; parking enforcement workers; police and sheriff's patrol officers; transit and railroad police; animal control workers; private detectives and investigators; gaming surveillance officers and gaming investigators; security guards; crossing guards; lifeguards, ski patrol, and other recreational protective service workers; and protective service workers, all other.

food preparation, serving, and related: This group comprises the following occupations: chefs and head cooks; first-line supervisors/managers of food preparation and serving workers; cooks, fast food; cooks, institution and cafeteria; cooks, private household; cooks, restaurant; cooks, short order; cooks, all other; food preparation workers; bartenders; combined food preparation and serving workers, including fast food; counter attendants, cafeteria, food concession, and coffee shop; waiters and waitresses; food servers, nonrestaurant; dining room and cafeteria attendants and bartender helpers; dishwashers; hosts and hostesses, restaurant, lounge, and coffee shop; and food preparation and serving-related workers.

building and grounds maintenance: This major group comprises the following occupations: first-line supervisors/managers of housekeeping and janitorial workers; first-line supervisors/managers of landscaping, lawn service, and groundskeeping workers; janitors and cleaners, except maids and housekeeping cleaners; maids and housekeeping cleaners; building cleaning workers, all other; pest control workers; landscaping and groundskeeping workers; pesticide handlers, sprayers, and applicators, vegetation; tree trimmers and pruners; and grounds maintenance workers, all other.

84. What Is Your Current Occupation? (Continued)

personal care and services: This group comprises the following occupations: gaming supervisors; slot key persons; first-line supervisors/managers of personal service workers; animal trainers; nonfarm animal caretakers; gaming dealers; gaming and sports book writers and runners; gaming service workers, all other; motion picture projectionists; ushers, lobby attendants, and ticket takers; amusement and recreation attendants; costume attendants; locker room, coatroom, and dressing room attendants; entertainment attendants and related workers, all other; embalmers; funeral attendants; barbers; hairdressers, hairstylists, and cosmetologists; makeup artists, theatrical and performance; manicurists and pedicurists; shampooers; skin care specialists; baggage porters and bellhops; concierges; tour guides and escorts; travel guides; flight attendants; transportation attendants, except flight attendants and baggage porters; child care workers; personal and home care aides; fitness trainers and aerobics instructors; recreation workers; residential advisors; and personal care and service workers, all other.

sales and related: This group comprises the following occupations: advertising sales agents; cashiers; counter and rental clerks; demonstrators, product promoters, and models; insurance sales agents; real estate brokers and sales agents; retail salespersons; sales engineers; sales representatives, wholesale and manufacturing; sales worker supervisors; securities, commodities, and financial services sales agents; and travel agents.

office and administrative support: This group comprises the following occupations: financial clerks, bill and account collectors; billing and posting clerks and machine operators; bookkeeping, accounting, and auditing clerks; gaming cage workers; payroll and timekeeping clerks; procurement clerks; tellers, information and record clerks, and brokerage clerks; credit authorizers, checkers, and clerks; customer service representatives; file clerks; hotel, motel, and resort desk clerks; human resources assistants, except payroll and timekeeping; interviewers; library assistants, clerical; order clerks; receptionists and information clerks; reservation and transportation ticket agents and travel clerks; material recording, scheduling, dispatching, and distributing occupations, cargo and freight agents; couriers and messengers; dispatchers; meter readers, utilities; postal service workers; production, planning, and expediting clerks; shipping, receiving, and traffic clerks; stock clerks and order fillers; weighers, measurers, checkers, and samplers, recordkeeping; other office and administrative support occupations, communications equipment operators; computer operators; data entry and information processing workers; desktop publishers; office and administrative support worker supervisors and managers; office clerks, general; and secretaries and administrative assistants.

farming, fishing, or forestry: This group comprises the following occupations: agricultural workers; fishers and fishing vessel operators; and forest, conservation, and logging workers.

84. What Is Your Current Occupation? (Continued)

construction or extraction: This group comprises the following occupations: first-line supervisors/managers of construction trades and extraction workers; boilermakers; brickmasons and blockmasons; stonemasons; carpenters; carpet installers; floor layers, except carpet, wood, and hard tiles; floor sanders and finishers; tile and marble setters; cement masons and concrete finishers; terrazzo workers and finishers; construction laborers; paving, surfacing, and tamping equipment operators; pile-driver operators; operating engineers and other construction equipment operators; drywall and ceiling tile installers; tapers; electricians glaziers; insulation workers, floor, ceiling, and wall; insulation workers, mechanical; painters, construction and maintenance; paperhangers; pipelayers; plumbers, pipefitters, and steamfitters; plasterers and stucco masons; reinforcing iron and rebar workers; roofers; sheet metal workers; structural iron and steel workers; helpers—brickmasons, blockmasons, stonemasons, and tile and marble setters; helpers—carpenters; helpers—electricians; helpers—painters, paperhangers, plasterers, and stucco masons; helpers—pipelayers, plumbers, pipefitters, and steamfitters; helpers—roofers; helpers, construction trades, all other; construction and building inspectors; elevator installers and repairers; fence erectors; hazardous materials removal workers; highway maintenance workers; rail-track laying and maintenance equipment operators; septic tank servicers and sewer pipe cleaners; segmental pavers; construction and related workers, all other; derrick operators, oil and gas; rotary drill operators, oil and gas; service unit operators, oil, gas, and mining; earth drillers, except oil and gas; explosives workers, ordnance handling experts, and blasters; continuous mining machine operators; mine cutting and channeling machine operators; mining machine operators, all other; rock splitters, quarry; roof bolters, mining; roustabouts, oil and gas; helpers—extraction workers; and extraction workers, all other.

installation, maintenance, or repair: This group comprises the following occupations: electrical and electronic equipment mechanics, installers, and repairers—computer, automated teller, and office machine repairers; electrical and electronics installers and repairers; electronic home entertainment equipment installers and repairers; radio and telecommunications equipment installers and repairers; vehicle and mobile equipment mechanics, installers, and repairers; aircraft and avionics equipment mechanics and service technicians; automotive body and related repairers; automotive service technicians and mechanics; diesel service technicians and mechanics; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; other installation, maintenance, and repair occupations—coin, vending, and amusement machine servicers and repairers; heating, air-conditioning, and refrigeration mechanics and installers; home appliance repairers; industrial machinery mechanics and maintenance workers; line installers and repairers; maintenance and repair workers, general; millwrights; and precision instrument and equipment repairers.

transportation and material moving: This group comprises the following occupations: air transportation occupations—air traffic controllers; aircraft pilots and flight engineers; material moving occupations; and motor vehicle operators.

CONTROL MOTORCYCLE RIDER FORM

85. Are You Married?

OECD Reference: A.5.2.1.1.4

Convention/Coding Source: DSI

Element Attributes:

- (01) single
- (02) married
- (03) separated
- (04) divorced
- (05) widowed
- (06) cohabitating
- (98) other (specify)
- (99) unknown

Range: 01–06, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

86. How Many Children Do You Have?

OECD Reference: A.5.2.1.1.5

Convention/Coding Source: DSI

Element Attributes:

- (00) none
- (01) one
- (02) two
- (03) three
- (04) four
- (05) five
- (06) six or more
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source: Primary—rider interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE RIDER FORM

87. Blood Alcohol Concentration (BAC)? (Code Results in mg/100 ml)

OECD Reference: B.5.1.1.1.32

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(000)	negative BAC
(001–900)	test results in mg/100 ml
(995)	BAC tested, results not known
(996)	BAC not tested
(998)	other (specify)
(999)	unknown

Range: 000–900, 995, 996, 998, 999

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

Blood Alcohol Concentration (BAC) analytically measures the mass of alcohol per unit volume of blood. The standard measure is expressed as the number of milligrams per deciliter (10th of a liter) expressed as a decimal (e.g., 0.05 = 50 mg/100 ml; 0.15 = 150 mg/100 ml). A blood alcohol concentration (BAC) test could be a blood, breath, or urine test. If the BAC was given on the police report or subsequently added after the case was initiated, enter the reported value. In essence, if any BAC is obtained, enter the reported value. When coding, for example, a BAC of 117 mg/dl is coded as 0.117.

CONTROL MOTORCYCLE RIDER FORM

88. Source of BAC Information?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) not tested
- (01) breath test
- (02) blood test
- (03) urine test
- (04) unknown if tested
- (05) tested, results unknown
- (06) tested, results not available
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source: Primary—control rider interview

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE PASSENGER FORM

Case Number

OECD Reference: None

Convention/Coding Source: N/A

Element Attributes: Case number

Range: 0001–9999

Source: Primary—case assignment chart

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE PASSENGER FORM

Motorcycle Passenger Number

OECD Reference: A.5.1.2.1

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(02–09)	passenger number
(99)	unknown

Range: 02–09, 99

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

1. Where Were You Located Prior to the Crash?

OECD Reference: A.5.1.2.42

Convention/Coding Source: DSI

Element Attributes:

- (01) immediately behind the motorcycle rider
- (02) immediately in front of the motorcycle rider
- (03) behind passenger in location 1
- (04) in front of passenger in location 2
- (05) dismounting, jumping to side
- (97) not applicable, unseated prior to the crash
- (98) other (specify)
- (99) unknown

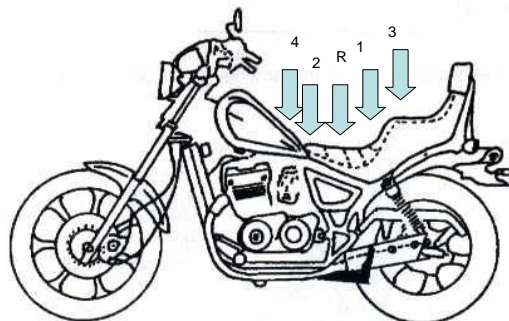
Range: 01–05, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

See figure 1 for seating positions.



Source: DSI.
R = rider.

Figure 1. Diagram. Seating positions on a motorcycle.

If the motorcycle is equipped with a sidecar, code this passenger as being situated in an “other” position (98) and specify. In addition, if a passenger is located in the second seat of a trike (either left or right of the rider/operator) indicate that the passenger is in an “other” position (98) and specify.

MOTORCYCLE PASSENGER FORM

2. What Was Your Riding Position at the Time of the Collision?

OECD Reference: A.5.1.2.43.1

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) normal, straddle-seated behind rider
- (02) riding with both legs on left side of motorcycle
- (03) riding with both legs on right side of motorcycle
- (04) straddle-seated on pillion behind rider
- (05) straddle-seated on tank ahead of rider
- (06) in sidecar
- (07) straddle-seated behind rider facing rear
- (98) other (specify)
- (99) unknown

Range: 01–07, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

A pillion is a secondary pad, cushion, or seat behind the main seat or saddle on a motorcycle.

MOTORCYCLE PASSENGER FORM

3. Did Any of Your Actions Contribute to the Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no, no action by passenger contributed to crash
- (01) yes, passenger weight contributed to loss of control during evasive action
- (02) yes, passenger lost hold or fell and contributed to rider loss of control
- (03) yes, passenger interfered with motorcycle balance and caused rider loss of control
- (04) yes, passenger interfered with motorcycle controls and contributed to crash
- (05) yes, passenger's lower extremities entrapped in rear suspension or wheel and contributed to crash
- (06) yes, passenger action distracted motorcycle rider and contributed to crash (specify)
- (98) other passenger action that contributed to crash (specify)
- (99) unknown

Range: 00–06, 98, 99

Source:

Primary—passenger interview

Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

4. At the Time of the Crash, Were You Wearing a Helmet?

OECD Reference: A.5.3.2.11

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) yes (skip to # 7)
- (02) helmet available but not used
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

5. What Is Your Reason for Not Wearing a Helmet?

OECD Reference: C.5.2.1.2.10

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) not required by law
- (02) no expectation of accident involvement
- (03) helmets are too expensive
- (04) helmets are inconvenient and uncomfortable
- (05) helmets reduce traffic awareness, limit hearing and vision
- (06) helmets are ineffective in reducing head injury
- (07) helmets cause neck injury
- (08) helmets cannot be used, physical or religious reasons
- (09) do not own a helmet
- (10) forgot to bring helmet today
- (97) not applicable, passenger is wearing a helmet
- (98) other (specify)
- (99) unknown

Range: 01–10, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

6. Do You Ever Wear a Helmet?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 18)
- (01) yes (skip to # 16)
- (02) occasionally (skip to # 16)
- (97) not applicable, passenger is wearing a helmet
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

7. Was Your Helmet Properly Adjusted on Your Head?

OECD Reference: A.5.3.2.12

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The following definitions may be applied in order to assist in the determination of proper helmet adjustment.

yes: The helmet was properly oriented on the wearer's head to provide maximum field of vision and maximum impact protection.

no: The helmet was on the passenger's head at the time of the crash/accident; however, it was oriented in such a fashion as to reduce the field of vision or the protective capacity of the helmet.

An example of an improperly adjusted helmet is a full-face helmet that has been partially donned and is resting on top of the head at the time of the accident. The retention system may or may not be fastened. Another example is an oversized helmet relative to the wearer's head that is rotated backward and secured with a loose retention strap at the time of the accident.

not applicable, no helmet: No helmet was worn.

unknown: The investigator is unable to determine if the helmet was properly adjusted. This response may also be used if the investigator is not sure if a helmet was worn.

MOTORCYCLE PASSENGER FORM

8. Was Your Helmet Securely Fastened to Your Head?

OECD Reference: A.5.3.2.13

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

9. What Type of Helmet Is It?

OECD Reference: A.5.3.2.14

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) not a motorcycle helmet
- (01) half/police motor vehicle, motorcycle helmet
- (02) open-face motor vehicle, motorcycle helmet
- (03) full-face motor vehicle, motorcycle helmet
- (04) novelty or beanie helmet
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

half/police motor vehicle, motorcycle helmet: These helmets are built with an energy-absorbing liner (usually expanded polystyrene) and are certified as meeting the USDOT standard. These are the least intrusive style of motorcycle helmets, covering only the top half of the cranium. They weigh the least, do not block the ears, and offer the least wind resistance. They also afford the least protection and are the most likely to come off in a crash, even if properly fastened.

open-face motor vehicle, motorcycle helmet: This style is similar to that of a full-face helmet, but it does not wrap around the face. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A chinstrap secures the helmet, sometimes in the form of a chin cup. This type of helmet may have a flexible chin protector that snaps on and off and resembles the chin bar of a full-face helmet. These removable chin bars (or gravel guards) are sometimes attached to helmets used in dirt bike racing. Such a flimsy attachment does not make it a full-face helmet—it is still an open-face helmet with an accessory attachment.

9. What Type of Helmet Is It? (Continued)

full-face motor vehicle, motorcycle helmet: These helmets cover the entire head and most of the face. The hard shell extends from the brow over the cranium to the base of the skull at the top of the neck. The shell rides forward along the cheekbones to encompass the jaws and chin, leaving a wraparound view port. A transparent visor slides over the view port to block out wind, rain, and dust and to ease eye fatigue. Most full-face motorcycle helmets are vented at the chin and within the shell. Vents normally have sliding doors for use in cold weather. The inner shell is highly padded, and the helmet has a chinstrap for securing. This style includes helmets with a moveable chin bar that can be unlatched to pivot upward, exposing the wearer's entire face.

novelty (or beanie) helmet: These helmets do not comply with USDOT regulations or any other performance requirements. Novelty helmets have only soft comfort padding (similar to the comfort padding of USDOT-compliant helmets) inside the shell but no energy-absorbing foam. Riders may add what appears to be a USDOT sticker to the back in order to fool police, but that should not fool an investigator. Energy-absorbing foam is absolutely essential to passing the USDOT standard. Also, novelty helmets almost never identify the manufacturer, model, or date of manufacture.

10. What Is the Type of Helmet Coverage?

OECD Reference: A.5.3.2.15

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) partial coverage
- (02) full coverage
- (03) full-facial coverage, integral chin bar but no face shield
- (04) full-facial coverage, removable chin bar
- (05) full-facial coverage, retractable chin bar
- (06) full-facial coverage, integral chin bar and face shield
- (07) open-face helmet with flat wraparound face shield
- (08) open-face helmet with bubble-type face shield
- (09) open-face helmet with visor/face shield combo
- (10) open-face helmet with removable gravel guard
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–10, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

partial coverage: These are the least intrusive helmets that are USDOT compliant. They cover only the top half of the cranium. They have an energy-absorbing liner (usually expanded polystyrene and 0.75-inch thick or more). They weigh the least, do not block the ears, and offer the least wind resistance. A novelty (or beanie) helmet does not comply with USDOT standards. A novelty helmet is generally thin, does not cover the ears or lower part of the brain, has a weak chinstrap, and may have protrusions such as a spike or horns. It has only comfort padding inside the shell and no energy-absorbing liner material. The manufacturer is almost never identified.

10. What Is the Type of Helmet Coverage? (Continued)

full coverage: One example is the open-face motor vehicle, motorcycle helmet. This style is similar to that of a full-face helmet, but it does not wrap around the face. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A chinstrap secures the helmet, sometimes in the form of a chin cup.

full-facial coverage, integral chin bar but no face shield: This style is similar to that of a full-face helmet, but it does wrap around the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A full chin bar is incorporated into the design.

full-facial coverage, removable chin bar: This style is similar to that of a full-face helmet, but it has a removable chin bar that extends across the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears.

full-facial coverage, retractable chin bar: This style is similar to that of a full-face helmet, but it has a retractable chin bar that wraps across the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears.

full-facial coverage, integral chin bar and face shield: This helmet shell extends from the brow over the cranium to the base of the neck and across the front of the face at the chin level. In addition, a transparent face shield covers the eyes, nose, and mouth areas.

open-face helmet with wraparound face shield: This is a removable transparent covering that may extend over some portion of the eyes, nose, and mouth areas. It can be attached to helmets at the sides of the head.

open-face helmet with bubble-type face shield: This is a large transparent covering in a curved, bubble shape that attaches to the front of an open-face helmet. It generally provides full facial protection.

open-face helmet with visor/face shield combo: This can be attached to helmets and provides transparent facial protection, with a visor overhang at the top of the unit.

MOTORCYCLE PASSENGER FORM

11. What Is the Predominant Color of Your Helmet?

OECD Reference: A.5.3.2.16

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) no dominating color, multicolored
- (02) white
- (03) yellow
- (04) black
- (05) red
- (06) blue
- (07) green
- (08) silver, grey
- (09) orange
- (10) brown, tan
- (11) purple
- (12) gold
- (13) chrome, metallic
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–13, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

12. What Is the Color of the Face Shield?

OECD Reference: A.5.3.2.17

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) clear
- (02) green
- (03) grey, smoke
- (04) amber, yellow
- (05) blue
- (06) reflective (any color)
- (97) not applicable/no face shield
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

13. Do You Own This Helmet?

OECD Reference: A.5.3.2.18

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

14. How Well Does This Helmet Fit?

OECD Reference: A.5.3.2.19

Convention/Coding Source: OECD

Element Attributes:

- (01) acceptable fit
- (02) too large, too loose
- (03) too small, too tight
- (04) contour mismatch
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 01–04, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The following definitions may be applied in order to assist in the determination of proper helmet fit.

acceptable fit: This is when the helmet is the correct size for the wearer. An acceptable fitting helmet will not move excessively when properly adjusted and retained on the wearer's head.

too large, too loose: This is when a helmet is too large given the size of the wearer's head. A helmet that is too large and too loose will move excessively on the wearer's head during normal use. The investigator should look for helmet-induced injuries as a result of excessive helmet movement in order to assist in the identification of a helmet that is too large. Typical helmet-induced injuries due to excessive helmet motion may include lacerations to the bridge of the nose or to the maxillary region. Helmet ejection in the presence of a fastened retention system is also evidence that suggests that the helmet was too large for the wearer.

MOTORCYCLE PASSENGER FORM

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14. How Well Does This Helmet Fit? (Continued)

too small, too tight: This refers to a helmet that is too small given the size of the wearer's head. A helmet that is too small and too tight may remain on the wearer's head even if the retention system is not properly fastened. It may also rest higher on the wearer's head given the fact that it cannot be fully donned due to its small size.

contour mismatch: The helmet size is correct for the passenger's head circumference, but the passenger's head is long and narrow or short and wide or otherwise unusual.

not applicable, no helmet: No helmet was worn.

MOTORCYCLE PASSENGER FORM

15. Was the Helmet Retained in Place on Your Head During the Crash?

OECD Reference: A.5.3.2.30

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no helmet
- (01) no, helmet ejected from head during pre-crash time period
- (02) no, helmet ejected from head during crash
- (03) no, helmet ejected from head after collision
- (04) yes, helmet retained in place to completion of crash events
- (05) yes, helmet moved on head but was retained
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

16. What Percentage of Time Do You Wear Your Helmet (When Riding as a Passenger)? (Code 001–100 Percent)

OECD Reference: A.5.3.2.20

Convention/Coding Source: OECD, DSI

Element Attributes:

(000)	never wears a helmet
(001–100)	percent helmet worn
(997)	not applicable, no helmet
(999)	unknown

Range: 000–100, 997, 999

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the percentage of time that the passenger wears a helmet when riding. If the passenger does not wear a helmet, input 000 as the correct response for the variable. If the passenger wears a helmet all the time while riding a motorcycle, then input 100. If the passenger does not wear the helmet 25 percent of the time, then code 075 for the time the passenger does wear the helmet.

MOTORCYCLE PASSENGER FORM

17. Under What Conditions Do You Usually Wear Your Helmet? (Code up to Four; Input 97 for Remaining Responses)

OECD Reference: A.5.3.2.21.1, A.5.3.2.21.2, A.5.3.2.21.3, A.5.3.2.21.4

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) never uses helmet
- (01) mostly on long trips
- (02) mostly in high-speed highway or freeway traffic
- (03) in adverse weather
- (04) usually, but not in hot weather
- (05) always
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

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18. Do You Have Any of the Following Permanent Physical Conditions? (Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.5.1.2.39.1, A.5.1.2.39.2, A.5.1.2.39.3

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) vision reduction or loss
- (02) hearing reduction or loss
- (03) respiratory, cardiovascular condition
- (04) paraplegia
- (05) amputee
- (06) neurological, epilepsy, stroke
- (07) endocrine system, diabetes, digestive system
- (08) infirmity, arthritis, senility
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

vision reduction or loss: This refers to the need to wear corrective lenses or to legal blindness in one or both eyes.

hearing reduction or loss: This refers to the need to wear a hearing aid or to partial or complete deafness.

respiratory system: The respiratory system consists of airways, lungs, and respiratory muscles that mediate the movement of air in and out of the body. Within the alveolar system of the lungs, molecules of oxygen and carbon dioxide are passively exchanged by diffusion between the gaseous environment and the blood. Thus, the respiratory system facilitates oxygenation of the blood with a concomitant removal of carbon dioxide and other gaseous metabolic wastes from the circulation. The system also helps to maintain the acid–base balance of the body through the efficient removal of carbon dioxide from the blood.

18. Do You Have Any of the Following Permanent Physical Conditions? (Continued)

cardiovascular condition: The cardiovascular system is made up of blood vessels, also known as the circulatory system, that work in conjunction with the beating heart.

paraplegia: This is an impairment in motor and/or sensory function of the lower extremities. It is usually the result of a spinal cord injury or a congenital condition, such as spina bifida, that affects the neural elements of the spinal canal. If the arms are also affected by paralysis, tetraplegia is the proper terminology.

amputee: Amputation is the removal of a body extremity by trauma or surgery.

neurological: The nervous system is a highly specialized network in which principal components are cells called neurons. Neurons are interconnected in complex arrangements and use electrochemical signals to conduct a great variety of stimuli within the nervous tissue as well as from and toward most other tissues. Thus, neurons coordinate multiple functions in organisms. Neurological impairment includes a loss of sensation caused by disease or injury.

epilepsy: This is a brain disorder that causes recurring seizures. Seizures happen when clusters of nerve cells, or neurons, in the brain send out the wrong signals. People may have strange sensations and emotions, behave strangely, have violent muscle spasms, or lose consciousness.

strokes: Strokes happen when blood flow to the brain stops. Within minutes, brain cells begin to die. There are two kinds of strokes. The more common stroke, ischemic, is caused by a blood clot that blocks or plugs a blood vessel in the brain. The other stroke, hemorrhagic, is caused by a blood vessel that breaks and bleeds into the brain. Ministrokes or transient ischemic attacks (TIAs) occur when the blood supply to the brain is briefly interrupted.

endocrine system: The glands and parts of glands that produce endocrine secretions help to integrate and control bodily metabolic activity. This includes the pituitary, thyroid, parathyroids, adrenals, islets of Langerhans, ovaries, and testes.

diabetes: This is a disease in which blood glucose, or sugar, levels are too high. Glucose comes from food. Insulin is a hormone that helps the glucose get into cells to give them energy. With Type 1 diabetes, the body does not make insulin. With Type 2 diabetes, the more common type, the body does not make or use insulin well. Without enough insulin, glucose stays in the blood.

digestive system: This refers to the bodily system concerned with eating and drinking, and the digestion and absorption of food.

infirmary: This is a bodily ailment or weakness, especially one brought on by old age.

MOTORCYCLE PASSENGER FORM

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18. Do You Have Any of the Following Permanent Physical Conditions? (Continued)

arthritis: This is a disease in which a person feels pain and stiffness in the body or has trouble moving around. Most kinds of arthritis cause pain and swelling in the joints. Joints are places where two bones meet, such as the elbow or knee. Over time, a swollen joint can become severely damaged. Some kinds of arthritis might also cause problems in organs, such as eyes or skin.

senility: More commonly referred to as dementia, senility is characterized by a decrease in cognitive abilities. This may include the person's ability to concentrate, recall information, and properly judge a situation. In addition, the personality of someone with senility may change. A person in the advanced stages of senility may be unsure of who he or she is.

MOTORCYCLE PASSENGER FORM

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19. At the Time of the Crash, Were You Experiencing Any of the Following? (Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.5.1.2.40.1, A.5.1.2.40.2, A.5.1.2.40.3

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) fatigue
- (02) hunger
- (03) thirst
- (04) elimination urgency
- (05) muscle spasm, cramp, itch
- (06) headache, minor malaise, fever
- (07) siesta syndrome (tired in the afternoon)
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

fatigue: This is a feeling of weariness, tiredness, or lack of energy.

hunger: This is a craving or urgent need for food or a specific nutrient. Hunger is an uneasy sensation and/or a weakened condition brought about by prolonged lack of food.

thirst: This is a sensation of dryness in the mouth and throat associated with a desire for liquids. The bodily condition known as dehydration induces this sensation. Thirst is also a basic desire or need to drink.

elimination urgency: This is the state in which the individual experiences a disturbance in urine elimination.

muscle spasm, cramp, itch: This is an involuntary contraction of a muscle. Muscle cramps are involuntary and often painful contractions (movements) of the muscles.

MOTORCYCLE PASSENGER FORM

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19. At the Time of the Crash, Were You Experiencing Any of the Following? (Continued)

headache: The most common type of headache is a tension headache. Tension headaches are due to tight muscles in the shoulders, neck, scalp, and jaw. They are often related to stress, depression, or anxiety. Tension headaches are more likely in those who work too much, do not get enough sleep, miss meals, or use alcohol.

minor malaise: This is a generalized feeling of discomfort, illness, or lack of wellbeing. It can be associated with a disease. Malaise can be accompanied by a feeling of exhaustion or not having enough energy to accomplish usual activities.

fever: This is a body temperature that is higher than normal. It is not an illness; it is part of the body's defense against infection. Most bacteria and viruses that cause infections do well at the body's normal temperature (98.6 °F), and a slight fever can make it harder for them to survive because a fever activates the body's immune system.

siesta syndrome (tired in the afternoon): This can be best described as the tired, groggy feeling experienced in the afternoon. Some people call it a "food coma" or "afternoon lull."

MOTORCYCLE PASSENGER FORM

20. Were You Concerned About Any of the Following Issues on the Day of the Crash?
(Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.5.1.2.41.1, A.5.1.2.41.2, A.5.1.2.41.3

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no problems
- (01) conflict with friends, relatives, divorce, separation
- (02) work-related problems
- (03) financial distress
- (04) school problems
- (05) legal, police problems
- (06) reward stress
- (07) traffic conflict, road rage
- (08) death of family or friend
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

21. How Many Hours of Sleep Did You Have in the 24 Hours Prior to the Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00)	no sleep
(01–24)	number of hours slept
(98)	other (specify)
(99)	unknown

Range: 00–24, 98, 99

Source:

Primary—passenger interview

Secondary—source rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

22. Did You Drink Any Alcohol or Take Any Drugs or Medication in the 24 Hours Prior to the Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 25)
- (01) alcohol use only (skip to # 25)
- (02) drug/medication use only
- (03) combined alcohol and drug/medication use
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

23. What Type of Drugs Other Than Alcohol?

OECD Reference: A.5.1.2.37

Convention/Coding Source: NASS,⁽⁴⁾ DSI, OECD

Element Attributes:

- (00) no drugs other than alcohol
- (01) stimulant
- (02) depressant
- (03) drugs taken, type unknown
- (04) multiple drugs taken
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

stimulant: This is a drug that temporarily quickens some vital processes.

depressant: This includes any drug that reduces or tends to reduce the function of a system or organ of the body.

MOTORCYCLE PASSENGER FORM

24. What Is the Source of Drugs Other than Alcohol? (Code up to Three)

OECD Reference: A.5.1.2.38

Convention/Coding Source: DSI, OECD

Element Attributes:

- (00) no drugs other than alcohol
- (01) prescription
- (02) nonprescription, over the counter
- (03) illegal
- (97) not applicable
- (99) unknown

Range: 00–03, 97, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

prescription drug: This is a licensed medicine that is regulated by legislation to require a prescription before it can be obtained.

MOTORCYCLE PASSENGER FORM

25. How Long Have You Been Riding as a Passenger on the Crash-Involved Motorcycle?

_____ years _____ months

OECD Reference: A.5.1.1.17

Convention/Coding Source: DSI

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(00-96)	years
(97-97)	not applicable, no previous experience, first time
(99-99)	unknown

Range: 00-96, 00-00, 97-97, 99-99

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

26. How Long Have You Been Riding as a Passenger in Any Kind of Motor Vehicle?

_____ years _____ months

OECD Reference: A.5.1.2.15

Convention/Coding Source: DSI

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(00-96)	years
(97-97)	not applicable, no previous experience, first time
(99-99)	unknown

Range: 00-96, 00-00, 97-97, 99-99

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Code 00 years 01 months for a period greater than 2 weeks and up through 1 month.

The following are examples of coding the variable:

Example 1: Riding as a passenger for 1 week, code 00 years 00 months.

Example 2: Riding as a passenger for 3 weeks, code 00 years 01 months.

Example 3: Riding as a passenger for 2 years, code 02 years 00 months.

MOTORCYCLE PASSENGER FORM

27. How Long Have You Ridden as a Passenger on Any Street Motorcycle?

_____ years _____ months

OECD Reference: A.5.1.2.16

Convention/Coding Source:

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(00-96)	years
(97-97)	not applicable, no previous experience, first time
(99-99)	unknown

Range: 00-96, 00-00, 97-97, 99-99

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

28. What Is the Average Number of Days per Year That You Ride as a Passenger on Motorcycles?

OECD Reference: A.5.1.2.18

Convention/Coding Source: DSI

Element Attributes:

(001–365) actual number of days per year
(999) unknown

Range: 001–365, 999

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

29. What Kind of Motorcycle Training Have You Had?

OECD Reference: A.5.1.2.20

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) State-recognized, entry-level motorcycle course
- (02) experienced-rider course
- (03) high-performance/competitive-track course
- (04) self-taught
- (05) taught by family and/or friends
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

state-recognized, entry-level course: Examples of entry-level motorcycle courses include sponsored courses from the Motorcycle Safety Foundation such as BRC, MRC, or RSS. State-sponsored courses, such as those offered through TEAM Oregon, would also qualify.

experienced-rider course: This course includes instruction like that found in the MSF Rider's Edge course or North Carolina's BikeSafe program.

high-performance/competitive-track course: These include classes such as the Pridgemore California Super Bike School.

MOTORCYCLE PASSENGER FORM

30. When You Travel as a Passenger, What Is the Percentage of Time You Ride a Motorcycle Versus Riding as a Passenger in Another Type of Vehicle?

Motorcycle _____
Other-Vehicle Type _____
100%

OECD Reference: A.5.1.3.21.1

Convention/Coding Source: OECD

Element Attributes:

(000)	first-time use
(001–100)	actual percentage of time
(997)	not applicable
(999)	unknown

Range: 000–100, 997, 999

Source:

Primary—passenger interview
Secondary—rider interview

Remarks: This variable is assigned by the investigator from the sources.

Record the percentage of time or use as a passenger that a motorcycle is used for transportation and the percentage of time or use that other types of vehicles are used. The percent estimate should total 100 percent. Do not include walking, mass transit, or other forms of transportation.

MOTORCYCLE PASSENGER FORM

31. When You Ride a Motorcycle as a Passenger, What Is the Percentage of Time It Is for Each of These Categories?

Recreation _____ %
Basic Transportation _____ %
100%

OECD Reference: A.5.1.2.21.2, A.5.1.2.21.3

Convention/Coding Source: OECD

Element Attributes:

(000)	first-time use
(001–100)	actual percentage of time
(997)	not applicable
(999)	unknown

Range: 000–100, 997, 999

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the percentage of time or use as a passenger that a motorcycle is used for recreational purposes (i.e., riding for pleasure) and the percentage of time or use that the motorcycle is used for basic transportation purposes (i.e., work, school, shopping, etc.). If the person does not use a motorcycle for recreation or basic transportation, code 000 in the appropriate category. The total percent usage for any one person must total 100 percent.

For example, if the motorcycle passenger uses the motorcycle to run errands and commute to and from work approximately 40 percent of the time, the motorcycle is used for recreational purposes for the remaining 60 percent of the time.

MOTORCYCLE PASSENGER FORM

32. How Much Experience Do You Have Riding as a Passenger on Motorcycles?

OECD Reference: A.5.1.2.22

Convention/Coding Source: OECD

Element Attributes:

- (00) never rode as a passenger before
- (01) very little experience
- (02) moderate experience
- (03) extensive experience
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

33. How Many Motorcycle Moving Traffic Crashes Have You Had as a Passenger in the Past 5 Years?

OECD Reference: A.5.1.2.25

Convention/Coding Source: OECD, DSI

Element Attributes:

(00)	none
(01–96)	actual number of crashes
(99)	unknown

Range: 00–96, 99

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

34. How Many Car or Truck Traffic Crashes Have You Had as a Passenger in the Past 5 Years?

OECD Reference: A.5.1.2.26

Convention/Coding Source: DSI

Element Attributes:

(00)	none
(01–96)	actual number of crashes
(99)	unknown

Range: 00–96, 99

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

35. What Kind of Clothing Was on Your Upper Body?

OECD Reference: A.5.3.2.1

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none (skip to # 37)
- (01) light cloth garment (e.g., thin cotton)
- (02) medium cloth garment (e.g., denim, nylon)
- (03) heavy cloth garment (e.g., imitation leather)
- (04) leather garment
- (05) Kevlar
- (06) armored nylon mesh
- (07) off-road, molded body armor
- (08) armored leather
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source:

Primary—passenger interview

Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

36. Was This Upper-Body Clothing Motorcycle Oriented?

OECD Reference: A.5.3.2.2

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Motorcycle-oriented upper-torso and upper-extremity clothing is any clothing sold exclusively or primarily for motorcycle riding.

MOTORCYCLE PASSENGER FORM

37. What Kind of Clothing Was on Your Lower Body?

OECD Reference: A.5.3.2.3

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none (skip to # 39)
- (01) light cloth garment (e.g., thin cotton)
- (02) medium cloth garment (e.g., denim, nylon)
- (03) heavy cloth garment (e.g., imitation leather)
- (04) leather garment
- (05) Kevlar
- (06) armored nylon mesh
- (07) off-road, molded body armor
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

38. Was This Lower-Body Clothing Motorcycle Oriented?

OECD Reference: A.5.3.2.4

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Motorcycle-oriented lower-torso and lower-extremity clothing is any clothing sold exclusively or primarily for motorcycle riding.

MOTORCYCLE PASSENGER FORM

39. Were You Wearing an Inflatable Safety Vest?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

A body protection device in the form of an inflatable vest includes an inflation mechanism that is actuated in response to the separation or removal of the wearer from the motorcycle. Attached to the outside of the vest is a compressed gas cartridge that communicates with the interior of the vest through a cartridge actuation mechanism and an inflation tube. The cartridge actuation mechanism includes a triggering device that can be actuated to open the cartridge by means of an actuation lever. The actuation lever actuates the triggering device in response to a pulling force of predetermined magnitude, and in doing so, detaches from the actuation mechanism. The actuation lever is connected to the vehicle by a lanyard. When the wearer is forcibly separated from the motorcycle, the lanyard exerts an actuation force on the actuation lever, which actuates the triggering device before detaching from the actuation mechanism, thereby opening the cartridge and allowing gas from the cartridge to inflate the vest. The vest is advantageously provided with a deflation tube and deflation valve.

MOTORCYCLE PASSENGER FORM

40. What Kind of Shoes or Boots Were You Wearing?

OECD Reference: A.5.3.2.5

Convention/Coding Source: OECD

Element Attributes:

- (00) no shoes or boots, barefoot (skip to # 43)
- (01) light sandal
- (02) medium street shoe, loafer
- (03) athletic, training shoe
- (04) heavy shoe or boot
- (05) reinforced work boot or motorcycle boot
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The following definitions may be applied in order to assist in the determination of the footwear material/type:

no shoes or boots, barefoot: The rider was not wearing footwear at the time of the crash.

light sandal: This is any open-toed shoe.

medium street shoe, loafer: This is a walking shoe with a leather/synthetic sole and a leather/synthetic upper.

athletic, training shoe: This is a shoe used for athletic or training purposes, typically fabricated from nylon or leather with an elastomeric sole.

heavy shoe or boot: This is a strong boot or sturdy shoe typically composed of leather or heavy-duty nylon with a thick, solid sole.

reinforced work boot or motorcycle boot: This is a boot with some form of reinforcement to increase the stiffness and durability of the boot.

MOTORCYCLE PASSENGER FORM

41. Did This Footwear Go up Over Your Ankle?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no footwear worn
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

42. Was the Footwear Motorcycle Oriented?

OECD Reference: A.5.3.2.6

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no footwear worn
- (99) unknown

Range: 00, 01, 97, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Motorcycle-oriented footwear is any footwear that is sold exclusively or primarily for motorcycle riding.

MOTORCYCLE PASSENGER FORM

43. What Kind of Gloves Were You Wearing?

OECD Reference: A.5.3.2.7

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none (skip to # 45)
- (01) light cloth garment (e.g., thin cotton)
- (02) medium cloth garment (e.g., denim, nylon)
- (03) heavy cloth garment (e.g., imitation leather)
- (04) leather garment
- (05) Kevlar
- (06) armored nylon mesh
- (07) off-road, molded body armor
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

44. Are the Gloves Motorcycle Oriented?

OECD Reference: A.5.3.2.8

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) yes, full-fingered
- (02) yes, shorties
- (97) not applicable, no gloves worn
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Motorcycle-oriented gloves are any gloves that are sold exclusively or primarily for motorcycle riding.

MOTORCYCLE PASSENGER FORM

45. Is Any of This Clothing Retroreflective? (Code up to Three Responses)

OECD Reference: None

Convention/Coding Source: DSI, MSF

Element Attributes:

- (00) no retroreflective clothing or gloves
- (01) upper body (shirt/jacket/vest)
- (02) lower body (pants/shorts)
- (03) gloves
- (04) special arm bands or similar items
- (97) not applicable, no clothing or gloves worn
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

retroreflective: Retroreflective refers to a surface, material, or device (retroreflector) that reflects light or other radiation back to its source (reflective). Retroreflective also refers to materials that have been added to the item in order to increase nighttime conspicuity. Retroreflective material used on clothing, the helmet, and the motorcycle helps to make the rider visible to other motorists, especially at night.

MOTORCYCLE PASSENGER FORM

46. What Is the Clothing Color of the Following?

Upper-Body Clothing _____
Lower-Body Clothing _____
Footwear _____
Gloves _____

OECD Reference: D.5.3.2.6.1, D.5.3.2.6.2, D.5.3.2.6.3, D.5.3.2.6.4

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) no dominating color, multicolored
- (02) white
- (03) yellow
- (04) black
- (05) red
- (06) blue
- (07) green
- (08) silver
- (09) orange
- (10) brown
- (11) purple
- (12) gold
- (13) grey
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 01–13, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

47. What Kind of Eye Protection Were You Wearing at the Time of the Crash?

OECD Reference: A.5.3.2.9

Convention/Coding Source: OECD, NASS⁽⁴⁾

Element Attributes:

- (00) none (skip to # 49)
- (01) clear, nonprescription glasses
- (02) clear, prescription glasses
- (03) nonprescription sunglasses
- (04) prescription sunglasses
- (05) goggles, nonprescription
- (06) goggles, prescription
- (07) industrial safety glasses
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

none: No corrective eyeglasses/sunglasses or contact lenses were worn by this passenger.

unknown: It is not known if the passenger was wearing eyewear at the time of crash.

MOTORCYCLE PASSENGER FORM

48. What Color Was the Eye Coverage Lens?

OECD Reference: A.5.3.2.10

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) clear
- (02) green
- (03) grey, smoke
- (04) amber, yellow
- (05) blue
- (06) reflective (any color)
- (97) not applicable, not wearing eye coverage
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

49. Were You Injured in This Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no injuries (skip to # 51)
- (01) yes
- (99) unknown

Range: 00, 01, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

50. What Kind of Medical Treatment Did You Receive?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no treatment
- (01) on-scene emergency care only
- (02) treated and released at hospital/trauma center
- (03) admitted to hospital/trauma center
- (04) walk-in clinic
- (05) private physician
- (97) not applicable, no injury
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

51. How Old Were You at the Time of the Crash? (Code Actual Age in Years)

OECD Reference: A.5.1.2.3

Convention/Coding Source: OECD, DSI

Element Attributes:

(01–96)	actual age in years
(99)	unknown

Range: 01–96, 99

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

52. Where Did You Get Your Current Driver's License?

OECD Reference: A.5.1.2.4

Convention/Coding Source: DSI

Element Attributes:

- (00) no license
- (01) Canada
- (02) California
- (03) other State (list)
- (04) military
- (97) no license required (49cc scooter)
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

53. What Kind of Operator's License Is It? (Code up to Four; Input 97 for Remaining Responses)

OECD Reference: A.5.1.2.1, A.5.1.2.2, A.5.1.2.3, A.5.1.2.4

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no license
- (01) learner's permit only
- (02) motorcycle license
- (03) automobile license
- (04) commercial license
- (05) motorcycle driver and competition license
- (06) license to transport people
- (07) heavy-truck license
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

54. What Year Was/Were the License(s) Issued? (List in the Same Order as # 53)

OECD Reference: A.5.1.2.6.1, A.5.1.2.6.2, A.5.1.2.6.3, A.5.1.2.6.4

Convention/Coding Source: DSI

Element Attributes:

(1900–2100)	actual year
(9997)	not applicable
(9999)	unknown

Range: 1900–2100, 9997, 9999

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

55. Are You of Hispanic or Latino Origin?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (02) refused to answer
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Primary—passenger interview

Remarks: This variable is self-identified by the passenger.

MOTORCYCLE PASSENGER FORM

56. What Is Your Race? (Code up to Three; Input 97 for Remaining Responses)

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) White
- (02) Black or African American
- (03) Asian
- (04) Native Hawaiian or other Pacific Islander
- (05) American Indian or Alaskan Native
- (06) refused to answer
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source: Primary—passenger interview

Remarks: This variable is self-identified by the passenger.

other (specify): This is selected for riders who consider themselves to be of a race not described above. Use this attribute for descriptions such as Eurasian, Cosmopolitan, interracial, etc.

MOTORCYCLE PASSENGER FORM

57. What Is Your Height?

___ feet ___ inches

OECD Reference: A.5.1.2.9

Convention/Coding Source: DSI

Element Attributes:

(01-12) actual number of feet and inches
(09-99) unknown

Range: 01-12, 09-99

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

58. What Is Your Weight in Pounds?

OECD Reference: A.5.1.2.10

Convention/Coding Source: DSI

Element Attributes:

(001–996)	actual weight in pounds
(999)	unknown

Range: 001–996, 999

Source:

Primary—passenger interview
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

59. What Is Your Gender?

OECD Reference: A.5.1.2.11

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) male
- (02) female
- (99) unknown

Range: 01, 02, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

unknown: This is used when the sex of the rider cannot be determined.

MOTORCYCLE PASSENGER FORM

60. How Much Formal Education Have You Had?

OECD Reference: A.5.1.2.12

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no formal schooling
- (01) less than high school diploma
- (02) high school diploma or GED
- (03) partial college/university
- (04) college/university graduate
- (05) graduate school, advanced degree, professional degree
- (06) specialty/technical school
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

If permissible, compute the number of years of formal education that the rider has received. Include all schooling during the rider's early years of life (i.e., up to age 18) as well as any schooling at a college, university, or technical school.

61. What Is Your Current Occupation?

OECD Reference: A.5.1.2.13

Convention/Coding Source: U.S. Department of Labor

Element Attributes:

- (01) management
- (02) business and financial
- (03) computer and mathematical
- (04) architecture and engineering
- (05) life, physical, and social sciences
- (06) community and social services
- (07) legal
- (08) education, training, or library
- (09) arts, design, entertainment, sports, or media
- (10) healthcare practitioners and technical jobs
- (11) healthcare support
- (12) protective services
- (13) food preparation, serving, and related
- (14) building and grounds maintenance
- (15) personal care and services
- (16) sales and related
- (17) office and administrative support
- (18) farming, fishing, or forestry
- (19) construction or extraction
- (20) installation, maintenance, or repair
- (21) transportation and material moving
- (22) military
- (23) full-time student
- (97) not applicable, not in workforce at present
- (98) other (specify)
- (99) unknown

Range: 01–23, 97–99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The following descriptions may be used as a guideline to code this variable.

61. What Is Your Current Occupation? (Continued)

management: This group comprises the following occupations: chief executives; general and operations managers; legislators; advertising and promotions managers; marketing managers; sales managers; public relations managers; administrative services managers; computer and information systems managers; financial managers; compensation and benefits managers; training and development managers; human resources managers, all other; industrial production managers; purchasing managers; transportation, storage, and distribution managers; farm, ranch, and other agricultural managers; farmers and ranchers; construction managers; education administrators, preschool and child care center/program; education administrators, elementary and secondary school; education administrators, postsecondary; education administrators, all other; engineering managers; food service managers; funeral directors; gaming managers; lodging managers; medical and health services managers; natural sciences managers; postmasters and mail superintendents; property, real estate, and community association managers; social and community service managers; and managers, all other.

business and financial: This group comprises the following occupations: accountants and auditors; appraisers and assessors of real estate; budget analysts; claims adjusters, appraisers, examiners, and investigators; cost estimators; financial analysts and personal financial advisors; insurance underwriters; loan officers; management analysts; meeting and convention planners; and tax examiners, collectors, and revenue agents.

architecture and engineering: This group comprises the following occupations: architects, except landscape and naval; landscape architects; cartographers and photogrammetrists; surveyors; aerospace engineers; agricultural engineers; biomedical engineers; chemical engineers; civil engineers; computer hardware engineers; electrical engineers; electronics engineers, except computer; environmental engineers; health and safety engineers, except mining safety engineers and inspectors; industrial engineers; marine engineers and naval architects; materials engineers; mechanical engineers; mining and geological engineers, including mining safety engineers; nuclear engineers; petroleum engineers; engineers, all other; architectural and civil drafters; electrical and electronics drafters; mechanical drafters; drafters, all other; aerospace engineering and operations technicians; civil engineering technicians; electrical and electronic engineering technicians; electro-mechanical technicians; environmental engineering technicians; industrial engineering technicians; mechanical engineering technicians; engineering technicians, except drafters, all other; and surveying and mapping technicians.

61. What Is Your Current Occupation? (Continued)

life, physical, and social sciences: This group comprises the following occupations: animal scientists; food scientists and technologists; soil and plant scientists; biochemists and biophysicists; microbiologists; zoologists and wildlife biologists; biological scientists, all other; conservation scientists; foresters; epidemiologists; medical scientists, except epidemiologists; life scientists, all other; astronomers; physicists; atmospheric and space scientists; chemists; materials scientists; environmental scientists and specialists, including health; geoscientists, except hydrologists and geographers; hydrologists; physical scientists, all other; economists; market research analysts; survey researchers; clinical, counseling, and school psychologists; industrial-organizational psychologists; psychologists, all other; sociologists; urban and regional planners; anthropologists and archeologists; geographers; historians; political scientists; social scientists and related workers, all other; agricultural and food science technicians; biological technicians; chemical technicians; geological and petroleum technicians; nuclear technicians; social sciences research assistants; environmental science and protection technicians, including health; forensic science technicians; forest and conservation technicians; and life, physical.

community and social services: This group comprises the following occupations: substance abuse and behavioral disorder counselors; educational, vocational, and school counselors; marriage and family therapists; mental health counselors; rehabilitation counselors; counselors, all other; child, family, and school social workers; medical and public health social workers; mental health and substance abuse social workers; social workers, all other; health educators; probation officers and correctional treatment specialists; social and human service assistants; community and social service specialists, all other; clergy; and directors, religious activities and education.

legal: This group comprises the following occupations: lawyers; administrative law judges, adjudicators, and hearing officers; arbitrators, mediators, and conciliators; judges, magistrate judges, and magistrates; paralegals and legal assistants; court reporters; law clerks; title examiners, abstractors, and searchers; and legal support workers, all other.

education, training, or library: This group comprises the following occupations: business teachers, postsecondary; computer science teachers, postsecondary; mathematical science teachers, postsecondary; architecture teachers, postsecondary; engineering teachers, postsecondary; agricultural sciences teachers, postsecondary; biological science teachers, postsecondary; forestry and conservation science teachers, postsecondary; atmospheric, earth, marine, and space sciences teachers, postsecondary; chemistry teachers, postsecondary; environmental science teachers, postsecondary; physics teachers, postsecondary; anthropology and archeology teachers, postsecondary; area, ethnic, and cultural studies teachers, postsecondary; economics teachers, postsecondary; geography teachers, postsecondary; political science teachers, postsecondary; psychology teachers, postsecondary; sociology teachers,

61. What Is Your Current Occupation? (Continued)

postsecondary; social sciences teachers, postsecondary, all other; health specialties teachers, postsecondary; nursing instructors and teachers, postsecondary; education teachers, postsecondary; library science teachers, postsecondary; criminal justice and law enforcement teachers, postsecondary; law teachers, postsecondary; social work teachers, postsecondary; art, drama, and music teachers, postsecondary; communications teachers, postsecondary; English language and literature teachers, postsecondary; foreign language and literature teachers, postsecondary; history teachers, postsecondary; philosophy and religion teachers, postsecondary; graduate teaching assistants; home economics teachers, postsecondary; recreation and fitness studies teachers, postsecondary; vocational education teachers, postsecondary; postsecondary teachers, all other; preschool teachers, except special education; kindergarten teachers, except special education; elementary school teachers, except special education; middle school teachers, except special and vocational education; vocational education teachers, middle school; secondary school teachers, except special and vocational education; vocational education teachers, secondary school; special education teachers, preschool, kindergarten, and elementary school; special education teachers, middle school; special education teachers, secondary school; adult literacy, remedial education, and GED teachers and instructors; self-enrichment education teachers; teachers and instructors, all other; archivists; curators; museum technicians and conservators; librarians; library technicians; audio-visual collections specialists; farm and home management advisors; instructional coordinators; teacher assistants; and education, training, and library workers, all other.

arts, design, entertainment, sports, or media: This group comprises the following occupations: art directors; craft artists; fine artists, including painters, sculptors, and illustrators; multimedia artists and animators; artists and related workers, all other; commercial and industrial designers; fashion designers; floral designers; graphic designers; interior designers; merchandise displayers and window trimmers; set and exhibit designers; designers, all other; actors; producers and directors; athletes and sports competitors; coaches and scouts; umpires, referees, and other sports officials; dancers; choreographers; music directors and composers; musicians and singers; entertainers and performers, sports and related workers, all other; radio and television announcers; public address system and other announcers; broadcast news analysts; reporters and correspondents; public relations specialists; editors; technical writers; writers and authors; interpreters and translators; media and communication workers, all other; audio and video equipment technicians; broadcast technicians; radio operators; sound engineering technicians; photographers; camera operators, television, video, and motion picture; film and video editors; and media and communication equipment workers.

61. What Is Your Current Occupation? (Continued)

healthcare support: This group comprises the following occupations: home health aides; nursing aides, orderlies, and attendants; psychiatric aides; occupational therapist assistants; occupational therapist aides; physical therapist assistants; physical therapist aides; massage therapists; dental assistants; medical assistants; medical equipment preparers; medical transcriptionists; pharmacy aides; veterinary assistants and laboratory animal caretakers; and healthcare support workers.

protective services: This group comprises the following occupations: first-line supervisors/managers of correctional officers; first-line supervisors/managers of police and detectives; first-line supervisors/managers of firefighting and prevention workers; first-line supervisors/managers, protective service workers, all other; firefighters; fire inspectors and investigators; forest fire inspectors and prevention specialists; bailiffs; correctional officers and jailers; detectives and criminal investigators; fish and game wardens; parking enforcement workers; police and sheriff's patrol officers; transit and railroad police; animal control workers; private detectives and investigators; gaming surveillance officers and gaming investigators; security guards; crossing guards; lifeguards, ski patrol, and other recreational protective service workers; and protective service workers, all other.

food preparation, serving, and related: This group comprises the following occupations: chefs and head cooks; first-line supervisors/managers of food preparation and serving workers; cooks, fast food; cooks, institution and cafeteria; cooks, private household; cooks, restaurant; cooks, short order; cooks, all other; food preparation workers; bartenders; combined food preparation and serving workers, including fast food; counter attendants, cafeteria, food concession, and coffee shop; waiters and waitresses; food servers, nonrestaurant; dining room and cafeteria attendants and bartender helpers; dishwashers; hosts and hostesses, restaurant, lounge, and coffee shop; and food preparation and serving-related workers.

building and grounds maintenance: This major group comprises the following occupations: first-line supervisors/managers of housekeeping and janitorial workers; first-line supervisors/managers of landscaping, lawn service, and groundskeeping workers; janitors and cleaners, except maids and housekeeping cleaners; maids and housekeeping cleaners; building cleaning workers, all other; pest control workers; landscaping and groundskeeping workers; pesticide handlers, sprayers, and applicators, vegetation; tree trimmers and pruners; and grounds maintenance workers, all other.

61. What Is Your Current Occupation? (Continued)

personal care and services: This group comprises the following occupations: gaming supervisors; slot key persons; first-line supervisors/managers of personal service workers; animal trainers; nonfarm animal caretakers; gaming dealers; gaming and sports book writers and runners; gaming service workers, all other; motion picture projectionists; ushers, lobby attendants, and ticket takers; amusement and recreation attendants; costume attendants; locker room, coatroom, and dressing room attendants; entertainment attendants and related workers, all other; embalmers; funeral attendants; barbers; hairdressers, hairstylists, and cosmetologists; makeup artists, theatrical and performance; manicurists and pedicurists; shampooers; skin care specialists; baggage porters and bellhops; concierges; tour guides and escorts; travel guides; flight attendants; transportation attendants, except flight attendants and baggage porters; child care workers; personal and home care aides; fitness trainers and aerobics instructors; recreation workers; residential advisors; and personal care and service workers, all other.

sales and related: This group comprises the following occupations: advertising sales agents; cashiers; counter and rental clerks; demonstrators, product promoters, and models; insurance sales agents; real estate brokers and sales agents; retail salespersons; sales engineers; sales representatives, wholesale and manufacturing; sales worker supervisors; securities, commodities, and financial services sales agents; and travel agents.

office and administrative support: This group comprises the following occupations: financial clerks, bill and account collectors; billing and posting clerks and machine operators; bookkeeping, accounting, and auditing clerks; gaming cage workers; payroll and timekeeping clerks; procurement clerks; tellers, information and record clerks, and brokerage clerks; credit authorizers, checkers, and clerks; customer service representatives; file clerks; hotel, motel, and resort desk clerks; human resources assistants, except payroll and timekeeping; interviewers; library assistants, clerical; order clerks; receptionists and information clerks; reservation and transportation ticket agents and travel clerks; material recording, scheduling, dispatching, and distributing occupations, cargo and freight agents; couriers and messengers; dispatchers; meter readers, utilities; postal service workers; production, planning, and expediting clerks; shipping, receiving, and traffic clerks; stock clerks and order fillers; weighers, measurers, checkers, and samplers, recordkeeping; other office and administrative support occupations, communications equipment operators; computer operators; data entry and information processing workers; desktop publishers; office and administrative support worker supervisors and managers; office clerks, general; and secretaries and administrative assistants.

farming, fishing, and forestry: This group comprises the following occupations: agricultural workers; fishers and fishing vessel operators; and forest, conservation, and logging workers.

61. What Is Your Current Occupation? (Continued)

construction or extraction: This group comprises the following occupations: first-line supervisors/managers of construction trades and extraction workers; boilermakers; brickmasons and blockmasons; stonemasons; carpenters; carpet installers; floor layers, except carpet, wood, and hard tiles; floor sanders and finishers; tile and marble setters; cement masons and concrete finishers; terrazzo workers and finishers; construction laborers; paving, surfacing, and tamping equipment operators; pile-driver operators; operating engineers and other construction equipment operators; drywall and ceiling tile installers; tapers; electricians glaziers; insulation workers, floor, ceiling, and wall; insulation workers, mechanical; painters, construction and maintenance; paperhangers; pipelayers; plumbers, pipefitters, and steamfitters; plasterers and stucco masons; reinforcing iron and rebar workers; roofers; sheet metal workers; structural iron and steel workers; helpers—brickmasons, blockmasons, stonemasons, and tile and marble setters; helpers—carpenters; helpers—electricians; helpers—painters, paperhangers, plasterers, and stucco masons; helpers—pipelayers, plumbers, pipefitters, and steamfitters; helpers—roofers; helpers, construction trades, all other; construction and building inspectors; elevator installers and repairers; fence erectors; hazardous materials removal workers; highway maintenance workers; rail-track laying and maintenance equipment operators; septic tank servicers and sewer pipe cleaners; segmental pavers; construction and related workers, all other; derrick operators, oil and gas; rotary drill operators, oil and gas; service unit operators, oil, gas, and mining; earth drillers, except oil and gas; explosives workers, ordnance handling experts, and blasters; continuous mining machine operators; mine cutting and channeling machine operators; mining machine operators, all other; rock splitters, quarry; roof bolters, mining; roustabouts, oil and gas; helpers—extraction workers; and extraction workers, all other.

installation, maintenance, and repair: This group comprises the following occupations: electrical and electronic equipment mechanics, installers, and repairers—computer, automated teller, and office machine repairers; electrical and electronics installers and repairers; electronic home entertainment equipment installers and repairers; radio and telecommunications equipment installers and repairers; vehicle and mobile equipment mechanics, installers, and repairers; aircraft and avionics equipment mechanics and service technicians; automotive body and related repairers; automotive service technicians and mechanics; diesel service technicians and mechanics; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; other installation, maintenance, and repair occupations—coin, vending, and amusement machine servicers and repairers; heating, air-conditioning, and refrigeration mechanics and installers; home appliance repairers; industrial machinery mechanics and maintenance workers; line installers and repairers; maintenance and repair workers, general; millwrights; and precision instrument and equipment repairers.

MOTORCYCLE PASSENGER FORM

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61. What Is Your Current Occupation? (Continued)

transportation and material moving: This group comprises the following occupations: air transportation occupations—air traffic controllers, aircraft pilots, and flight engineers; material moving occupations; motor vehicle operators; bus drivers; taxi drivers and chauffeurs; truck drivers and driver/sales workers; rail transportation occupations; and water transportation occupations.

MOTORCYCLE PASSENGER FORM

62. Are You Married?

OECD Reference: C.5.2.1.2.1

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) single
- (02) married
- (03) separated
- (04) divorced
- (05) widowed
- (06) cohabitating
- (98) other (specify)
- (99) unknown

Range: 01–06, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

63. How Many Children Do You Have?

OECD Reference: C.5.2.1.2.2

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) one
- (02) two
- (03) three
- (04) four
- (05) five
- (06) six or more
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source:

- Primary—passenger interview
- Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE PASSENGER FORM

64. Blood Alcohol Concentration (BAC)? (Code Results in mg/100 ml)

OECD Reference: A.5.1.2.34

Convention/Coding Source: OECD, NASS⁽⁴⁾

Element Attributes:

(000)	negative BAC
(001–900)	test results in mg/100 ml
(995)	BAC tested, results not known
(996)	BAC not tested
(998)	other (specify)
(999)	unknown

Range: 000–900, 995, 996, 998, 999

Source:

- Primary—BAC test given at scene
- Secondary—medical records and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Blood Alcohol Concentration (BAC) analytically measures the mass of alcohol per unit volume of blood. The standard measure is expressed as the number of milligrams per deciliter (10th of a liter) expressed as a decimal (e.g., 0.05 = 50 mg/100 ml; 0.15 = 150 mg/100 ml). A blood alcohol concentration (BAC) test could be a blood, breath, or urine test. If the BAC was given on the police report or medical record, enter the reported value. In essence, if any BAC is obtained, enter the reported value and annotate the source. When coding, for example, a BAC of 117 mg/dl is coded as 0.117.

MOTORCYCLE PASSENGER FORM

65. Source of BAC Information?

OECD Reference: A.5.1.2.35

Convention/Coding Source: DSI

Element Attributes:

- (00) not tested
- (01) breath test
- (02) unknown if tested
- (03) tested, results unknown
- (04) tested, results not available
- (05) official records/ER/autopsy/PAR
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source:

- Primary—test administered to passenger
- Secondary—hospital record and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTROL MOTORCYCLE PASSENGER FORM

Case Number

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes: Case number

Range: 0001–2000

Source: Primary—case assignment chart

Remarks: This variable is assigned by the investigator from the source.

The assigned case number for this control motorcycle passenger form will be the case number that has been assigned to the crash that is being investigated at the control study location.

CONTROL MOTORCYCLE PASSENGER FORM

Control MC Passenger Number

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes: 01–20

Range: 01–20

Source: The source is assigned by the investigator.

Remarks: The control motorcycle passenger number will be assigned starting with 01 for the control study location based on the case number being investigated.

CONTROL MOTORCYCLE PASSENGER FORM

1. Before This Interview, Were You Wearing a Helmet?

OECD Reference: B.5.3.1.2.9

Convention/Coding Source: DSI, OECD

Element Attributes:

- (00) no
- (01) yes (skip to # 4)
- (02) helmet available but not used
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

2. What Is Your Reason for Not Wearing a Helmet?

OECD Reference: B.5.2.1.2.13

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) not required by law
- (02) no expectation of crash involvement
- (03) helmets are too expensive
- (04) helmets are inconvenient and uncomfortable
- (05) helmets reduce traffic awareness, limit hearing and vision
- (06) helmets are ineffective in reducing head injury
- (07) helmets cause neck injury
- (08) helmets cannot be used, physical or religious reasons
- (09) do not own a helmet
- (10) forgot to bring helmet today
- (97) not applicable, rider is wearing a helmet
- (98) other (specify)
- (99) unknown

Range: 01–10, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

3. Do You Ever Wear a Helmet?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 14)
- (01) yes (skip to # 12)
- (02) occasionally (skip to # 12)
- (97) not applicable, passenger is wearing a helmet
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

4. Was/Is Your Helmet Properly Adjusted on Your Head?

OECD Reference: B.5.3.1.2.10

Convention/Coding Source: OEC, DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

The following definitions may be applied in order to assist in the determination of proper helmet adjustment.

yes: The helmet was properly oriented on the wearer's head to provide maximum field of vision and maximum impact protection.

no: The helmet was on the passenger's head prior to the interview; however, it was oriented in such a fashion as to reduce the field of vision or the protective capacity of the helmet.

An example of an improperly adjusted helmet is a full-face helmet that has been partially donned and is resting on top of the head prior to the interview. The retention system may or may not be fastened. Another example is an oversized helmet, relative to the wearer's head, that is rotated backward and secured with a loose retention strap.

not applicable, no helmet: No helmet was worn.

unknown: The investigator is unable to determine if the helmet was properly adjusted. This response may also be used if the investigator is not sure if a helmet was worn.

CONTROL MOTORCYCLE PASSENGER FORM

5. Was/Is Your Helmet Securely Fastened to Your Head?

OECD Reference: B.5.3.1.2.11

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Note: A properly adjusted chin strap would indicate a securely fastened helmet.

6. What Type of Helmet Is It?

OECD Reference: B.5.3.1.2.12

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) not a motorcycle helmet
- (01) half/police motor vehicle, motorcycle helmet
- (02) open-face motor vehicle, motorcycle helmet
- (03) full-face motor vehicle, motorcycle helmet
- (04) novelty or beanie helmet
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

half/police motor vehicle, motorcycle helmet: These helmets are built with an energy-absorbing liner (usually expanded polystyrene) and are certified as meeting the USDOT standard. These are the least intrusive style of motorcycle helmets, covering only the top half of the cranium. They weigh the least, do not block the ears, and offer the least wind resistance. They also afford the least protection and are the most likely to come off in a crash, even when properly fastened.

open-face motor vehicle, motorcycle helmet: This style is similar to that of a full-face helmet, but it does not wrap around the face. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A chinstrap secures the helmet, sometimes in the form of a chin cup. This type of helmet may have a flexible chin protector that snaps on and off and resembles the chin bar of a full-face helmet. These removable chin bars (or gravel guards) are sometimes attached to helmets used in dirt-bike riding. Such a flimsy attachment does not make it a full-face helmet—it is still an open-face helmet with an accessory attachment.

6. What Type of Helmet Is It? (Continued)

full-face motor vehicle, motorcycle helmet: These helmets cover the entire head and most of the face. The hard shell extends from the brow over the cranium to the base of the skull at the top of the neck. The shell rides forward along the cheekbones to encompass the jaws and chin, leaving a wraparound view port. A transparent visor slides over the view port to block out wind blast, rain, and dust and to ease eye fatigue. Most full-face motorcycle helmets are vented at the chin and within the shell. Vents normally have sliding doors for use in cold weather. The inner shell is highly padded, and the helmet has a chinstrap for securing. This style includes helmets with a moveable chin bar that can be unlatched to pivot upward, exposing the wearer's entire face.

novelty or beanie helmet: These helmets do not comply with USDOT regulations or any other performance requirements. Novelty helmets have only soft comfort padding (similar to the comfort padding of USDOT-compliant helmets) inside the shell but no energy-absorbing foam. Riders may add what appears to be a USDOT sticker to the back in order to fool police, but that should not fool an investigator. Energy-absorbing foam is absolutely essential to passing the USDOT standard. Also, novelty helmets almost never identify the manufacturer, model, or date of manufacture.

CONTROL MOTORCYCLE PASSENGER FORM

6(A). Conformity to Which Qualification? (Code All That Apply; Input 97 for Remaining Responses)

OECD Reference: A.5.3.1.25.1, A.5.3.1.25.2, A.5.3.1.25.3, A.5.3.1.25.4

Convention/Coding Source: OECD

Element Attributes:

- (01) no standards labeled
- (02) ISO
- (03) ECE-22-02
- (04) ECE-22-03
- (05) ECE-22-04
- (06) E04 (EU)
- (07) BS6658A
- (08) BS6658B
- (09) JIS-A
- (10) JIS-B
- (11) JIS-C
- (12) FMVSS 218
- (13) SNELL M85
- (14) SNELL M90 (Singapore)
- (15) ANSI Z90.1
- (16) CSA D230
- (17) TUV
- (18) DGM (Italy)
- (19) NF (France)
- (20) ASA (Australia)
- (21) CEN
- (22) FIM
- (23) SEI
- (24) M6.1 (Malay)
- (25) NZS (1214, 1215)
- (26) SSA # 9
- (27) USDOT
- (98) other (specify)
- (99) unknown

Range: 01–27, 98, 99

Source: Primary—helmet

Remarks: This variable is assigned by the investigator from the source.

7. What Is the Type of Helmet Coverage?

OECD Reference: B.5.3.1.2.13

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) partial coverage
- (02) full coverage
- (03) full-facial coverage, integral chin bar but no face shield
- (04) full-facial coverage, removable chin bar
- (05) full-facial coverage, retractable chin bar
- (06) full-facial coverage, integral chin bar and face shield
- (07) open-face helmet with flat wraparound face shield
- (08) open-face helmet with bubble-type face shield
- (09) open-face helmet with visor/face shield combo
- (10) open-face helmet with removable gravel guard
- (97) not applicable, not helmet
- (98) other (specify)
- (99) unknown

Range: 00–10, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

partial coverage: These are the least intrusive style of motorcycle helmets, covering only the top half of the cranium. These helmets are USDOT compliant and have an energy-absorbing liner (usually expanded polystyrene, and 0.75-inch thick or more). They weigh the least, do not block the ears, and offer the least wind resistance. They also afford the least protection.

full coverage: The style of an open-face motor vehicle, motorcycle helmet is similar to a full-face helmet, but it does not wrap around the face. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A chinstrap secures the helmet, sometimes in the form of a chin cup.

full-facial coverage, integral chin bar but no face shield: This style is similar to that of a full-face helmet, but it does wrap around the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A full chin bar is incorporated into the design.

7. What Is the Type of Helmet Coverage? (Continued)

full-facial coverage, removable chin bar: This style is similar to that of a full-face helmet, but it has a removable chin bar that extends across the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears.

full-facial coverage, retractable chin bar: This style is similar to that of a full-face helmet, but it has a retractable chin bar that wraps across the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears

full-facial coverage, integral chin bar and face shield: This helmet shell extends from the brow over the cranium to the base of the neck and across the front of the face at the chin level. In addition, a transparent face shield covers the eyes, nose, and mouth areas.

open-face helmet with wraparound face shield: A wraparound face shield is a removable transparent covering that may extend over some portion of the eyes, nose, and mouth areas. It can be attached to helmets at the sides of the head.

open-face helmet with bubble-type face shield: A bubble-type face shield is a large transparent covering in a curved, “bubble” shape that attaches to the front of an open-face helmet. It generally provides full facial protection.

open-face helmet with visor/face shield combo: This can be attached to helmets and provides transparent facial protection, with a visor overhang at the top of the unit.

CONTROL MOTORCYCLE PASSENGER FORM

8. What Is the Predominant Color of Your Helmet?

OECD Reference: B.5.3.1.2.14

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) no dominating color, multicolored
- (02) white
- (03) yellow
- (04) black
- (05) red
- (06) blue
- (07) green
- (08) silver, grey
- (09) orange
- (10) brown, tan
- (11) purple
- (12) gold
- (13) chrome, metallic
- (97) not applicable, not helmet
- (98) other (specify)
- (99) unknown

Range: 01–13, 97–99

Source: Primary—passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

9. What Is the Color of the Face Shield?

OECD Reference: B.5.3.1.2.15

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) clear
- (02) green
- (03) grey, smoke
- (04) amber, yellow
- (05) blue
- (06) reflective (any color)
- (97) not applicable, no face shield
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

10. Do You Own This Helmet?

OECD Reference: B.5.3.1.2.16

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

11. How Well Does This Helmet Fit?

OECD Reference: B.5.3.1.2.17

Convention/Coding Source: OECD

Element Attributes:

- (01) acceptable fit
- (02) too large, too loose
- (03) too small, too tight
- (04) contour mismatch
- (97) not applicable, no helmet
- (98) other (specify)
- (99) unknown

Range: 01–04, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

The following definitions may be applied in order to assist in the determination of proper helmet fit.

acceptable fit: This is when the helmet is the correct size for the wearer. An acceptable fitting helmet will not move excessively when properly adjusted and retained on the wearer's head.

too large, too loose: This is when a helmet is too large given the size of the wearer's head. A helmet that is too large and too loose will move excessively on the wearer's head during normal use.

too small, too tight: This is a helmet that is too small given the size of the wearer's head. A helmet that is too small and too tight may remain on the wearer's head even if the retention system is not properly fastened. It may also rest higher upon the wearer's head given the fact that it cannot be fully donned due to its small size.

contour mismatch: The helmet size is correct for rider's head circumference, but the rider's head is long and narrow, short and wide, or otherwise unusual.

not applicable, no helmet: No helmet was worn.

CONTROL MOTORCYCLE PASSENGER FORM

12. What Percentage of Time Do You Wear Your Helmet (When Riding as a Passenger)? (Code 000–100 Percent)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(000–100)	percent helmet worn
(997)	not applicable, no helmet
(999)	unknown

Range: 000–100, 997, 999

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Record the percentage of time that the passenger wears a helmet when riding. If the passenger does not wear a helmet, input 000 as the correct response for the variable. If the passenger wears a helmet all the time while riding a motorcycle, then input 100. If the interviewee does not wear the helmet 25 percent of the time, then code 075 for the time the passenger does wear the helmet.

CONTROL MOTORCYCLE PASSENGER FORM

13. Under What Conditions Do You Usually Wear Your Helmet? (Code up to Four; Input 97 for Remaining Responses)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) never uses helmet
- (01) mostly on long trips
- (02) mostly in high-speed highway or freeway traffic
- (03) in adverse weather
- (04) usually, but not in hot weather
- (05) always
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

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14. Do You Have Any of the Following Permanent Physical Conditions? (Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.5.1.1.2.35.1, A.5.1.1.2.35.2, A.5.1.1.2.35.3

Convention/Coding Source: DSI, OECD

Element Attributes:

- (00) no
- (01) vision reduction or loss
- (02) hearing reduction or loss
- (03) respiratory, cardiovascular condition
- (04) paraplegia
- (05) amputee
- (06) neurological, epilepsy, stroke
- (07) endocrine system, diabetes, digestive system
- (08) infirmity, arthritis, senility
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

vision reduction or loss: This refers to the need to wear corrective lenses or to legal blindness in one or both eyes.

hearing reduction or loss: This refers to the need to wear a hearing aid or to partial or complete deafness.

respiratory system: The respiratory system consists of airways, lungs, and respiratory muscles that mediate the movement of air in and out of the body. Within the alveolar system of the lungs, molecules of oxygen and carbon dioxide are passively exchanged by diffusion between the gaseous environment and the blood. Thus, the respiratory system facilitates oxygenation of the blood with a concomitant removal of carbon dioxide and other gaseous metabolic wastes from the circulation. The system also helps to maintain the acid–base balance of the body through the efficient removal of carbon dioxide from the blood.

cardiovascular condition: The cardiovascular system is made up of blood vessels, also known as the circulatory system, that work in conjunction with the beating heart.

14. Do You Have Any of the Following Permanent Physical Conditions? (Continued)

paraplegia: This is an impairment in motor and/or sensory function of the lower extremities. It is usually the result of a spinal cord injury or a congenital condition, such as spina bifida, that affects the neural elements of the spinal canal. If the arms are also affected by paralysis, tetraplegia is the proper terminology.

amputee: Amputation is the removal of a body extremity by trauma or surgery.

neurological: The nervous system is a highly specialized network in which principal components are cells called neurons. Neurons are interconnected in complex arrangements and use electrochemical signals to conduct a great variety of stimuli within the nervous tissue as well as from and toward most other tissues. Thus, neurons coordinate multiple functions in organisms. Neurological impairment includes a loss of sensation caused by disease or injury.

epilepsy: This is a brain disorder that causes recurring seizures. Seizures happen when clusters of nerve cells, or neurons, in the brain send out the wrong signals. People may have strange sensations and emotions, behave strangely, have violent muscle spasms, or lose consciousness.

strokes: Strokes happen when blood flow to the brain stops. Within minutes, brain cells begin to die. There are two kinds of strokes. The more common stroke, ischemic, is caused by a blood clot that blocks or plugs a blood vessel in the brain. The other stroke, hemorrhagic, is caused by a blood vessel that breaks and bleeds into the brain. Ministrokes or transient ischemic attacks (TIAs) occur when the blood supply to the brain is briefly interrupted.

endocrine system: The glands and parts of glands that produce endocrine secretions help to integrate and control bodily metabolic activity. This includes the pituitary, thyroid, parathyroids, adrenals, islets of Langerhans, ovaries, and testes.

diabetes: This is a disease in which blood glucose, or sugar, levels are too high. Glucose comes from food. Insulin is a hormone that helps the glucose get into cells to give them energy. With Type 1 diabetes, the body does not make insulin. With Type 2 diabetes, the more common type, the body does not make or use insulin well. Without enough insulin, glucose stays in the blood.

digestive system: This refers to the bodily system concerned with eating and drinking, and the digestion and absorption of food.

infirmity: This is a bodily ailment or weakness, especially one brought on by old age.

14. Do You Have Any of the Following Permanent Physical Conditions? (Continued)

arthritis: This is a disease in which a person feels pain and stiffness in the body or has trouble moving around. Most kinds of arthritis cause pain and swelling in the joints. Joints are places where two bones meet, such as the elbow or knee. Over time, a swollen joint can become severely damaged. Some kinds of arthritis might also cause problems in organs, such as eyes or skin.

senility: More commonly referred to as dementia, senility is characterized by a decrease in cognitive abilities. This may include the person's ability to concentrate, recall information, and properly judge a situation. In addition, the personality of someone with senility may change. A person in the advanced stages of senility may be unsure of who he or she is.

CONTROL MOTORCYCLE PASSENGER FORM

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15. When You Were Just Riding, Were You Experiencing Any of the Following? (Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.5.1.1.2.36.1, A.5.1.1.2.36.2, A.5.1.1.2.36.3

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) fatigue
- (02) hunger
- (03) thirst
- (04) elimination urgency
- (05) muscle spasm, cramp, itch
- (06) headache, minor malaise, fever
- (07) siesta syndrome (tired in the afternoon)
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

fatigue: This is a feeling of weariness, tiredness, or lack of energy.

hunger: This is a craving or urgent need for food or a specific nutrient. Hunger is an uneasy sensation and/or a weakened condition brought about by prolonged lack of food.

thirst: This is a sensation of dryness in the mouth and throat associated with a desire for liquids. The bodily condition known as dehydration induces this sensation. Thirst is also a basic desire or need to drink.

elimination urgency: This is the state in which the individual experiences a disturbance in urine elimination.

muscle spasm, cramp, itch: This is an involuntary contraction of a muscle. Muscle cramps are involuntary and often painful contractions (movements) of the muscles.

headache: The most common type of headache is a tension headache. Tension headaches are due to tight muscles in the shoulders, neck, scalp, and jaw. They are often related to stress, depression, or anxiety. Tension headaches are more likely in those who work too much, do not get enough sleep, miss meals, or use alcohol.

**15. When You Were Just Riding, Were You Experiencing Any of the Following?
(Continued)**

minor malaise: This is a generalized feeling of discomfort, illness, or lack of well-being. It can be associated with a disease. Malaise can be accompanied by a feeling of exhaustion or not having enough energy to accomplish usual activities.

fever: This is a body temperature that is higher than normal. It is not an illness; it is part of the body's defense against infection. Most bacteria and viruses that cause infections do well at the body's normal temperature (98.6 °F), and a slight fever can make it harder for them to survive because a fever also activates the body's immune system.

siesta syndrome (tired in the afternoon): This can be best described as the tired, groggy feeling experienced in the afternoon. Some people call it a "food coma" or "afternoon lull."

CONTROL MOTORCYCLE PASSENGER FORM

16. When You Were Just Riding, Were You Concerned About Any of the Following Issues? (Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.5.1.1.2.37.1, A.5.1.1.2.37.2, A.5.1.1.2.37.3

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no problems
- (01) conflict with friends, relatives, divorce, separation
- (02) work-related problems
- (03) financial distress
- (04) school problems
- (05) legal, police problems
- (06) reward stress
- (07) traffic conflict, road rage
- (08) death of family or friend
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

17. How Many Hours of Sleep Did You Have in the Past 24 Hours?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00)	no sleep
(01–24)	numbers of hours slept
(98)	other (specify)
(99)	unknown

Range: 00–24, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

18. Did You Drink Any Alcohol or Take Any Drugs or Medications in the Past 24 Hours?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 21)
- (01) alcohol use only (skip to # 21)
- (02) drug/medication use only
- (03) combined alcohol and drug/medication use
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

19. Did You Take Any Type of Drugs Other Than Alcohol?

OECD Reference: B.5.1.1.1.33

Convention/Coding Source: NASS,⁽⁴⁾ DSI, OECD

Element Attributes:

- (00) no drugs other than alcohol
- (01) stimulant
- (02) depressant
- (03) drugs taken, type unknown
- (04) multiple drugs taken
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

stimulant: This is a drug that temporarily quickens some vital processes.

depressant: This includes any drug that reduces or tends to reduce the function of a system or organ of the body.

CONTROL MOTORCYCLE PASSENGER FORM

20. What Was the Source of These Drugs Other Than Alcohol? (Code Three Responses)

OECD Reference: B.5.1.1.2.34

Convention/Coding Source: DSI, OECD

Element Attributes:

- (00) no drugs other than alcohol
- (01) prescription
- (02) nonprescription, over the counter
- (03) illegal
- (97) not applicable
- (99) unknown

Range: 00–03, 97, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

prescription drug: This is a licensed medicine that is regulated by legislation to require a prescription before it can be obtained.

CONTROL MOTORCYCLE PASSENGER FORM

21. How Long Have You Been Riding as a Passenger on This Motorcycle?

_____ years _____ months

OECD Reference: B.5.1.1.2.13

Convention/Coding Source: DSI

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(00-96)	years
(97-97)	not applicable, no previous experience, first time
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 97-97-99-99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Code 00 years 01 months for a period greater than 2 weeks up through 1 month.

The following are examples of coding the variable:

Example 1: Riding as a passenger for 1 week, code 00 years 00 months.

Example 2: Riding as a passenger for 3 weeks, code 00 years 01 months.

Example 3: Riding as a passenger for 2 years, code 02 years 00 months.

CONTROL MOTORCYCLE PASSENGER FORM

22. How Long Have You Been Riding as a Passenger in Any Kind of Motor Vehicle?

_____ years _____ months

OECD Reference: B.5.1.1.2.12

Convention/Coding Source: DSI

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(00-96)	years
(97-97)	not applicable, no previous experience, first time.
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 97-97-99-99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Code 00 years 01 months for period greater than 2 weeks up through 1 month.

The following are examples of coding the variable:

Example 1: Riding as a passenger for 1 week, code 00 years 00 months.

Example 2: Riding as a passenger for 3 weeks, code 00 years 01 months.

Example 3: Riding as a passenger for 2 years, code 02 years 00 months.

CONTROL MOTORCYCLE PASSENGER FORM

23. How Long Have You Ridden as a Passenger on Any Street Motorcycle?

_____ years _____ months

OECD Reference: B.5.1.1.2.12

Convention/Coding Source: DSI

Element Attributes:

(00-00)	less than 2 weeks
(00-11)	months
(00-96)	years
(97-97)	not applicable, no previous experience, first time.
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 97-97-99-99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Code 00 years 01 months for period greater than 2 weeks up through 1 month.

The following are examples of coding the variable:

Example 1: Riding as a passenger for 1 week, code 00 years 00 months.

Example 2: Riding as a passenger for 3 weeks, code 00 years 01 months.

Example 3: Riding as a passenger for 2 years, code 02 years 00 months.

CONTROL MOTORCYCLE PASSENGER FORM

24. What Is the Average Number of Days per Year That You Ride as a Passenger on Motorcycles?

OECD Reference: B.5.1.1.2.14

Convention/Coding Source: OECD, DSI

Element Attributes:

(001–365)	actual number of days per year
(999)	unknown

Range: 001–365, 999

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

25. What Kind of Motorcycle Training Have You Had?

OECD Reference: B.5.1.1.2.16

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) State-recognized, entry-level motorcycle course
- (02) experienced-rider course
- (03) high-performance/competitive-track course
- (04) self-taught
- (05) taught by family and/or friends
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

entry-level motorcycle course: Examples of entry-level motorcycle courses include sponsored courses from the Motorcycle Safety Foundation such as BRC, MRC, or RSS. State-sponsored courses, such as those offered through TEAM Oregon, would also qualify.

experienced-rider course: This type of course includes instruction such as the MSF Rider's Edge course or North Carolina's BikeSafe program.

high-performance/competitive-track course: This type of course includes classes such as the Pridgemore California Super Bike School.

CONTROL MOTORCYCLE PASSENGER FORM

26. When You Travel as a Passenger, What Is the Percentage of Time You Ride on a Motorcycle Versus Riding as a Passenger in Another Type of Vehicle?

Motorcycle _____
Other-Vehicle Type _____
100%

OECD Reference: None

Convention/Coding Source: OECD

Element Attributes:

(000)	first-time use
(001–100)	actual percentage of time
(997)	not applicable
(999)	unknown

Range: 000–100, 997, 999

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Record the percentage of time or use as a passenger that a motorcycle is used for transportation and the percentage of time or use that other types of vehicles are used. The percent-use estimate should total 100 percent. Do not include walking, mass transit, or other forms of transportation.

CONTROL MOTORCYCLE PASSENGER FORM

27. When You Ride a Motorcycle as a Passenger, What Is the Percentage of Time It Is for Each of These Categories?

Recreation _____ %
Basic Transportation _____ %
100%

OECD Reference: B.5.1.1.2.17.2, B.5.1.1.2.17.3

Convention/Coding Source: OECD

Element Attributes:

(000)	first-time use
(001–100)	actual percentage of time
(997)	not applicable
(999)	unknown

Range: 000–100, 997, 999

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Record the percentage of time or use that the motorcycle is used while as a passenger for recreational purposes (i.e., riding for pleasure) and the percentage of time or use that the motorcycle is used for basic transportation purposes (e.g., work, school, shopping). The total percent usage for any one person must total 100 percent. Code 000 percentage for the recreational or the basic transportation if the other category equals 100 percent.

The following is an example of coding this variable: The motorcycle passenger rides on the motorcycle to run errands and commute to and from work approximately 40 percent of the time. The motorcycle passenger rides on the motorcycle for recreational purposes for 60 percent of the remaining time. The total percent-riding time as a passenger equals 100 percent.

CONTROL MOTORCYCLE PASSENGER FORM

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28. How Much Experience Do You Have Riding as a Passenger on Motorcycles?

OECD Reference: B.5.1.1.2.19

Convention/Coding Source: OECD

Element Attributes:

- (00) never rode as a passenger before
- (01) very little experience
- (02) moderate experience
- (03) extensive experience
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

29. How Many Motorcycle Moving Traffic Crashes Have You Had as a Passenger in the Past 5 Years?

OECD Reference: B.5.1.1.2.23

Convention/Coding Source: DSI, OECD

Element Attributes:

(00)	none
(01–96)	actual number of crashes
(99)	unknown

Range: 00–96, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

30. How Many Car or Truck Traffic Crashes Have You Had as a Passenger in the Past 5 Years?

OECD Reference: B.5.1.1.2.24

Convention/Coding Source: OECD, DSI

Element Attributes:

(00)	none
(01–96)	actual number of crashes
(99)	unknown

Range: 00–96, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

31. What Kind of Clothing Is on Your Upper Body?

OECD Reference: B.5.3.1.2.1

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none (skip to # 33)
- (01) light cloth garment (e.g., thin cotton)
- (02) medium cloth garment (e.g., denim, nylon)
- (03) heavy cloth garment (e.g., imitation leather)
- (04) leather garment
- (05) Kevlar
- (06) armored nylon mesh
- (07) off-road, molded body armor
- (08) armored leather
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

32. Is This Upper-Body Clothing Motorcycle Oriented?

OECD Reference: B.5.3.1.2.2

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Motorcycle-oriented upper-torso and upper-extremity clothing is any clothing sold exclusively or primarily for motorcycle riding.

CONTROL MOTORCYCLE PASSENGER FORM

33. What Kind of Clothing Is on Your Lower Body?

OECD Reference: B.5.3.1.2.3

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none (skip to # 35)
- (01) light cloth garment (e.g., thin cotton)
- (02) medium cloth garment (e.g., denim, nylon)
- (03) heavy cloth garment (e.g., imitation leather)
- (04) leather garment
- (05) Kevlar
- (06) armored nylon mesh
- (07) off-road, molded body armor
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

34. Is This Lower-Body Clothing Motorcycle Oriented?

OECD Reference: B.5.3.1.2.4

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Motorcycle-oriented lower-torso and lower-extremity clothing is any clothing sold exclusively or primarily for motorcycle riding.

CONTROL MOTORCYCLE PASSENGER FORM

35. Are You Wearing an Inflatable Safety Vest?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

A body-protection device in the form of an inflatable vest includes an inflation mechanism that is actuated in response to the separation or removal of the wearer from the motorcycle. Attached to the outside of the vest is a compressed gas cartridge that communicates with the interior of the vest through a cartridge actuation mechanism and an inflation tube. The cartridge actuation mechanism includes a triggering device that can be actuated to open the cartridge by means of an actuation lever. The actuation lever actuates the triggering device in response to a pulling force of predetermined magnitude, and in doing so, detaches from the actuation mechanism. The actuation lever is connected to the motorcycle by a lanyard. When a wearer of the vest is forcibly separated from the vehicle, the lanyard exerts an actuation force on the actuation lever, which actuates the triggering device before detaching from the actuation mechanism, thereby opening the cartridge and allowing gas from the cartridge to inflate the vest. The vest is advantageously provided with a deflation tube and a deflation valve.

CONTROL MOTORCYCLE PASSENGER FORM

36. What Kind of Shoes or Boots Are You Wearing?

OECD Reference: B.5.3.1.2.5

Convention/Coding Source: OECD

Element Attributes:

- (00) no shoes or boots, barefoot (skip to # 39)
- (01) light sandal
- (02) medium street shoe, loafer
- (03) athletic, training shoe
- (04) heavy shoe or boot
- (05) reinforced work boot or motorcycle boot
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

The following definitions may be applied to determine the footwear material/type.

no shoes or boots, barefoot: The rider was not wearing footwear at the time of the crash.

light sandal: This is any open-toed shoe.

medium street shoe, loafer: This is a walking shoe with a leather/synthetic sole and a leather/synthetic upper.

athletic, training shoe: This is a shoe used for athletic or training purposes, typically fabricated from nylon or leather with an elastomeric sole.

heavy shoe or boot: This is a strong boot or sturdy shoe typically composed of leather or heavy-duty nylon with a thick, solid sole.

CONTROL MOTORCYCLE PASSENGER FORM

37. Does This Footwear Go up Over Your Ankle?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no footwear worn
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

38. Is the Footwear Motorcycle Oriented?

OECD Reference: B.5.3.1.2.6

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no footwear worn
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Motorcycle-oriented footwear is any footwear that is sold exclusively or primarily for motorcycle riding.

CONTROL MOTORCYCLE PASSENGER FORM

39. What Kind of Gloves Are You Wearing?

OECD Reference: B.5.3.1.2.7

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none (skip to # 41)
- (01) light cloth garment (e.g., thin cotton)
- (02) medium cloth garment (e.g., denim, nylon)
- (03) heavy cloth garment (e.g., imitation leather)
- (04) leather garment
- (05) Kevlar
- (06) armored nylon mesh
- (07) off-road, molded body armor
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

40. Are the Gloves Motorcycle Oriented?

OECD Reference: B.5.3.1.2.8

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) yes, full-fingered
- (02) yes, shorties
- (97) not applicable, no gloves worn
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Motorcycle-oriented gloves are any gloves that are sold exclusively or primarily for motorcycle riding.

CONTROL MOTORCYCLE PASSENGER FORM

41. Is Any of This Clothing Retroreflective? (Code up to Three Responses)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no retroreflective clothing or gloves
- (01) upper body (shirt/jacket/vest)
- (02) lower body (pants/shorts)
- (03) gloves
- (04) special arm bands or similar items
- (97) not applicable, no clothing or gloves worn
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Retroreflective: This refers to a surface, material, or device (retroreflector) that reflects light or other radiation back to its source (reflective).

Retroreflective refers to materials that have been added to the item to increase nighttime conspicuity.

Retroreflective material used on clothing, helmets, and motorcycles helps to make the rider visible to other motorists, especially at night.

CONTROL MOTORCYCLE PASSENGER FORM

42. What Is the Clothing Color of the Following?

Upper-Body Clothing _____
Lower-Body Clothing _____
Footwear _____
Gloves _____

OECD Reference: D.5.3.2.6.1, D.5.3.2.6.2, D.5.3.2.6.3, D.5.3.2.6.4

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) no dominating color, multicolored
- (02) white
- (03) yellow
- (04) black
- (05) red
- (06) blue
- (07) green
- (08) silver
- (09) orange
- (10) brown
- (11) purple
- (12) gold
- (13) grey
- (97) not applicable, no clothing
- (98) other (specify)
- (99) unknown

Range: 01–13, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

43. What Kind of Eye Protection Are You Wearing Now?

OECD Reference: B.5.1.1.2.10

Convention/Coding Source: DSI

Element Attributes:

- (00) none (skip to # 45)
- (01) clear, nonprescription glasses
- (02) clear, prescription glasses
- (03) nonprescription sunglasses
- (04) prescription sunglasses
- (05) goggles, nonprescription
- (06) goggles, prescription
- (07) industrial safety glasses
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

The passenger must be wearing the glasses/lenses at the time of the interview.

none: No corrective eyeglasses/sunglasses or contact lenses were worn by this passenger.

unknown: It is not known if the passenger was wearing eyewear at the time of interview.

CONTROL MOTORCYCLE PASSENGER FORM

44. What Color Is the Eye-Coverage Lens?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) clear
- (02) green
- (03) grey, smoke
- (04) amber, yellow
- (05) blue
- (06) reflective (any color)
- (97) not applicable, not wearing eye coverage
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

45. How Old Are You? (Code Actual Age in Years)

OECD Reference: B.5.1.1.2.2

Convention/Coding Source: DSI, OECD

Element Attributes:

(01–96)	actual age in years
(99)	unknown

Range: 01–96, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

46. Where Did You Get Your Current Driver's License?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no license
- (01) Canada
- (02) California
- (03) other State (list)
- (04) military
- (97) no license required (49cc scooter)
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

47. What Kind of Operator's License Is It? (Code up to Four; Input 97 for Remaining Responses)

OECD Reference: B.5.1.1.2.3.1, B.5.1.1.2.3.2, B.5.1.1.2.3.3, B.5.1.1.2.3.4

Convention/Coding Source: DSI

Element Attributes:

- (00) no license
- (01) learner's permit only
- (02) motorcycle license
- (03) automobile license
- (04) commercial license
- (05) motorcycle driver and competition license
- (06) license to transport people
- (07) heavy-truck license
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

48. What Year Was/Were the License(s) Issued? (List in the Same Order as # 47)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(1900–2100)	actual year
(9997)	not applicable
(9999)	unknown

Range: 1900–2100, 9997, 9999

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

49. Are You of Hispanic or Latino Origin?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (02) refused to answer
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is self-identified by the passenger.

CONTROL MOTORCYCLE PASSENGER FORM

50. What Is Your Race? (Code up to Three; Input 97 for Remaining Responses)

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) White
- (02) Black or African American
- (03) Asian
- (04) Native Hawaiian or other Pacific Islander
- (05) American Indian or Alaskan Native
- (06) refused to answer
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

51. What Is Your Height?

___ feet ___ inches

OECD Reference: B.5.1.1.2.5

Convention/Coding Source: DSI

Element Attributes:

(01-12) actual number of feet and inches
(09-99) unknown

Range: 01-12, 09-99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

52. What Is Your Weight?

OECD Reference: B.5.1.1.2.6

Convention/Coding Source: DSI

Element Attributes:

(001–996)	actual weight in pounds
(999)	unknown

Range: 001–996, 999

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

Note: The code value for this variable is in pounds (lb).

CONTROL MOTORCYCLE PASSENGER FORM

53. What Is Your Gender?

OECD Reference: B.5.1.1.2.7

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) male
- (02) female
- (99) unknown

Range: 01, 02, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

unknown: This is used when the sex of the passenger cannot be determined.

CONTROL MOTORCYCLE PASSENGER FORM

54. How Much Formal Education Have You Had?

OECD Reference: B.5.1.1.2.8

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no formal schooling
- (01) less than high school diploma
- (02) high school diploma or GED
- (03) partial college/university
- (04) college/university graduate
- (05) graduate school, advanced degree, professional degree
- (06) specialty/technical school
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

If permissible, compute the number of years of formal education that the passenger has received. Include all schooling during the passenger's early years of life (i.e., up to age 18) as well as any schooling at a college, university, or technical school.

55. What Is Your Current Occupation?

OECD Reference: B.5.1.1.2.9

Convention/Coding Source: U.S. Department of Labor

Element Attributes:

- (01) management
- (02) business and financial
- (03) computer and mathematical
- (04) architecture and engineering
- (05) life, physical, and social sciences
- (06) community and social services
- (07) legal
- (08) education, training, or library
- (09) arts, design, entertainment, sports, or media
- (10) healthcare practitioners and technical jobs
- (11) healthcare support
- (12) protective services
- (13) food preparation, serving, and related
- (14) building and grounds maintenance
- (15) personal care and services
- (16) sales and related
- (17) office and administrative support
- (18) farming, fishing, or forestry
- (19) construction or extraction
- (20) installation, maintenance, or repair
- (21) transportation and material moving
- (22) military
- (23) full-time student
- (97) not applicable, not in workforce at present
- (98) other (specify)
- (99) unknown

Range: 01–23, 97–99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

The following descriptions may be used as a guideline to code this variable.

55. What Is Your Current Occupation? (Continued)

management occupations: This group comprises the following occupations: chief executives; general and operations managers; legislators; advertising and promotions managers; marketing managers; sales managers; public relations managers; administrative services managers; computer and information systems managers; financial managers; compensation and benefits managers; training and development managers; human resources managers, all other; industrial production managers; purchasing managers; transportation, storage, and distribution managers; farm, ranch, and other agricultural managers; farmers and ranchers construction managers; education administrators, preschool and childcare center/program; education administrators, elementary and secondary school; education administrators, postsecondary; education administrators, all other; engineering managers; food service managers; funeral directors; gaming managers; lodging managers; medical and health services managers; natural sciences managers; postmasters and mail superintendents; property, real estate, and community association managers; social and community service managers; and managers, all other.

business and financial: This group comprises the following occupations: accountants and auditors; appraisers and assessors of real estate; budget analysts; claims adjusters, appraisers, examiners, and investigators; cost estimators; financial analysts and personal financial advisors; insurance underwriters; loan officers; management analysts; meeting and convention planners; and tax examiners, collectors, and revenue agents.

architecture and engineering: This group comprises the following occupations: architects, except landscape and naval; landscape architects; cartographers and photogrammetrists; surveyors; aerospace engineers; agricultural engineers; biomedical engineers; chemical engineers; civil engineers; computer hardware engineers; electrical engineers; electronics engineers, except computer; environmental engineers; health and safety engineers, except mining safety engineers and inspectors; industrial engineers; marine engineers and naval architects; materials engineers; mechanical engineers; mining and geological engineers, including mining safety engineers; nuclear engineers; petroleum engineers; engineers, all other; architectural and civil drafters; electrical and electronics drafters; mechanical drafters; drafters; all other; aerospace engineering and operations technicians; civil engineering technicians; electrical and electronic engineering technicians; electro-mechanical technicians; environmental engineering technicians; industrial engineering technicians; mechanical engineering technicians; engineering technicians, except drafters, all other; and surveying and mapping technicians.

55. What Is Your Current Occupation? (Continued)

life, physical, and social sciences: This group comprises the following occupations: animal scientists; food scientists and technologists; soil and plant scientists; biochemists and biophysicists; microbiologists; zoologists and wildlife biologists; biological scientists, all other; conservation scientists; foresters; epidemiologists; medical scientists, except epidemiologists; life scientists, all other; astronomers; physicists; atmospheric and space scientists; chemists; materials scientists; environmental scientists and specialists, including health; geoscientists, except hydrologists and geographers; hydrologists; physical scientists, all other; economists; market research analysts; survey researchers; clinical, counseling, and school psychologists; industrial-organizational psychologists; psychologists, all other; sociologists; urban and regional planners; anthropologists and archeologists; geographers; historians; political scientists; social scientists and related workers, all other; agricultural and food science technicians; biological technicians chemical technicians; geological and petroleum technicians; nuclear technicians; social sciences research assistants; environmental science and protection technicians, including health; forensic science technicians; forest and conservation technicians; and life, physical.

community and social services: This group comprises the following occupations: substance abuse and behavioral disorder counselors; educational, vocational, and school counselors; marriage and family therapists; mental health counselors; rehabilitation counselors; counselors, all other; child, family, and school social workers; medical and public health social workers; mental health and substance abuse social workers; social workers, all other; health educators; probation officers and correctional treatment specialists; social and human service assistants; community and social service specialists, all other; clergy; and directors, religious activities and education.

legal: This group comprises the following occupations: lawyers; administrative law judges, adjudicators, and hearing officers; arbitrators, mediators, and conciliators; judges, magistrate judges, and magistrates; paralegals and legal assistants; court reporters; law clerks; title examiners, abstractors, and searchers; and legal support workers, all other.

education, training, or library: This group comprises the following occupations: business teachers, postsecondary; computer science teachers, postsecondary; mathematical science teachers, postsecondary; architecture teachers, postsecondary; engineering teachers, postsecondary; agricultural sciences teachers, postsecondary; biological science teachers, postsecondary; forestry and conservation science teachers, postsecondary; atmospheric, earth, marine, and space sciences teachers, postsecondary; chemistry teachers, postsecondary; environmental science teachers, postsecondary; physics teachers, postsecondary; anthropology and archeology teachers, postsecondary; area, ethnic, and cultural studies teachers, postsecondary; economics teachers, postsecondary; geography teachers, postsecondary; political science teachers, postsecondary; psychology teachers, postsecondary; sociology teachers, postsecondary; social sciences teachers, postsecondary, all other; health specialties teachers, postsecondary; nursing instructors and teachers, postsecondary; education teachers,

55. What Is Your Current Occupation? (Continued)

postsecondary; library science teachers, postsecondary; criminal justice and law enforcement teachers, postsecondary; law teachers, postsecondary; social work teachers, postsecondary; art, drama, and music teachers, postsecondary; communications teachers, postsecondary; English language and literature teachers, postsecondary; foreign language and literature teachers, postsecondary; history teachers, postsecondary; philosophy and religion teachers, postsecondary; graduate teaching assistants; home economics teachers, postsecondary; recreation and fitness studies teachers, postsecondary; vocational education teachers, postsecondary; postsecondary teachers, all other; preschool teachers, except special education; kindergarten teachers, except special education; elementary school teachers, except special and vocational education; vocational education teachers, middle school; secondary school teachers, except special and vocational education; vocational education teachers, secondary school; special education teachers, preschool, kindergarten, and elementary school; special education teachers, middle school; special education teachers, secondary school; adult literacy, remedial education, and GED teachers and instructors; self-enrichment education teachers; teachers and instructors, all other; archivists; curators; museum technicians and conservators; librarians; library technicians; audio-visual collections specialists; farm and home management advisors; instructional coordinators; teacher assistants; and education, training, and library workers, all other.

arts, design, entertainment, sports, or media: This group comprises the following occupations: art directors; craft artists; fine artists, including painters, sculptors, and illustrators; multimedia artists and animators; artists and related workers, all other; commercial and industrial designers; fashion designers; floral designers; graphic designers; interior designers; merchandise displayers and window trimmers; set and exhibit designers; designers, all other; actors producers and directors; athletes and sports competitors; coaches and scouts; umpires, referees, and other sports officials; dancers; choreographers; music directors and composers; musicians and singers; entertainers and performers, sports and related workers, all other; radio and television announcers; public address system and other announcers; broadcast news analysts; reporters and correspondents; public relations specialists; editors; technical writers; writers and authors; interpreters and translators; media and communication workers, all other; audio and video equipment technicians; broadcast technicians; radio operators; sound engineering technicians; photographers; camera operators, television, video, and motion picture; film and video editors; and media and communication equipment workers.

healthcare support: This group comprises the following occupations: home health aides; nursing aides, orderlies, and attendants; psychiatric aides; occupational therapist assistants; occupational therapist aides; physical therapist assistants; physical therapist aides; massage therapists; dental assistants; medical assistants; medical equipment preparers; medical transcriptionists; pharmacy aides; veterinary assistants and laboratory animal caretakers; and healthcare support workers.

55. What Is Your Current Occupation? (Continued)

protective services: This group comprises the following occupations: first-line supervisors/managers of correctional officers; first-line supervisors/managers of police and detectives; first-line supervisors/managers of firefighting and prevention workers; first-line supervisors/managers, protective service workers, all other; firefighters; fire inspectors and investigators; forest fire inspectors and prevention specialists; bailiffs; correctional officers and jailers; detectives and criminal investigators; fish and game wardens; parking enforcement workers; police and sheriff's patrol officers; transit and railroad police; animal control workers; private detectives and investigators; gaming surveillance officers and gaming investigators; security guards; crossing guards; lifeguards, ski patrol, and other recreational protective service workers; and protective service workers, all other.

food preparation and serving related: This group comprises the following occupations: chefs and head cooks; first-line supervisors/managers of food preparation and serving workers; cooks, fast food; cooks, institution and cafeteria; cooks, private household; cooks, restaurant; cooks, short order; cooks, all other; food preparation workers; bartenders; combined food preparation and serving workers, including fast food; counter attendants, cafeteria, food concession, and coffee shop; waiters and waitresses; food servers, nonrestaurant; dining room and cafeteria attendants and bartender helpers; dishwashers; hosts and hostesses, restaurant, lounge, and coffee shop; and food preparation and serving-related workers.

building and grounds maintenance: This major group comprises the following occupations: first-line supervisors/managers of housekeeping and janitorial workers; first-line supervisors/managers of landscaping, lawn service, and groundskeeping workers; janitors and cleaners, except maids and housekeeping cleaners; maids and housekeeping cleaners; building cleaning workers, all other; pest control workers; landscaping and groundskeeping workers; pesticide handlers, sprayers, and applicators, vegetation; tree trimmers and pruners; and grounds maintenance workers, all other.

personal care and services: This group comprises the following occupations: gaming supervisors; slot key persons; first-line supervisors/managers of personal service workers; animal trainers; nonfarm animal caretakers; gaming dealers; gaming and sports book writers and runners; gaming service workers, all other; motion picture projectionists; ushers, lobby attendants, and ticket takers; amusement and recreation attendants; costume attendants; locker room, coatroom, and dressing room attendants; entertainment attendants and related workers, all other; embalmers; funeral attendants; barbers; hairdressers, hairstylists, and cosmetologists; makeup artists, theatrical and performance; manicurists and pedicurists; shampooers; skin care specialists; baggage porters and bellhops; concierges; tour guides and escorts; travel guides; flight attendants; transportation attendants, except flight attendants and baggage porters; child care workers; personal and home care aides; fitness trainers and aerobics instructors; recreation workers; residential advisors; and personal care and service workers, all other.

55. What Is Your Current Occupation? (Continued)

sales and related occupations: This group comprises the following occupations: advertising sales agents; cashiers; counter and rental clerks; demonstrators, product promoters, and models; insurance sales agents; real estate brokers and sales agents; retail salespersons; sales engineers; sales representatives, wholesale and manufacturing; sales worker supervisors; securities, commodities, and financial services sales agents; and travel agents.

office and administrative support: This group comprises the following occupations: financial clerks, bill and account collectors; billing and posting clerks and machine operators; bookkeeping, accounting, and auditing clerks; gaming cage workers; payroll and timekeeping clerks; procurement clerks; tellers, information and record clerks, and brokerage clerks; credit authorizers, checkers, and clerks; customer service representatives; file clerks; hotel, motel, and resort desk clerks; human resources assistants, except payroll and timekeeping; interviewers; library assistants, clerical; order clerks; receptionists and information clerks; reservation and transportation ticket agents and travel clerks; material recording, scheduling, dispatching, and distributing occupations, cargo and freight agents; couriers and messengers; dispatchers; meter readers, utilities; postal service workers; production, planning, and expediting clerks; shipping, receiving, and traffic clerks; stock clerks and order fillers; weighers, measurers, checkers, and samplers, recordkeeping; other office and administrative support occupations, communications equipment operators; computer operators; data entry and information processing workers; desktop publishers; office and administrative support worker supervisors and managers; office clerks, general; and secretaries and administrative assistants.

farming, fishing, or forestry: This group comprises the following occupations: agricultural workers; fishers and fishing vessel operators; forest, conservation, and logging workers.

construction or extraction: This group comprises the following occupations: first-line supervisors/managers of construction trades and extraction workers; boilermakers; brickmasons and blockmasons; stonemasons; carpenters; carpet installers; floor layers, except carpet, wood, and hard tiles; floor sanders and finishers; tile and marble setters; cement masons and concrete finishers; terrazzo workers and finishers; construction laborers; paving, surfacing, and tamping equipment operators; pile-driver operators; operating engineers and other construction equipment operators; drywall and ceiling tile installers; tapers; electricians glaziers; insulation workers, floor, ceiling, and wall; insulation workers, mechanical; painters, construction and maintenance; paperhangers; pipelayers; plumbers, pipefitters, and steamfitters; plasterers and stucco masons; reinforcing iron and rebar workers; roofers; sheet metal workers; structural iron and steel workers; helpers—brickmasons, blockmasons, stonemasons, and tile and marble setters; helpers—carpenters; helpers—electricians; helpers—painters, paperhangers, plasterers, and stucco masons; helpers—pipelayers, plumbers, pipefitters, and steamfitters; helpers—roofers; helpers, construction trades, all other; construction and building inspectors;

55. What Is Your Current Occupation? (Continued)

elevator installers and repairers; fence erectors; hazardous materials removal workers; highway maintenance workers; rail-track laying and maintenance equipment operators; septic tank servicers and sewer pipe cleaners; segmental pavers; construction and related workers, all other; derrick operators, oil and gas; rotary drill operators, oil and gas; service unit operators, oil, gas, and mining; earth drillers, except oil and gas; explosives workers, ordnance handling experts, and blasters; continuous mining machine operators; mine cutting and channeling machine operators; mining machine operators, all other; rock splitters, quarry; roof bolters, mining; roustabouts, oil and gas; helpers—extraction workers; and extraction workers, all other.

installation, maintenance, or repair: This group comprises the following occupations: electrical and electronic equipment mechanics, installers, and repairers—computer, automated teller, and office machine repairers; electrical and electronics installers and repairers; electronic home entertainment equipment installers and repairers; radio and telecommunications equipment installers and repairers; vehicle and mobile equipment mechanics, installers, and repairers; aircraft and avionics equipment mechanics and service technicians; automotive body and related repairers; automotive service technicians and mechanics; diesel service technicians and mechanics; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; other installation, maintenance, and repair occupations—coin, vending, and amusement machine servicers and repairers; heating, air-conditioning, and refrigeration mechanics and installers; home appliance repairers; industrial machinery mechanics and maintenance workers; line installers and repairers; maintenance and repair workers, general; millwrights; and precision instrument and equipment repairers.

transportation and material moving: This group comprises the following occupations: air transportation occupations—air traffic controllers; aircraft pilots and flight engineers; material moving occupations; and motor vehicle operators.

CONTROL MOTORCYCLE PASSENGER FORM

56. Are You Married?

OECD Reference: D.5.2.1.2.4

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) single
- (02) married
- (03) separated
- (04) divorced
- (05) widowed
- (06) cohabitating
- (98) other (specify)
- (99) unknown

Range: 01–06, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

57. How Many Children Do You Have?

OECD Reference: D.5.2.1.2.5

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) one
- (02) two
- (03) three
- (04) four
- (05) five
- (06) six or more
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE PASSENGER FORM

58. Blood Alcohol Concentration (BAC)? (Code Results mg/100 ml)

OECD Reference: None

Convention/Coding Source: NASS,⁽⁴⁾ OECD

Element Attributes:

(000)	negative BAC
(001–900)	test results in mg/100 ml
(995)	BAC tested, results not known
(996)	BAC not tested
(998)	other (specify)
(999)	unknown

Range: 000–900, 995, 996, 998, 999

Source: Primary—BAC test given following interview

Remarks: This variable is assigned by the investigator from the source.

Blood alcohol concentration (BAC) analytically measures the mass of alcohol per unit volume of blood. The standard measure is expressed as the number of milligrams per deciliter (10th of a liter) expressed as a decimal (e.g., 0.05 = 50 mg/100 ml; 0.15 = 150 mg/100 ml). A blood alcohol concentration (BAC) test could be a blood, breath, or urine test. A breath test will be given at the time of the control passenger interview whenever consent is obtained.

CONTROL MOTORCYCLE PASSENGER FORM

59. Source of BAC Information?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) not tested
- (01) breath test
- (02) unknown if tested
- (03) tested, results unknown
- (04) tested, results not available
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source: Primary—control passenger interview

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

Case Number

OECD Reference: None

Convention/Coding Source: None

Convention/Coding Source: Case number chart

Element Attributes: Case number

Range: 0001–2000

Source: Primary—case number chart

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

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1. Manufacturer (Enter Code in Database)

OECD Reference: A.4.1.1.1

Convention/Coding Source: OECD, DSI

Element Attributes:

- (A02) ATK Motorcycles
- (A05) Ace Motor Corporation
- (A06) Alligator (motorcycle)
- (A07) Allstate (scooter manufacturer)
- (A08) American Eagle Manufacturing Company, Inc.
- (A09) American IronHorse
- (A10) American Machine and Foundry
- (A11) Aprilia
- (B01) BMW
- (B02) BSA
- (B08) Buell
- (B09) Big Dog Motorcycles
- (B10) Boss Hoss
- (B11) BMC
- (C08) California Motorcycle Company
- (C09) Confederate Motor Company
- (C10) Crocker Motorcycles
- (C11) Cushman
- (C12) Can-Am
- (C13) Christini
- (D03) Ducati
- (E04) Electric Moto Corporation
- (E05) Excelsior-Henderson Motorcycle
- (F03) Falcon Motorcycles
- (F04) Fischer Motor Company
- (G01) Genuine Buddy
- (G02) Genuine Stella
- (H01) Harley-Davidson
- (H04) Honda
- (H06) Henderson Motorcycle
- (H07) Hyosung
- (I01) Indian
- (I03) Iver Johnson
- (I04) Il Bello
- (K02) Kawasaki

MOTORCYCLE MECHANICAL FORM

Page 2 of 3

1. Manufacturer (Continued)

(K03) KTM
(K04) Kymco
(L01) Lance
(M08) Moto Guzzi
(M13) Marine Turbine Technologies
(M14) MotoCzysz
(M15) Mustang
(M16) Motobecane
(M17) MV Agusta
(M18) Motofino
(N02) Norton
(O03) Orange County Choppers
(P03) Penton
(P04) Pierce-Arrow
(P05) Piaggio
(P06) Puma
(P07) Panon
(R06) Ridley Motorcycle Company
(R07) Roehr Motorcycle Company
(R08) Rokon Motorcycle
(R09) Royal
(S10) Suzuki
(S11) Stokers Dallas
(S12) Special Construction
(S13) Sanyang
(S14) Shanghai Meitian
(S15) Shenke
(T02) Triumph
(T03) Tank
(T04) Tomos
(T05) Titan
(U01) U.S. Titan
(V03) Vectrix
(V04) VéloSoleX
(V05) Victory
(V06) Vespa
(W01) West Coast Choppers
(Y01) Yamaha
(Y02) Yankee
(Z01) Zinn KMD

MOTORCYCLE MECHANICAL FORM

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1. Manufacturer (Continued)

- (Z02) Zong
- (Z03) Zero
- (998) other (specify)
- (999) unknown

Range: Record code of actual manufacturer, 998, 999

Source:

- Primary—vehicle inspection
- Secondary—police crash report, registration records, and interviewee

Remarks: This variable is assigned by the investigator from the sources.

Record the manufacturer of the motorcycle in the database using the list of manufacturers provided; the list is not all-inclusive (e.g., there are manufacturers from overseas countries that are not named) and does include some custom manufacturers of motorcycles.

MOTORCYCLE MECHANICAL FORM

2. Model (Write In; Do Not Code)

OECD Reference: A.4.1.1.2

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes: Record the vehicle model as it relates to the vehicle manufacturer.

Range: Record the vehicle model

Source:

Primary—vehicle inspection

Secondary—police report and interviewee

Remarks: This variable is assigned by the investigator from the sources.

Record the entire model, including the engine displacement associated with that model (if available). Examples would include the following: Honda Shadow VT1100 Spirit, Honda Shadow VT1100 Sabre, Yamaha XJR 1300, Harley-Davidson Sportster XL 883, and Harley-Davidson Dyna Low Rider FXDL.

MOTORCYCLE MECHANICAL FORM

3. Year (Code the Four-Digit Year)

Model Year _____

OECD Reference: A.4.1.1.3

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(1900–(current year + 1))	current data-collection year plus one
(9999)	unknown

Range: 1900–(current year + 1), 9999

Source:

Primary—vehicle identification number (VIN)
Secondary—police report and interviews

Remarks: This variable is assigned by the investigator from the sources.

Select the model year for which the vehicle was manufactured. Code 9999 only if the vehicle model year cannot be determined (this should occur rarely).

MOTORCYCLE MECHANICAL FORM

4. Motorcycle Legal Category

OECD Reference: A.4.1.1.4

Convention/Coding Source: MAIDS, OECD

Element Attributes:

- (01) L1 vehicle
- (02) L3 vehicle
- (03) mofa
- (98) other (specify)
- (99) unknown

Range: 01–03, 98, 99

Source:

Primary—vehicle inspection

Secondary—registration records, police crash report, and interview

Remarks: This variable is assigned by the investigator from the sources.

L1 vehicle: This is a two-wheeled vehicle with an engine cylinder capacity not exceeding 50cc and, whatever the means of propulsion, a maximum design speed not exceeding 31 mph (50 km/h).

L3 vehicle: This is a two-wheeled vehicle with an engine cylinder capacity exceeding 50cc or, whatever the means of propulsion, a maximum design speed exceeding 31 mph (50 km/h).

mofa: This is a subcategory of L1 vehicles with a maximum design speed not exceeding 16 mph (25 km/h). A mofa may or may not have pedals.

other (specify): This is any type of two-wheeled motorized vehicle that is not described under the L1, L3, or mofa types.

unknown: This is selected when the type of two-wheeled motorized vehicle is unknown.

MOTORCYCLE MECHANICAL FORM

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5. Motorcycle Type

OECD Reference: A.4.1.1.4.2

Convention/Coding Source: OECD, Wikipedia⁽⁷⁾

Element Attributes:

- (01) conventional street L1 or L3 vehicle (tank between knees), without modifications
- (02) conventional street L1 or L3 vehicle (tank between knees), with modifications
- (03) dual-purpose, on-road–off-road motorcycle
- (04) sport, race replica
- (05) cruiser
- (06) chopper, modified chopper
- (07) touring
- (08) scooter
- (09) step-through
- (10) sport-touring
- (11) motorcycle plus sidecar, left
- (12) motorcycle plus sidecar, right
- (13) off-road motorcycle, motocross, enduro, trials
- (14) tricycle
- (15) law enforcement
- (98) other (specify)
- (99) unknown

Range: 01–15, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

conventional street L1 or L3 vehicle (tank between knees), without modifications: This is a standard street-style motorcycle with original equipment and no significant modification; it also includes any motorcycle that is of a conventional design with upright handlebars and usually without a fairing.

conventional street L1 or L3 vehicle (tank between knees), with modifications: This is a motorcycle that is of the conventional design; however, modifications have been made to the motorcycle. Those modifications should be listed in the data summary sheets.

dual purpose, on-road–off-road motorcycle: This refers to any motorcycle with block/trials universal or semi-knobby tires and high-raised fenders. Since these motorcycles are capable of on-road and off-road use, they will be fitted with signal lamps and other road-safety features to make them legal for street use.

5. Motorcycle Type (Continued)

sport, race replica: This is any motorcycle that has drop handlebars, a small windscreen, and an aerodynamic fairing. The rider is typically in a forward-crouch position during normal vehicle operation.

cruiser: This is a large (greater than 250cc) motorcycle with upright or pulled-back handlebars and large fenders. These motorcycles typically have large padded seats with a low seat height. The rider sits upright or slightly reclined during normal vehicle operation.

chopper, modified chopper: This is any motorcycle that has been modified with an extended front-fork assembly. These vehicles are usually fitted with extended upright handlebars to accommodate a more-reclined riding position.

touring: This is also called a full dresser. It is a large (greater than 250cc) motorcycle that is primarily designed for travel on highways or motorways. These motorcycles are fitted with side luggage compartments and a rear cargo box and may or may not have trailers. There typically is also a large fairing windscreen on the front of the motorcycle.

scooter: This refers to any motorcycle equipped with a floorboard for the rider's feet. The riding position is upright, with the feet firmly planted on the floorboard.

step-through: This is a hybrid of a conventional scooter and a standard motorcycle. The engine can range up to or beyond 250cc. The tires are usually larger than a conventional scooter, and the suspension can withstand higher speeds.

sport-touring: Sport-touring motorcycles are a hybrid of sport bikes and touring bikes, allowing long-distance riding at higher speeds and with more emphasis on sport-like performance (in both handling and speed) than standard touring bikes; these bikes offer a middle ground between both segments.

motorcycle plus sidecar, left: This is a street motorcycle that has been fitted with a sidecar on the left side to accommodate a seated passenger.

motorcycle plus sidecar, right: This is a street motorcycle that has been fitted with a sidecar on the right side to accommodate a seated passenger.

off-road motorcycle, motocross, enduro, trial: This is a motorcycle that is not qualified for street use. Off-road motorcycles may or may not have a plastic gas tank, limited lighting systems (e.g., brake lights, turning lights, and a headlamp), and high fenders.

tricycle: A motorized tricycle's wheels may be arranged in either a delta or tadpole configuration. A delta tricycle has one wheel in front and two in back, and the tadpole tricycle has two wheels in front and one in back.

MOTORCYCLE MECHANICAL FORM

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5. Motorcycle Type (Continued)

law enforcement: This is a motorcycle that is being used by law enforcement or security personnel. A police motorcycle is a motorcycle used by various police departments. It may be custom-designed to meet the specific requirements of a particular department. A police motorcycle is often called a “motor” by police officers in the United States. Similarly, motorcycle units are known as “motor units,” and motorcycle officers are known as “motor officers.”

other (specify): Use this for any motorcycle type that is not captured in variables 01–15.

unknown: Use this when the type of motorcycle cannot be determined (this would seldom be coded).

MOTORCYCLE MECHANICAL FORM

6. Motorcycle Weight

OECD Reference: A.4.1.1.5

Convention/Coding Source: Wikipedia⁽⁷⁾

Element Attributes:

(0001–9996) actual weight, as specified by manufacturer, in pounds
(9999) unknown

Range: 0001–9996, 9999

Source: Primary—manufacturer specifications

Remarks: This variable is assigned by the investigator from the source.

“Dry weight” is a technical term that refers to the weight of a vehicle without any consumables, passengers, or cargo. It is one of two common weight measurements included in automobile and motorcycle specifications (the other is curb weight). Dry weight is usually a preferred measure in motorcycle specifications and is provided in kilograms (to convert kilograms to pounds use the following conversion: actual kg/0.4536).

“Wet weight” is a technical term that refers to the weight of a vehicle with varying set of fluids, such as fuel or lubricants, without rider, passengers, or cargo.

In motorcycles, manufacturer-published dry-weight figures are used as a marketing tool and should be taken lightly. For example, the battery is typically excluded from dry weight, although few manufacturers state this explicitly. For a typical sport bike, the difference between wet weight and “manufacturer-claimed” dry weight is around 70 lb (32 kg). This difference includes 25–30 lb of gasoline, 5–7 lb of engine oil, 5–7 lb of coolant, and 7–9 lb of battery.

MOTORCYCLE MECHANICAL FORM

7. Vehicle Identification Number

OECD Reference: A.4.1.1.6

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(999999999999999) unknown

Range: VIN characters contain 1–9 numerical values and alphabetical values (except I, O, and Q). For privacy protection, do not enter the final four characters

Source:

Primary—vehicle inspection

Secondary—police report

Remarks: This variable is assigned by the investigator from the sources.

Since 1954, American automobile manufacturers have used VINs. Variations exist in VIN locations and VIN systems used by the different manufacturers as well as from year to year by each manufacturer. Beginning with the 1981 model year, the USDOT required manufacturers selling over-the-road vehicles in the United States to produce vehicles with a 17-character VIN. Before 1981, VINs consisted of 11 characters.

unknown: If the entire VIN is unknown or missing, enter a 9 in each position.

If the vehicle is a motorhome or school bus, the vehicle chassis VIN is coded, and the secondary manufacturer's number should be annotated if indicated on the PAR.

MOTORCYCLE MECHANICAL FORM

8. Odometer Reading in Miles

OECD Reference: A.4.1.1.8

Convention/Coding Source: OECD, NASS⁽⁴⁾

Element Attributes:

(000001–999996)	actual number of miles
(999999)	unknown

Range: 000001–999996, 999999

Source:

Primary—vehicle inspection
Secondary—interviewee and repair facility

Remarks: This variable is assigned by the investigator from the sources.

Report the number of miles displayed on the odometer. This variable measures the distance the vehicle has traveled. However, in cases where it is known that the odometer was working but had turned over (i.e., recycled), the recorded value represents the total distance traveled by the vehicle rather than the reading on the odometer. Annotate if it is determined that the odometer had turned over.

unknown: Use this when it is known that the odometer was disconnected or broken before the collision, the vehicle is equipped with an electronic instrument cluster and an analog “back-up” odometer is not present, the vehicle’s odometer reading is unknown, or the vehicle was manufactured without an odometer.

MOTORCYCLE MECHANICAL FORM

9. Registered-Owner Category

OECD Reference: A.4.1.1.9

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) motorcycle rider
- (02) motorcycle passenger
- (03) operated with consent of owner
- (04) dealer
- (05) stolen
- (97) not applicable, no registration available
- (98) other (specify)
- (99) unknown

Range: 01–05, 97–99

Source:

Primary—vehicle registration records collected during vehicle inspection while on scene
Secondary—police crash report and interviewee

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE MECHANICAL FORM

10. Predominant Color of Motorcycle

OECD Reference: A.4.1.1.10

Convention/Coding Source: OECD

Element Attributes:

- (00) no dominating color, multicolored
- (01) white
- (02) yellow
- (03) black
- (04) red
- (05) blue
- (06) green
- (07) silver, grey
- (08) orange
- (09) brown, tan
- (10) purple
- (11) gold
- (12) chrome, metallic
- (98) other (specify)
- (99) unknown

Range: 00–12, 98, 99

Source:

Primary—vehicle inspection

Secondary—police crash report and registration records (if available)

Remarks: This variable is assigned by the investigator from the source.

Code the response that best describes the color scheme of the vehicle. Select the color that represents 50 percent or greater of the motorcycle's color. If there is no color representing greater than 50 percent, code 00.

MOTORCYCLE MECHANICAL FORM

11. Did the Motorcycle Have Any Retroreflective Parts, Material, or Paint?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no, none
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—interview

Remarks: This variable is assigned by the investigator from the sources.

Retroreflective refers to a surface, material, or device (retroreflector) that reflects light or other radiation back to its source.

MOTORCYCLE MECHANICAL FORM

12. Motor Displacement

OECD Reference: A.4.1.1.11

Convention/Coding Source: DSI, Wikipedia⁽⁷⁾

Element Attributes:

(0001–9996) actual number
(9999) unknown

Range: 0001–9996, 9999

Source:

Primary—vehicle inspection
Secondary—interview and registration records

Remarks: This variable is assigned by the investigator from the sources.

Displacement is defined as the total volume of air/fuel mixture an engine can draw in during one complete engine cycle. In a piston engine, this is the volume that is swept as the pistons are moved from top dead center to bottom dead center. To the layperson, this is the size of the engine. Motorcycle engines range from less than 50cc, commonly found in many mopeds and small scooters, to a 6,000cc engine used by Boss Hoss in its cruiser-style motorcycle BHC-3 LS2.

The motorcycle motor displacement is commonly built into the vehicle model (e.g., a Harley-Davidson Sportster 883 has a motor displacement of 883 cc; other examples include the Honda CBR1000RR = 1,000cc and the Honda Shadow Spirit VT750 = 750cc).

In some cases, like those of Kawasaki motorcycles, the model motor displacement indicator is rounded to the nearest 100 cc (e.g., Kawasaki Vulcan 1600 Classic has a motor displacement of 1,552 cc). The investigator should code the actual displacement of the engine. Some models will not designate a motor displacement indicator in the model number (e.g., Yamaha FZ6). In such cases, use one of the several online VIN-decoding applications to decipher and breakdown VINs for the purpose of deciphering engine displacement. In addition, NICB manuals can be used for the same purpose.

Most manufacturers have a website that lists their models, and motor displacement details are usually available.

13. Number of Cylinders

OECD Reference: A.4.1.1.12

Convention/Coding Source: Wikipedia⁽⁷⁾

Element Attributes:

(01–96)	actual number of cylinders
(99)	unknown

Range: 01–96, 99

Source:

Primary—vehicle inspection
Secondary—VIN and interviewee

Remarks: This variable is assigned by the investigator from the sources.

Enter the number of cylinders; use the following information.

Motorcycles have mostly, but not exclusively, been produced with one to four cylinders, and designers have tried every imaginable layout. Engines with more cylinders provide more power for the same displacement and feel smoother to ride. Engines with fewer cylinders are cheaper, lighter, and easier to maintain.

single cylinder: One-cylinder motorcycles are known as “singles,” and in larger capacities as “thumpers” (for the sound they make). In some singles, the cylinder points up and slightly forward (spark plug on top), but the most common arrangement is a horizontal cylinder, such as used by Honda in its C-series singles (the highest volume motorcycle of all time, with over 40 million units). It is the most common of all configurations.

two cylinders: Two-cylinder motorcycles are called “twins.” The two most common cylinder arrangements are the V-twin and the inline twin (or straight-two), which is also known as the parallel twin because the cylinders share a common crank pin.

In the V-twin, the cylinders form a V around the crankshaft, which is oriented transversely (i.e., perpendicular to the direction of travel). The angle in the V-twins varies from around 45 to 90 degrees. Harley-Davidson and Vincent engines typically are arranged around 45 degrees and tend to vibrate more because of their firing order. Ducati and Moto Guzzi make V-twins with cylinders arranged at 90 degrees to quell primary vibrations. Some Moto Guzzi motorcycles have V-twins oriented transversely (one cylinder to the left, one to the right).

13. Number of Cylinders (Continued)

The inline twin, or straight-two (common in classic British and Japanese motorcycles), is known as the parallel twin because the cylinders share a common crank pin. In this design the cylinders are side by side vertically above the crankcase. If not oriented vertically, they are generally nearly so in order to maximize airflow cooling.

The parallel twin engine configuration was made famous by Edward Turner's Triumph Speed Twin design as used on the Triumph Bonneville. In the famous BMW flat-twin ("boxer twin") engine, the cylinders are horizontally opposed, protruding from either side of the frame. The boxer is the only twin-cylinder arrangement that has inherent primary balance without a rocking couple, producing very low vibration levels without the use of counterbalance shafts. Narrow-angle V-twins vibrate. Sunbeam produced an air-cooled inline twin driving a propeller shaft.

Narrow-angle V-twin engines dominate the cruiser motorcycle segment.

three cylinders: Three-cylinder designs are unusual. They are referred to as "triples" and are normally inline triples in layout. The British Hinkley-built Triumph, Italian Benelli, and Japanese Yamaha are three motorcycle manufacturers who have used triples in their large-displacement motorcycles. The Italian firm Laverda was also renowned for their 1,000 and 1,200cc triples.

Before emissions requirements limited the production of two-stroke motorcycles, triples were more common. In the 1970s Kawasaki had its 250, 350, 500, and 750 triples, which were known for their power (but maybe not rideability), and Suzuki had 380, 550, and 750 triples (the last one was water cooled and thus gained the nickname "Water Buffalo" or "Kettle"). All the others were air cooled. Honda also produced a water-cooled V-3 two-stroke.

four cylinders: Four-cylinder engines are colloquially known as "four-bangers." They are quite similar to car engines and most commonly have a transverse-mounted inline four layout, although some are longitudinal (as in the earlier BMW K series). V-4 and boxer designs (as in the Honda Gold Wing series) have been produced. One of the more unusual designs was the Ariel Square Four, which was effectively two parallel-twin engines one in front of the other in a common crankcase. It had remarkably little vibration because of the contra-rotating crankshafts. Yamaha and Suzuki used the same concept in their water-cooled two-stroke engines (RZ500 and RG500, respectively). Since the advent of Honda's CB750 straight-four engine, straight-fours have dominated the noncruiser street-motorcycle segments.

five cylinders: Honda has produced a five-cylinder engine for racing, the RCV, but no five-cylinders exist for commercial production motorcycles.

13. Number of Cylinders (Continued)

six cylinders: Six-cylinder engines are uncommon and usually found only on the biggest motorcycles. Two of the best six-cylinder examples are the Honda CBX and the Kawasaki KZ1300. Nowadays, the most famous six-cylinder engine is the boxer used on the Honda Valkyrie series and the Honda Gold Wing.

more than six cylinders: No major motorcycle manufacturer currently mass-produces motorcycles with more than six cylinders. However, motorcycles with more than six cylinders have been produced experimentally or in limited numbers. Galbusera built their V-8 in 1938, and Moto Guzzi experimented over a period of 2 yr with their dual overhead cam 500cc V8 (the Otto Cylindri) in the 1950s. A number of custom and one-off motorcycles use more than six cylinders. For example, the Boss Hoss motorcycle uses a Chevy V-8 motor (5,700 and 6,000cc). In the mid-90s, Daimler-Chrysler manufactured a limited number of Tomahawk concept bikes featuring a Dodge Viper's V-10 engine. The Australian company Drysdale has built short runs of 750cc V-8 superbikes and 1L V-8 road-going motorcycles, both with engines specifically developed for the purpose.

14. Symptoms of Problem

OECD Reference: A.4.1.1.13

Convention/Coding Source: OECD

Element Attributes:

- (00) none
- (01) stopped in traffic
- (02) front-wheel lockup
- (03) rear-wheel lockup
- (04) power loss
- (05) speed-control problem
- (06) loss of control
- (07) uncontrolled acceleration or deceleration
- (08) motor stalled
- (09) front axle loose
- (10) rear axle loose
- (11) front-axle fixing loose
- (12) rear-axle fixing loose
- (13) loss of lighting
- (14) loss of electrical, other than lighting
- (98) other (specify)
- (99) unknown

Range: 00–14, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—interviewee

Remarks: This variable is assigned by the investigator from the sources.

Use the following procedures to determine if there were symptoms of mechanical problems.

Proper procedure for examination of front-axle security: Raise the front or rear wheel, grasp the tire, and apply a cyclic lateral force to the tire (i.e., a lateral push and pull on the tire). If there is any lateral or vertical free play in the axle, then the axle is considered loose.

14. Symptoms of Problem (Continued)

Use the following procedures as a guide to determine drive-chain, belt, or shaft condition (if problems are found, code 98).

Drive-chain tension measurement is accomplished by applying a force perpendicular to the lower chain at a point midway between the front and rear sprockets. Measure the amount of travel experienced by the chain during this evaluation. If the travel of the chain is between 20 and 30 mm, then the chain is considered to be loose. Evaluate the drive-chain condition by pulling on a single chain link located at the rearmost portion of the rear sprocket. Normal movement of more than three chain links indicates wear to the drive chain.

The following procedures may be used as a guide to determine drum condition (if problems are found, code 98).

Proper evaluation of the drum condition is achieved by performing an initial evaluation of the throttle control. Firmly grasp the drum and rotate counterclockwise (i.e., apply the throttle). If the drum returns back to its normal condition, then the drum is considered normal, and there are no abnormal conditions in the throttle system. Code all cables, slides, and springs as being in normal operating condition. If the drum does not return to its normal position, then there is an abnormal condition in the throttle system that will require further investigation.

The following procedures may be used as a guide to determine the cable condition (if problems are found, code 98).

If the drum does not return to the normal position, inspect the cable for any crushing or binding due to the accident. The inspection should include a detailed analysis of the cable path from the drum through to the carburetor. Pay particular attention to the cable travel near the triple-clamp assembly as this is a common location for cable crushing and binding.

The following procedures may be used as a guide to determine the throttle plates/slides condition.

To properly inspect the throttle plates/slides, disassemble the carburetor and inspect the throttle plates/slides for binding or visible damage.

The following procedures may be used as a guide to determine the condition of the return springs.

To properly inspect the return springs, disassemble the carburetor and inspect and manually manipulate the return springs to ensure normal operation. If there is binding of the return springs or if there is physical damage to the return springs, then this must be noted on the inspection sheet.

14. Symptoms of Problem (Continued)

The following procedures and guidelines should be used to determine steering-stem adjustment.

Raise the front wheel off the ground using the center stand. From the centered position of the fork, slowly push the handlebar to the other side. If the handlebar begins to turn without the aid of additional force application (i.e., due to gravity), then the steering stem is not overtightened (code 98). If the handlebar does not begin to turn due to gravity, then the steering stem is overtightened (code 98). If the handlebar does begin to turn freely, kneel in front of the motorcycle and while facing the motorcycle, grasp the lower ends of the front fork, and gently push and pull on the front fork. If there is play in the front fork, then the steering stem is considered loose. If the amount of play in the front fork is 2 mm or less, then the steering stem is considered loose and could contribute to control difficulty (code 98). If there is greater than 2 mm of play in the front fork, then the steering-stem adjustment is considered very loose and could contribute to control interference (code 98). Describe any other unique conditions of the steering stem (e.g., modification or sabotage).

MOTORCYCLE MECHANICAL FORM

15. Source of Problem

OECD Reference: A.4.1.1.14

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) fuel starvation
- (02) electrical or ignition failure
- (03) mechanical failure of motor components
- (04) lubrication
- (05) cooling system
- (06) stuck or binding throttle
- (07) seized motor
- (08) transmission
- (09) clutch
- (10) lighting system
- (11) fuse, circuit breaker
- (12) missing axle security
- (13) axle bearings
- (14) front-fork pinch bolts
- (15) axle adjust screws and set nuts
- (97) not applicable, no mechanical problem
- (98) other (specify)
- (99) unknown

Range: 01–15, 97–99

Source:

- Primary—vehicle inspection
- Secondary—interviewee

Remarks: This variable is assigned by the investigator from the sources.

Use the inspection procedures described in variable 14 (Symptoms of Problem); code the appropriate response that describes the origin of the mechanical problem.

MOTORCYCLE MECHANICAL FORM

16. Tire Size Measurement Units

OECD Reference: None

Convention/Coding Source: Steel Thunder Custom Cycles⁽¹²⁾

Element Attributes:

- (01) inches
- (02) millimeters
- (03) alphanumeric
- (99) unknown

Range: 01–03, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Inspect tire and record the proper tire size measurement as indicated.

There are three different systems of tire description: the inch system (e.g., tire-size readings like 5.00-16 or 4.50/S/18), the alphanumeric system (e.g., MT 90-16), and the metric system (e.g., 130/90-16). The last numbers describe the rim size. Before that number, there is generally a dash or one of the following letters: S, H, or V. This is the key to know the tire's speed range: (S) tires are admissible for speeds up to 112 mph, (H) tires are admissible for speeds up to 130 mph, and (V) tires are admissible for speeds of 150 mph and higher. The alphanumeric system and Series 80 are describing low-profile tires, which means the height is smaller than the width, and the proportions to the width are fixed. Only in the standard inch system are there tires with equal width and height, which is then a "square profile."

MOTORCYCLE MECHANICAL FORM

17. Front-Tire Measurement

OECD Reference: A.4.1.1.15

Convention/Coding Source: DSI

Element Attributes:

(999999999) unknown

Range: 999999999

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Code the front-tire size that is indicated on the tire sidewall (e.g., 2.50 H 16 4PR would be coded 250H164PR). Code the applicable tire designation, regardless of whether it is metric, alphanumeric, or in inches.

Most tires are measured by width/aspect ratio first, then by rim diameter. Width is in millimeters, the aspect ratio is given as a percentage of the width being the height, and then the rim diameter is in inches (e.g., 180/55-17 has an aspect ratio of 55; 55 percent of a 180-mm width in height on a 17-inch rim).

MOTORCYCLE MECHANICAL FORM

18. Rear-Tire Measurement

OECD Reference: A.4.1.2.15

Convention/Coding Source: DSI

Element Attributes:

(999999999) unknown

Range: 999999999

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Record the rear-tire size code designation that is indicated on the tire sidewall (e.g., 2.50 H 16 4PR would be coded 250H164PR). Code the applicable tire designation, regardless of whether it is metric, alphanumeric, or in inches.

Most tires are measured by width/aspect ratio first, then by rim diameter. Width is in millimeters, the aspect ratio is given as a percentage of the width being the height, and then the rim diameter is in inches (e.g., 180/55-17 is has an aspect ratio of 55; 55 percent of a 180 mm width in height on a 17-inch rim).

MOTORCYCLE MECHANICAL FORM

19. Tire Manufacturer

Front _____
Rear _____

OECD Reference: A.4.1.1.16, A.4.1.2.16

Convention/Coding Source: OECD, DSI

Element Attributes:

- (A1) Avon
- (B1) Bridgestone
- (C1) Cheng Shin
- (C2) Continental
- (D1) Dico
- (D2) Dunlop
- (F1) Firestone
- (G1) Goodyear
- (H1) Hutchinson
- (I1) IRC
- (I2) ITP
- (K1) Kazan
- (K2) Kenda
- (M1) Metzeler
- (M2) Michelin
- (O1) Ohtsu
- (P1) Pirelli
- (S1) Skat Trak
- (S2) Shinko
- (98) other (specify)
- (99) unknown

Range: A1, B1, C1, C2, D1, D2, F1, G1, H1, I1, I2, K1, K2, M1, M2, O1, P1, S1, S2, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

20. Rim Size, Front

_____ × _____ inches

OECD Reference: A.4.1.1.17

Convention/Coding Source: OECD

Element Attributes:

(0–96 × 0–96) actual size of front rim in inches

(9.99 × 99) unknown

Range: 0–96 × 0–96, 9.99 × 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Rim size is reported in the following format: rim width × rim diameter (e.g., 1.40 × 18 or 2.25 × 17). Please express the accuracy of the rim width to the nearest 0.01 inch. For example, an expressed rim size of 1.4 × 18 would be coded as 1.40 × 18.

MOTORCYCLE MECHANICAL FORM

21. Rim Size, Rear

_____ × _____ inches

OECD Reference: A.4.1.2.17

Convention/Coding Source: OECD

Element Attributes:

(0–96 × 0–96) actual size of rear rim in inches

(9.99 × 99) unknown

Range: 0–96 × 0–96, 9.99 × 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Rim size is reported in the following format: rim width × rim diameter (e.g., 1.40 × 18 or 2.25 × 17). Please express the accuracy of the rim width to the nearest 0.01 inch. For example, an expressed rim size of 1.4 × 18 would be coded as 1.40 × 18.

MOTORCYCLE MECHANICAL FORM

22. Rim Manufacturer

Front _____
Rear _____

OECD Reference: A.4.1.1.18, A.4.1.2.18

Convention/Coding Source: OECD, DSI

Element Attributes:

- (OE) original equipment
- (D1) Daido (DID)
- (D2) Douglas
- (E1) Enkai
- (E2) Excel
- (S1) Sun
- (T1) Talon Hubs
- (U1) Union
- (OT) other (specify)
- (99) unknown

Range: OE, D1, D2, E1, E2, S1, T1, U1, OT, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

23. Tread Type

Front _____
Rear _____

OECD Reference: A.4.1.1.19, A.4.1.2.19

Convention/Coding Source: OECD

Element Attributes:

- (00) no tread pattern, slick
- (01) straight-rib tread pattern
- (02) block pattern, trials type
- (03) knobby pattern, motocross type
- (04) all weather, cross or dog-bone pattern
- (05) all weather, diagonal or diamond pattern
- (06) all weather, angle groove
- (07) racing design, minimum groove design
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

The following tread-type descriptions may be used as a guideline to determine tread typology.

no tread pattern, slick: The tire has no specific tread pattern.

straight-rib tread pattern: The tire-tread pattern is perpendicular to the tire’s axis of rotation (i.e., the tread pattern is parallel to the tire’s direction of rotation). There may be a slight offset in the rib pattern as well.

block pattern, trials type: The tire-tread pattern is similar to the knobby pattern; however, there is closer knob spacing, and the tire is approved for street use. The tire-tread pattern is parallel to the tire’s axis of rotation.

knobby pattern, motocross type: The tire tread is raised and consists of individual knob-like raised areas primarily designed for improved traction in off-road conditions.

all weather, cross or dog bone pattern: The tire tread has interlocking tread components (dog bone shape, flag shape, etc.) that may either be parallel or perpendicular to the tire’s axis of rotation.

23. Tread Type (Continued)

all weather, diagonal or diamond pattern: The tire-tread pattern forms a closed diamond pattern or a closed diagonal pattern.

all weather, angle groove: The tire-tread pattern has an angle groove pattern that originates at the center of the tire tread and radiates on an angle to the edge of the tire tread.

racing design, minimum groove design: There is a very shallow tread pattern on the tire. These tires are very similar to slick tires, yet they have a slight tread pattern on them when compared to all-weather tires.

other (specify): This is selected when none of the tread types capture the tread type of the inspected motorcycle. Specify the tread type.

unknown: This is used when the tread type is unknown.

MOTORCYCLE MECHANICAL FORM

24. Measured Tread Depth (Code in 32nds)

Front _____/32nds

Rear _____/32nds

OECD Reference: A.4.1.1.20, A.4.1.2.20

Convention/Coding Source: OECD

Element Attributes:

(00–96/32nds) actual tread depth

(99/32nds) unknown

Range: 00–96, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Tread-depth measurement is accomplished by using an imperial tread-depth gauge, which is commercially available through many automotive supply facilities. Measure the tread depth at the center of the tread with the depth gauge. The tire may wear unevenly; therefore, it is best to take measurements at several places and compute the average tread depth (e.g., 07/32).

MOTORCYCLE MECHANICAL FORM

25. Inflation Pressure (Code in PSI)

Front _____
Rear _____

OECD Reference: A.4.1.1.21, A.4.1.2.21

Convention/Coding Source: DSI, OECD

Element Attributes:

(000)	completely flat
(001–100)	PSI
(999)	unknown

Range: 000–100, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Only measure the pressure if confident that the crash did not cause loss of pressure, otherwise code 999.

Pound per square inch, or more accurately pound-force per square inch, is a unit of pressure or stress based on avoirdupois units. It is the pressure resulting from a force of one pound applied to an area of one square inch.

Using a standard dial-type tire-pressure gauge, record the pressure for the front and rear tires. If the tire was deflated as a result of the crash, enter 999 (unknown). Do not enter 000, which is the value that would be obtained during the on-scene investigation.

MOTORCYCLE MECHANICAL FORM

26. Braking Evidence on Tire

Front _____
Rear _____

OECD Reference: A.4.1.1.22, A.4.1.2.22

Convention/Coding Source: OECD

Element Attributes:

- (00) none
- (01) evidence of moderate braking
- (02) evidence of heavy braking without wheel lock up
- (03) evidence of heavy locked-wheel braking, one skid patch
- (04) evidence of heavy locked-wheel braking, multiple skid patches
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—scene evidence (e.g., skid marks)

Remarks: This variable is assigned by the investigator from the sources.

Record the variable that best describes the evidence on the tire and at the scene to determine whether moderate braking or heavy braking was applied.

Braking evidence is determined by close examination of the front and rear tires of the motorcycle. Examination should only be performed under well-lighted conditions. During braking, rubber tire material is deposited on the roadway surface and subsequently removed from the motorcycle tire. Flat spots or patches will appear on the motorcycle tire where this contact with the roadway surface occurred. Tire evidence as a result of moderate braking will show surface marks throughout the circumference of the tire without a change in tire tread depth. Tire evidence from heavy braking without wheel lock up will show a series of skid patches around the circumference of the tire. When heavy locked-wheel braking occurs, the tire will show flat regions where rubber was transferred to the roadway surface. If more than one flat spot or skid patch is observed on the tire, it may be concluded that the tire has multiple skid patches.

27. Suspension Type, Front

OECD Reference: A.4.1.1.23

Convention/Coding Source: SAE,⁽⁹⁾ Indian Motorcycle,⁽¹³⁾ OECD, Wikipedia⁽⁷⁾

Element Attributes:

- (00) none, rigid wheel mount
- (01) telescoping tube, conventional lower-fork legs
- (02) telescoping tube, inverted fork legs
- (03) springer
- (04) girder
- (05) leading link, single- or double-sided
- (06) articulated multiple link
- (07) trailing link, single- or double-sided
- (08) telelever (BMW only)
- (09) lower suspension
- (98) other (specify)
- (99) unknown

Range: 00–09, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

suspension: This refers to the assembly of mechanical devices that connects the axle of the rotating wheel to the main vehicle. It can include links, slider tracks, pivots, springs, and dampers.

none, rigid wheel mount: Modern designs have the two wheels of a motorcycle connected to the chassis by a suspension arrangement; however, chopper-style motorcycles often elect to forgo rear suspension, using a rigid frame.

telescoping tube, conventional lower-fork legs: The front suspension is usually built into the front fork and may consist of telescoping tubes, called fork tubes, that contain the suspension inside or some multibar linkage that incorporates the suspension externally. Most front forks incorporate telescopic hydraulic shock absorbers to absorb the vertical shock of the front wheel when hitting bumps, thus providing a smooth ride. This telescopic motorcycle front-suspension system has been designed to contain a pair of upper-fork tubes containing lower-fork sliders that move into one another. Inside each of the telescopic forks is a spring and a damping-rod system.

27. Suspension Type, Front (Continued)

telescoping tube, inverted fork legs: The inverted cartridge-fork assembly is basically an upside-down fork that has a cartridge within it; it operates very similarly to a cartridge damper-fork system. The upper tubes in the inverted-fork design have a greater diameter than those of the standard right-side-up fork system. This larger upper tube gives this fork design more surface area, which increases the front fork's resistance to unwanted fork flexing.

springer: The springer fork assembly was an outdated system until it was redesigned by an American motorcycle manufacturer. It uses a rigid fork, which is attached to and pivots in the frame's steering-head bearing area. There is also a spring fork that slides through the rigid-fork bushings. This unit is attached to the rigid fork by two rockers. These rockers pivot on self-lubricating bushings. The suspension in this design is provided by six compression springs and two rebound springs. There is a newer version of the springer front-end suspension that uses a single hydraulic shock for suspension damping.

girder: Girder front suspensions are nearly as old as motorcycles and are seen on custom bikes but not often on sport bikes. A girder fork is a solid unit that is attached to the rest of the motorcycle with a parallel link arrangement. It works similarly to a set of parallel rulers. One ruler represents the motorcycle's steering head, and the other represents the top of the fork. A girder is a solid unit, not necessarily one single solid fork leg on each side, because most girder forks use lighter weight tubing to make the entire girder. That tubing does not move in relation to itself, so the girder as a whole is solid. A disadvantage to girder forks is that, as the suspension moves, the wheelbase changes, which seriously affects handling.

leading link, single- or double-sided: This system uses a link to mount the wheel to the front of the tubes. This system works well, but it is very expensive to manufacture.

articulated multiple link: This multilink suspension is a type of vehicle suspension design typically used in independent suspensions; it uses three or more lateral arms and one or more longitudinal arms. These arms do not have to be of equal length and may be angled away from their obvious direction. Typically, each arm has a spherical joint (ball joint) or rubber bushing at the end. Consequently, they react to loads along their own length, in tension and compression, but not in bending. Some multilinks use a trailing arm, or wishbone, which has two bushings at one end.

trailing link, single- or double-sided: This system uses a link to mount the front wheel to the rear of the front tubes. The drawback to this system is that it does not cushion the braking load efficiently.

27. Suspension Type, Front (Continued)

telelever (BMW only): The Saxon-Motodd design (marketed as Telelever by BMW) has an additional swing arm that mounts to the frame and supports the spring. This causes the trail and caster angle (rake) to increase during braking instead of decreasing as with traditional telescopic forks.

lower suspension: This refers to a lower-front-fork tube shock-absorber system not described by other front systems.

other (specify): This is any type of front-suspension system that is not described in the previous variables.

28. Suspension Type, Rear

OECD Reference: None

Convention/Coding Source: OECD, SAE,⁽⁹⁾ Wikipedia⁽⁷⁾

Element Attributes:

- (00) none, rigid wheel mount
- (01) conventional fork swing arm, double exterior tubular shocks
- (02) conventional fork swing arm, mono-shock
- (03) conventional fork swing arm, linkage-articulated mono-shock
- (04) one-sided swing arm, single exterior tubular shock
- (05) one-sided swing arm, mono-shock
- (06) one-sided swing arm, linkage-articulated mono-shock
- (07) lower suspension
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

swing arm: This is the linkage that connects the rear-wheel axle to the rear-frame assembly. It is sometimes called the rear fork.

conventional fork swing arm, mono-shock: This rear suspension consists of a conventional swing arm with a mono-shock absorber located forward of the rear wheel. In a motorcycle with a mono-shock rear suspension, there is only one shock that connects the rear swing arm to the motorcycle's frame. Typically, this lone shock is in front of the rear wheel and uses a linkage to connect to the swing arm. Mono-shocks eliminate torque on the swing arm and provide more consistent handling and braking. They are also easier to adjust, since there is only one shock to adjust, and there is no worry about matching two shocks. Also, the linkages used to connect the shock to the swing arm are frequently designed to give a rising rate of damping for the rear.

conventional fork swing arm, linkage-articulated mono-shock: The mono-shock is attached to the swing arm and can move independently (up and down) through an articulated cylindrical joint.

28. Suspension Type, Rear (Continued)

one-sided swing arm, single exterior tubular shock: A single-sided swing arm is a style of motorcycle swing arm. As its name implies, it lies along only one side of the motorcycle's rear wheel, unlike the conventional swing arm, which lies along both sides. It allows the rear wheel to be mounted like those of an automobile. This makes wheel maintenance simpler since removal involves the loosening of a set of lugs or a single nut, sliding the wheel forward to slacken and uncouple the drive chain (when fitted with a chain or belt drive), and then pulling out the axle shaft. When made with a S-shaped contour, these swing arms need to be much stiffer than the double-sided versions to accommodate the new torsional forces incurred by holding onto the wheel by just one side. Having a single mounting point also guarantees proper wheel alignment. The single-sided swing arm is also found on small machines, where a robust chain case acts as the swing arm connecting engine and rear wheel.

one-sided swing arm, linkage-articulated mono-shock: In the one-sided swing arm with the linkage-articulated mono-shock, the mono-shock is attached to the swing arm and can move independently (up and down) through an articulated cylindrical joint. This type of suspension is most commonly found with high-performance Ducati, Moto-Guzzi, and Triumph motorcycles.

lower suspension: This refers to customized rear shocks that are installed and intended to lower the profile of the motorcycle and create less ground clearance.

MOTORCYCLE MECHANICAL FORM

29. Suspension Condition

Front _____
Rear _____

OECD Reference: A.4.1.1.24, A.4.1.2.24

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no unusual condition; acceptable condition
- (01) excessive wear in joints, sliders, pivot bolts; excessive mobility
- (02) seal or dampers leaking; deteriorated damping
- (03) loose or missing fasteners, inadequate clamping; excessive flexibility
- (04) suspension elements damaged prior to accident events
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

30. Rider Brake-Control Type

Lever/Pedal 1 _____

Lever/Pedal 2 _____

OECD Reference: A.4.1.1.25, A.4.1.2.25

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none, not present
- (01) hand
- (02) foot
- (99) unknown

Range: 00–02, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

31. Rider Brake-Control Side

Lever/Pedal 1 _____

Lever/Pedal 2 _____

OECD Reference: A.4.1.1.26, A.4.1.2.26

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) left
- (02) right
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01, 02, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

32. Brake Actuation at Lever or Pedal

Lever/Pedal 1 _____
Lever/Pedal 2 _____

OECD Reference: A.4.1.1.27, A.4.1.2.27

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) hydraulic
- (02) mechanical
- (03) electric
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–03, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

hydraulic: Although hydraulic disc brakes were rarely seen before Honda came out with the CB750 in 1969, they are quite common now, even on clutches. A hydraulic brake is an arrangement of braking mechanism which uses brake fluid, typically containing glycol ethers or diethylene glycol, to transfer pressure from the controlling mechanism to the braking mechanism.

mechanical: Earlier brakes than mechanical ones, such as carriage or external-contracting band brakes, wore quickly because they acted on surfaces exposed to dust and grit. A special problem of band brakes was that the friction material wrapped around and insulated the drum on which it acted, obstructing its cooling. Mechanical brakes arrest the energy of a machine or object via force, most commonly friction. Mechanical brakes function via force delivered to a body in rotary or linear motion, such as an axle, shaft, or wheel, to slow or stop motion. Mechanical brakes are often in an assembly with a mechanical clutch for engaging and disengaging shafts.

Until about 1906, motorcycle brakes had been actuated by articulated rods and levers, but the familiar Bowden cable arrived on the scene, simplifying controls.

32. Brake Actuation at Lever or Pedal (Continued)

A number of small scooters are equipped with mechanical drum brakes. The mechanical Combi Brake System (CBS) is designed for small scooters. On application of the left lever, the brakes work simultaneously on the front and rear wheels through the equalizer. On input of low power, however, the front wheel brake efficacy is checked to bring nosedive closer to the former level caused by operation of the left lever. A high degree of deceleration is effectively obtained through a single operation of the left lever.

electric: An electromagnetic brake is functional by a spring force when electricity is off. It is designed for good performance in panic braking during a power outage, holding of long-term shutdown condition, and coasting prevention of the motorcycle. Various advantages, such as a quiet braking sound, long operating life, compactness, large torque, stable braking force, or availability of the manual release lever, are ensured. There are two types of spring-actuated brakes: braking and holding.

MOTORCYCLE MECHANICAL FORM

33. Brake Control–System Type

Lever/Pedal 1 _____

Lever/Pedal 2 _____

OECD Reference: A.4.1.1.28, A.4.1.2.28

Convention/Coding Source: OECD, DSI, Motorcycle Safety Foundation (MSF), Honda

Element Attributes:

- (01) independent front brake
- (02) independent rear brake
- (03) combined front and rear brakes, CBS
- (97) not applicable
- (99) unknown

Range: 01–03, 97, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

independent front brake: The vast majority of motorcycles use an independent system for the front and rear wheels, with a lever on the right handlebar controlling the front brake.

independent rear brake: The foot pedal located on the right side or a hand lever located on the left handlebar that actuates the rear brake when applied.

combined front and rear brakes, CBS: For a conventional combined or CBS motorcycle, the breaks work simultaneously on the front and rear wheels by operation of the pedal (left lever). Honda has also developed a dual CBS for application for much larger sports models. For the front double-disc brake and rear disc brake, this not only brakes the front and rear wheels at the same time by applying the pedal, but also applies braking force on the rear wheel when the right lever is operated. The dual CBS enables the driver to efficiently decelerate and reduce nosedive.

34. Connection to Front Brake Includes

Lever/Pedal 1 _____
Lever/Pedal 2 _____

OECD Reference: A.4.1.1.29, A.4.1.2.29

Convention/Coding Source: OECD

Element Attributes:

- (01) no proportioning valve
- (02) fixed proportioning valve
- (03) variable proportioning valve
- (97) not applicable
- (99) unknown

Range: 01–03, 97, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

The brake system functions as the brake pedal is pushed so that the master cylinder pressurizes the input line to the proportioning valve. This valve will allow an equal amount of pressure output to the front and rear brake calipers, as was generated during the application of braking. Beyond a predetermined point, the proportioning valve will automatically begin limiting output pressure to the rear brake caliper while maintaining direct input to the front caliper. The more pedal pressure, the more the ratio of front to rear brake pressure increases in a linear fashion. This system improves stopping distance for those riders not inclined to use a front brake.

no proportioning valve: The linked braking system is not equipped with a proportioning valve.

fixed proportioning valve: The proportioning valve is usually found on the firewall and has hard brake lines coming out of it. These lines go to the calipers or a different ABS unit altogether. If it is difficult to find the brake proportioning valve, try following the brake lines coming from the brakes all the way to the engine.

Linked brakes (CBS) are a brake system where use of the front or rear brake, separately, will also activate the other brake not applied by the rider. On a fully linked system, if the rider applies the rear brake, then the front brakes are partially applied. Or, if the rider applies only the front brake, then the system will also activate the rear brake through a proportioning valve (to avoid rear-wheel lockup).

34. Connection to Front Brake Includes (Continued)

variable proportioning valve: The potential problem with linked brakes is that they can promote a dependence on the rear brake. Most linked-brake systems use only a portion of the bike's front brakes when the rear brake pedal is pressed. These days, most bikes have multipiston front brake calipers (i.e., calipers with two or three pistons per caliper). On the linked-brake function, when the rear brake pedal is pressed, usually only one piston of each front brake is applied, no matter how hard the rear brake pedal is pressed. This is done to enhance bike stability during braking, especially if the rider tromps on the rear brake (as is common for untrained/unskilled riders).

35. Connection to Rear Brake Includes

Lever/Pedal 1 _____
Lever/Pedal 2 _____

OECD Reference: A.4.1.1.30, A.4.1.2.30

Convention/Coding Source: OECD

Element Attributes:

- (01) no proportioning valve
- (02) fixed proportioning valve
- (03) variable proportioning valve
- (97) not applicable
- (99) unknown

Range: 01–03, 97, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

The system functions as the brake pedal is pushed so that the master cylinder pressurizes the input line to the proportioning valve. This valve will allow an equal amount of pressure output to the front and rear brake calipers, as was generated during the application of braking. Beyond a predetermined point, the proportioning valve will automatically begin limiting output pressure to the rear brake caliper while maintaining direct input to the front caliper. The more pedal pressure, the more the ratio of front to rear brake pressure increases in a linear fashion. This system improves stopping distance for riders not inclined to use a front brake.

no proportioning valve: The linked braking system is not equipped with a proportioning valve.

fixed proportioning valve: The proportioning valve is usually found on the firewall and has hard brake lines coming out of it. These lines go to the calipers or a different ABS unit altogether. If it is difficult to find the brake proportioning valve, try following the brake lines coming from the brakes all the way to the engine.

Linked brakes (CBS) are a brake system where use of the front or rear brake, separately, will also activate the other brake not applied by the rider. On a fully linked system, if the rider applies the rear brake, then the front brakes are partially applied. Or, if the rider applies only the front brake, then the system will also activate the rear brake through a proportioning valve (to avoid rear-wheel lockup).

35. Connection to Rear Brake Includes (Continued)

variable proportioning valve: The potential problem with linked brakes is that they can promote a dependence on the rear brake. Most linked-brake systems use only a portion of the bike's front brakes when the rear brake pedal is pressed. These days, most bikes have multipiston front brake calipers (i.e., calipers with two or three pistons per caliper). On the linked-brake function, when the rear brake pedal is pressed, usually only one piston of each front brake is applied, no matter how hard the rear brake pedal is pressed. This is done to enhance bike stability during braking, especially if the rider tromps on the rear brake (as is common for untrained/unskilled riders).

MOTORCYCLE MECHANICAL FORM

36. ABS

Front _____
Rear _____

OECD Reference: A.4.1.1.29, A.4.1.2.29

Convention/Coding Source: SAE, ⁽⁹⁾ OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

ABS is a braking system that automatically controls the slip ratios of one or more wheels of the vehicle during braking. It allows the rider to apply maximum braking force without the fear of wheel lockup and the resulting loss of control, providing the bike is not leaned over. Under many pavement conditions, ABS allows the rider to stop a motorcycle more rapidly while maintaining steering control, even during situations of extreme panicked braking.

ABS maintains separate operation of front and rear brakes. Steel-braided lines run from both master cylinders to a controller unit located under the right-side panel, then back to the brake rotors. If the wheel sensors detect lockup, the control unit pulses the brakes up to seven times per second to prevent the wheels from locking up.

37. ABS Type

Front _____
Rear _____

OECD Reference: A.4.1.1.32, A.4.1.2.32

Convention/Coding Source: OECD, BMW, Wikipedia⁽⁷⁾

Element Attributes:

- (01) electrohydraulic
- (02) hydromechanical
- (03) all hydraulic, fluidic
- (04) all mechanical
- (05) pneumatic hydraulic
- (06) electromechanical
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

electrohydraulic: A typical ABS is composed of a central electronic unit, four speed sensors (one for each wheel), and two or more hydraulic valves on the brake circuit. The electronic unit constantly monitors the rotation speed of each wheel. When it senses that any number of wheels are rotating considerably slower than the others (a condition that will bring it to lock), it moves the valves to decrease the pressure on the braking circuit, effectively reducing the braking force on that wheel. The wheels then turn faster, and when they turn too fast, the force is reapplied. This process is repeated continuously, and this causes the characteristic pulsing feeling through the brake pedal. A typical ABS can apply and release braking pressure up to 20 times per second.

This type of ABS system prevents the wheels from locking in the event of an emergency stop by means of an electronically controlled regulatory hydraulic system. Wheel sensors measure the rotational speed of the front and rear wheels and identify when the wheel begins to lock. The sensors pass on a measured impulse to a processor, which activates a pressure modulator in the hydraulic brake circuit of the front or rear wheel. The activated pressure modulator reduces brake pressure in a fraction of a second and then increases it once more. This means that the ABS applies the right amount of brake pressure within the ABS range to the appropriate wheel as necessary to keep the wheel just short of the locking point.

37. ABS Type (Continued)

hydromechanical: A hydromechanical ABS regulates the flow of fluid to the brakes under extreme brake pressure. The system uses a pump valve equipped with a hydroreservoir that maintains pressure directly to the mechanical parts in the ABS (hydraulically actuated). This system also uses a manual mechanical proportioning valve.

all hydraulic, fluidic: This type of ABS works primarily from hydraulic fluid chambers to activate brake pressure to the front and rear brakes.

all mechanical: Fully mechanical ABSs are very rare and are usually seen in early-model motorcycles. A fully mechanical system was used sparingly in the 1960s in models such as the Ferguson P99 racing car, the Jensen FF, and the experimental all-wheel-drive Ford Zodiac. The system proved expensive and, in automobile use, somewhat unreliable. However, a limited form of antilock braking, using a valve that could adjust front- to rear-brake force distribution when a wheel locked, was fitted to the 1964 Austin 1800.

pneumatic hydraulic: This type of ABS uses a combination of pneumatic and hydraulic technology.

electromechanical: The hydraulic system in motorcycles can be augmented by the addition of special hydraulic solenoid switches, which allow the control unit to modulate brake pressure on each controlled wheel. The number of wheels controlled depends on the configuration selected by the manufacturer. Typically, this ABS has one control circuit that acts on both the front and rear wheels. This system uses a combination of electronic (sensors) and mechanical technology.

MOTORCYCLE MECHANICAL FORM

38. Brake Mechanism

Front _____
Rear _____

OECD Reference: A.4.1.1.33, A.4.1.2.33

Convention/Coding Source: OECD, Total Motorcycle,⁽¹⁴⁾ Wikipedia,⁽⁷⁾ DSI

Element Attributes:

- (00) none, not present
- (01) caliper/shoe to wheel rim
- (02) drum, single-leading shoe
- (03) drum, double-leading shoe
- (04) single disc, single piston
- (05) single disc, multipiston
- (06) double disc, single piston
- (07) double disc, multipiston
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Use the following information to help in identifying the proper brake mechanism.

caliper/shoe to wheel rim: This is a single/double-side caliper that applies braking pressure from brake pads to the wheel rim (e.g., typical bicycle brakes). Finding this type of brake on a motorcycle traveling on the road is unlikely.

drum, single leading shoe: For a long time, motorcycles were stopped by drum brakes, which work by pushing shoes up against the inside of a drum and causing friction, thereby slowing the motorcycle down. Drum brakes are easy to recognize with the “drum” mounted on the wheel. The single-leading shoe has a cam that pushes one side of each brake shoe out to make contact with the brake drum when the brakes are activated.

drum, double-leading shoe: The double-leading shoe has two cams on each end of the brake shoe pushing both ends out to meet the drum. This gives better shoe-to-drum contact, increasing braking power. They are, however, more difficult to adjust, and if not adjusted correctly, give less braking power than the single-leading shoe.

38. Brake Mechanism (Continued)

single disc, single piston: There is only one disc per wheel, and the caliper is activated by one piston.

single disc, multipiston: There is only one disc per wheel; however, there are multiple pistons in the caliper housing to increase the caliper/shoe pressure and provide an even braking pressure. The number of pistons in a caliper is often referred to as the number of “pots,” so if a vehicle has six pot calipers, it means that each caliper houses six pistons.

double disc, single piston: There are two discs per wheel (one on each side of the wheel/tire hub). This system consists of two calipers per disc; however, there is only one piston per caliper housing.

double disc, multipiston: There are two discs per wheel (one on each side of the wheel/tire hub); however, there are multiple pistons in the caliper housing to increase the caliper/shoe pressure and provide an even braking pressure.

MOTORCYCLE MECHANICAL FORM

39. Brake-Mechanism Actuation

Front _____
Rear _____

OECD Reference: A.4.1.1.34, A.4.1.2.34

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ Answers,⁽¹⁵⁾

Element Attributes:

- (01) hydraulic
- (02) mechanical
- (03) electric
- (04) electric regenerative
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–04, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

hydraulic: Hydraulic brakes use fluid pushed through a hose from a reservoir to actuate the pistons in the disc caliper that actuate the pads. Many hydraulic disc brakes have a self-adjusting mechanism, so as the brake pad wears, the pistons keep the distance from the pad to the disc consistent to maintain the same brake-lever throw.

mechanical: Mechanical brakes are almost always cheaper, but have little modulation, and may accumulate dirt in the cable lines since the cable is usually open to the outside. Mechanical discs have a manual control to adjust the pad-to-rotor gap. Calipers are now generally made in one piece to increase stiffness and reduce heat buildup, but the two-piece design still reduces heat buildup more effectively, and most top-end models still have a two-piece caliper.

electric: This type features an actuator in which the actuating force is supplied by a current flowing through a solenoid or through an electromagnet that is attracted to discs on the rotating member, actuating the brake shoes; this force is counteracted by the force of a compression spring. These are also known as electromagnetic brakes.

electric regenerative: A regenerative brake is a mechanism that reduces vehicle speed by converting some of its kinetic energy into electrical energy. This electrical energy is then stored for future use or fed back into a power system for use in other areas. An electrical regenerative actuation system on a motorcycle uses the electrical current generated by the motor and transmits the energy to actuate or activate the calipers or drum shoes.

MOTORCYCLE MECHANICAL FORM

40. Were Brakes Operational Before Crash?

Front _____
Rear _____

OECD Reference: A.4.1.1.35, A.4.1.2.35

Convention/Coding Source: DSI, OECD

Element Attributes:

- (00) no
- (01) yes
- (99) unknown

Range: 00, 01, 99

Source:

- Primary—vehicle inspection
- Secondary—interviewee (rider) and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE MECHANICAL FORM

41. Do the Brakes Appear to be Defective?

Front _____
Rear _____

OECD Reference: A.4.1.1.36, A.4.1.2.36

Convention/Coding Source: DSI, OECD

Element Attributes:

(00) no
(01) yes
(99) unknown

Range: 00, 01, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

42. Brakes Condition/Wear

Front _____
Rear _____

OECD Reference: A.4.1.1.37, A.4.1.2.37

Convention/Coding Source: OECD

Element Attributes:

- (01) no significant wear
- (02) minimum wear to friction surfaces
- (03) moderate wear to friction surfaces
- (04) severe wear to friction surfaces, replacement and repair overdue
- (05) severe deterioration due to wear of friction surfaces
- (06) severe deterioration of operating system
- (07) brake components damaged prior to accident events
- (98) other (specify)
- (99) unknown

Range: 01–07, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

One indicator of pad wear is the fluid level in the master cylinder. As the pads wear, the caliper piston moves farther out of its bore. Fluid from the master cylinder must then fill the space behind the piston. The first clue that the pads need to be examined may be a drop in the brake-fluid level. Typically, brake pads will have some sort of visual indicator to indicate how much life is left. These may be painted strips, slots cut into the pads, or a step milled into the pad material. As the pad wears, so do the indicators. When they disappear, it is time to replace the pad. Some manufacturers may specify a minimum thickness for the pad material. In most instances, this is somewhere between 2.0 and 1.5 mm. The wear indicators are visible without removing the pads from the caliper, though an inspection cover might need to be removed to see them.

The following guidelines should be used to determine brake condition and wear.

no significant wear: The brake system is in good operating condition, and the friction surfaces show little if any significant wear (i.e., within 10 percent of the original design specifications).

minimum wear to friction surfaces: The brake system is in good operating condition, and the friction surfaces show signs of use with the friction surface-wear thickness between 40 and 90 percent of the original design specifications.

42. Brakes Condition/Wear (Continued)

moderate wear to friction surfaces: The brake system is in good operating condition, and the friction surfaces show signs of use with the friction surface-wear thickness between 1 and 39 percent of the original design specifications.

severe wear to friction surfaces: The brake system is in good operating condition, and the friction surfaces are beyond the original design service limit (typically less than 1 mm left on the friction surface).

severe deterioration due to wear of friction surfaces: The brake system is in operating condition; however, due to excessive wear of the friction surfaces beyond the original design service limit, additional brake-system components have become damaged or broken.

severe deterioration of operating system: The brake system is no longer in operating condition due to excessive wear of the friction surfaces beyond the original design service limit and damage to the components of the operating system.

brake components damaged prior to accident events: The brake system components show clear signs of physical damage unrelated to this particular accident (e.g., cut cables).

other (specify): This variable should be used for any brake condition or wearing noted that is not captured by the other element attributes.

unknown: Use this code only when the brake condition cannot be determined.

MOTORCYCLE MECHANICAL FORM

43. Brake Adjustment

Front _____
Rear _____

OECD Reference: A.4.1.1.38, A.4.1.2.38

Convention/Coding Source: OECD

Element Attributes:

- (00) no maladjustment
- (01) improper adjustment, significant control action required for braking action
- (02) severe adjustment problem
- (03) inoperable due to sabotage
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

The following guidelines should be used to determine brake adjustment.

no maladjustment: The brakes are in normal operating condition. No maladjustment noted.

improper adjustment, significant control action required for braking action: The brakes are operational; however, the play in the brakes is in excess of the standard design limit.

severe adjustment problem: One of the braking systems is inoperable due to a severe adjustment problem (i.e., excessive play in the brake pedal or brake lever that causes it to bottom out prior to brake actuation).

inoperable due to sabotage: The braking system has been modified, rendering it inoperable.

44. Frame Type/Configuration

OECD Reference: A.4.1.1.39

Convention/Coding Source: OECD, SAE,⁽⁹⁾ Motorcycle Frame Technology,⁽¹⁶⁾ Wikipedia⁽⁷⁾

Element Attributes:

- (01) step-through, formed sheet metal
- (02) step-through, tubular frame
- (03) conventional tube-cradle type with single-down tube
- (04) conventional tube-cradle type with double-down tubes
- (05) backbone type, motor transmission mounted independently
- (06) backbone type, motor transmission integral with frame
- (07) perimeter frame, tube type
- (08) perimeter frame, extrusion-element type
- (09) monocoque, shell-only structure
- (98) other (specify)
- (99) unknown

Range: 01–09, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

frame: The structural parts of the rear-frame assembly are the fork assembly, the motor and transmission, the rear swing arm and suspension, the rider's seat, and a number of other mechanical components. Motorcycle frames are usually made from welded aluminum, steel, or alloy, but carbon-fiber is used in some expensive or custom frames. The purpose of a motorcycle frame is to act as a base onto which all the various components can be bolted. The engine generally sits inside the frame, the rear swing-arm is attached by a pivot bolt (allowing the suspension to move), and the front forks are attached to the front of the frame. The frame can also help protect the more sensitive parts of a motorcycle in a crash.

step-through, formed sheet metal: The classic scooter design features a step-through frame and a flat floorboard for the rider's feet. This design is possible because the scooter engine and drive system transferring power to the rear wheel is attached to the rear axle or under the seat. Unlike a motorcycle, where the engine is mounted on the frame, this front-hinged arrangement allows the engine to swing vertically together with the rear wheel.

44. Frame Type/Configuration (Continued)

step-through, tubular frame: This is much the same as the step-through, formed sheet metal frame, but it is constructed from tubular framing that is usually welded at structure points. The tubular frame principle offers a more rigid platform to mount a larger engine than smaller-sized scooter-type bikes.

conventional tube-cradle type with single-down tube: The single-cradle frame is the simplest type of motorcycle frame and looks similar to the first-ever motorcycle frames. It is made from steel tubes that surround the engine, with a main tube above and other smaller diameter tubes beneath. If a single cradle becomes double at the exhaust, as frequently occurs, it is referred to as a split single-cradle frame. Single-cradle frames are usually found in off-road motorcycles.

conventional tube-cradle type with double-down tubes: The double-cradle frames are descended from single-cradle frames. They consist of two cradles that support the engine, one on either side. Double-cradle frames are commonly used in custom motorcycles and simpler road bikes. They offer a good compromise between rigidity, strength, and lightness, though they have now been technically surpassed by perimeter frames.

backbone type, motor transmission mounted independently: Although not the most desirable frame, the backbone frame comprises a single, wide main beam from which the engine is suspended. The backbone frame allows for great flexibility in design since it is concealed inside the finished motorcycle. The engine seems to hang in midair. It is simple and cheap to make and is used mainly on naked and off-road motorcycles.

backbone type, motor transmission integral with frame: Although not the most desirable frame, the backbone frame comprises a single, wide main beam from which the engine is suspended. The backbone frame allows for great flexibility in design since it is concealed inside the finished motorcycle. The engine seems to hang in midair. It is simple and cheap to make and is used mainly on naked and off-road motorcycles. The motor-transmission mount is welded or integrated directly within the frame.

perimeter frame, tube type: Motorcycle racing research has shown that major advantages are to be gained in terms of rigidity by joining the steering head to the swing arm in as short a distance as possible. Flexure and torsion are dramatically reduced.

This is the concept behind the perimeter frame. Two robust beams descend in the most direct way from the steering head to the swing arm, passing around the engine. The earliest perimeter frames were made from steel, but the need to improve rigidity to weight ratios led most manufacturers to adopt aluminum instead. Aluminum is now by far the most common road bike frame material, and the aluminum perimeter frame is the most popular frame for modern super-sports motorcycles. This type of perimeter frame is designed from tubular steel or aluminum and is a welded design.

44. Frame Type/Configuration (Continued)

perimeter frame, extrusion-element type: Motorcycle racing research has shown that major advantages are to be gained in terms of rigidity by joining the steering head to the swing arm in as short a distance as possible. Flexure and torsion are dramatically reduced. This is the concept behind the perimeter frame. Two robust beams descend in the most direct way possible from the steering head to the swing-arm, passing around the engine. The earliest perimeter frames were made from steel, but the need to improve rigidity to weight ratios led most manufacturers to adopt aluminum instead. Aluminum is now by far the most common road bike frame material, and the aluminum perimeter frame is the most popular frame for modern super-sports motorcycles.

monocoque, shell-only structure: Monocoque, meaning “single shell” in French, is a construction technique that uses the external skin to support some or most of the load. This is as opposed to using an internal frame or chassis that is then covered with cosmetic body panels. The monocoque frame is used nearly exclusively on competition bikes and is very rarely found on road-going bikes. Monocoque frames act as a single-piece unit that functions as a seat mounting, tank, and tail section. Though they offer certain advantages in terms of rigidity, monocoque frames are heavy and generally not worthwhile.

MOTORCYCLE MECHANICAL FORM

45. Frame Material

OECD Reference: A.4.1.1.40

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) steel
- (02) aluminum alloy
- (03) carbon-fiber composite
- (04) other composite
- (98) other (specify)
- (99) unknown

Range: 01–04, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

46. Reduction in Wheelbase

_____ . _____ inches

OECD Reference: A.4.1.1.41

Convention/Coding Source: SAE⁽⁹⁾

Element Attributes:

(00.0–99.6) actual number in inches
(99.9) unknown

Range: 00.0–99.6, 99.9

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

The wheelbase is the distance from the front axle to the rear axle when the vehicle is perpendicular to the roadway. This is a direct post-crash field measurement taken from the center of the rear-wheel hub to the front-wheel axle. The field measurement can be compared (and in most cases, deducted) from the original vehicle manufacturer specifications. The resultant reduction in wheelbase should be recorded in inches to the nearest 1/10 of an inch. For example, if the resultant reduction in wheelbase were 3 2/8 inches, then the proper coding would be 03.3 inches (2/8 would be rounded to the nearest 1/10, so in this case, 0.3).

MOTORCYCLE MECHANICAL FORM

47. Did Front Wheel Displace Against Either the Motor or the Frame?

OECD Reference: A.4.1.1.42

Convention/Coding Source: DSI, OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Determine if the impact force displaced the front wheel longitudinally rearward against the motor or frame. If the wheel contacted the motor or frame, or was restricted against the motor or frame, code 01.

MOTORCYCLE MECHANICAL FORM

48. Steering-Stem Adjustment

OECD Reference: A.4.1.1.43

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) secure, properly tightened
- (02) overly tightened, control interference
- (03) loose, contributes to control difficulty
- (04) very loose, control interference
- (98) other (specify)
- (99) unknown

Range: 01–04, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

The following procedures and guidelines should be used to determine steering-stem adjustment:

Raise the front wheel off the ground. From the centered position of the fork, slowly push the handlebar to the other side. If the handlebar begins to turn without the aid of additional force application (i.e., due to gravity), then the steering stem is not overly tightened (code 01). If the handlebar does not begin to turn due to gravity, then the steering stem is overly tightened (code 02).

If the handlebar does begin to turn freely, kneel in front of the motorcycle and, while facing the motorcycle, grasp the lower ends of the front fork and gently push and pull on the front fork. If there is play in the front fork, then the steering stem is considered loose. If the amount of play in the front fork is 0.08 inches (2 mm) or less, then the steering stem is considered loose and could contribute to control difficulty (code 03). If there is greater than 0.08 inches (2 mm) of play in the front fork, then the steering-stem adjustment is considered very loose and could contribute to control interference (code 04).

Describe any other unique conditions of the steering stem (e.g., modification or sabotage) as “other” (code 98).

49. Steering Damper Installed

OECD Reference: A.4.1.1.44

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ Motorcycle Frame Technology,⁽¹⁶⁾ BMW

Element Attributes:

- (00) none installed or not applicable
- (01) center steering pivot adjustable friction discs
- (02) tubular friction damper
- (03) hydraulic tubular damper, one side
- (04) hydraulic tubular damper, both sides
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

steering damper: This is a damping device designed to inhibit an undesirable, uncontrolled movement or oscillation of a motorcycle steering mechanism (a phenomenon known in the motorcycling community as “wobble”).

Steering dampers are available in two forms. Linear dampers resemble a telescoping shock absorber and operate in a similar manner. They can be aligned either longitudinally and to one side of the steering, or transversely across the bike. Rotary dampers resemble small boxes and operate via a rotating pivot. They are mounted coaxially with the steering axis and are typically located on top of the steering head.

Steering dampers can be found on many modern sport bikes and all race bikes and are similar to telescopic forks in that they provide a dampening effect to bumps on the road. A steering damper provides a resistive force against the direction of movement, giving a controlled compression and rebound. Dampers are velocity-dependent, so the faster the spring moves (e.g., like when hitting a bump), the more resistance the damper provides. If a damper is attached, then there will be a dampening force that will tend to stop any steering motion. In most cornering at mid to high speeds, the front wheel steers very little to lean into a corner so the damper does not have much of an impact. However, if the wheel hits a groove and starts oscillating back and forth vigorously, the steering damper will resist the movement and dissipate the energy providing more stability to the whole bike. The level of dampening can be adjusted quickly and easily by way of a dial on most units.

49. Steering Damper Installed (Continued)

center steering pivot adjustable friction discs: These are typically found on older-style (European) motorcycles.

tubular friction damper: These are usually high-viscosity damper sets made of aluminum. High-viscosity friction damper aluminum pistons and high-viscosity lubrication create a contiguous relationship with the internal surface of the piston (friction) and create smooth shock action on computer numeric control (CNC) aluminum and steel parts.

In practice, the tubular friction damper works better than a hydraulic damper because there is no linkage that can fail or result in sloppy handling.

hydraulic tubular damper, one side: This uses a single hydraulic damper on one side of the bike.

hydraulic tubular damper, both sides: This uses two hydraulic dampers, one on each side of the bike.

MOTORCYCLE MECHANICAL FORM

50. Is Rear Swing Arm Loose?

OECD Reference: A.4.1.1.45

Convention/Coding Source: Wikipedia,⁽⁷⁾ DSI, OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Inspect the rear swing arm anchor points and determine if loose.

The basic motorcycle swing arm is a rectangle, with one short side connected to the motorcycle's frame with bearings so that it can pivot. The other short side is the rear axle, around which the rear wheel turns. The long sides are connected to the motorcycle's frame or rear subframe with one or two shocks with coil-over springs.

Some swing arms have only one long side and are known as single-sided swing arms. Notable examples include the Honda VFR800 and the BMW R- and K-series of motorcycles. Single-sided swing arms make rear-wheel removal easier, though they generally increase the unsprung weight of the rear suspension. This is due to the additional material required to give identical rigidity to a conventional swing arm setup. For this reason sports bikes are rarely seen using the setup. Notable exclusions are the Ducati 916, which was intended to be taken endurance racing; the MV Agusta f4, which has a hollow interior for reducing weight (a magnesium version is also available); and the Ducati 1098, which was given a single-sided swing arm for styling reasons.

On many shaft-driven motorcycles, the shaft drive is contained in one of the long sides of the swing arm. Notable examples include all post-1955 BMWs prior to BMW's use of the single-sided swing-arms, Urals, many Moto Guzzi twins, the Honda Goldwing, the Yamaha XS Eleven, and the Yamaha FJR1300. The BMW R- and K-series combine a shaft drive contained in the swing arm with a single-sided swing arm, and the combination is marketed as the Paralever. Newer Moto Guzzi motorcycles use a similar arrangement marketed as the CA.R.C. (Cardano Reattivo Compatto, or compact reactive shaft drive).

For motorcycles with drive chains, the rear axle can be adjusted forward and backward in relation to the swing arm to adjust chain tension.

MOTORCYCLE MECHANICAL FORM

51. Is the Motorcycle Equipped With Pedals?

OECD Reference: A.4.1.1.4.1

Convention/Coding Source: DSI, OECD

Element Attributes:

(00) no
(01) yes
(99) unknown

Range: 00, 01, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Code 01 if the motorcycle is equipped with pedals that are used for braking or transmission-shift control.

MOTORCYCLE MECHANICAL FORM

52. Rider Foot Pegs, Footrest Type

OECD Reference: A.4.1.1.47

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) rigid metal pegs, no covers
- (02) rigid metal pegs, rubber covers
- (03) metal folding pegs, no covers
- (04) metal folding pegs, rubber covers
- (05) rigid metal footrests, pegs, or footboards
- (06) folding metal footrests, pegs, or footboards
- (07) accessory highway pegs only
- (08) scooter footboards
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

53. Passenger Foot Pegs, Footrest Type

OECD Reference: A.4.1.1.48

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) rigid metal pegs, no covers
- (02) rigid metal pegs, rubber covers
- (03) metal folding pegs, no covers
- (04) metal folding pegs, rubber covers
- (05) rigid metal footrests, pegs, or footboards
- (06) folding metal footrests, pegs, or footboards
- (07) accessory highway pegs only
- (08) scooter footboards
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

54. Side-Stand Type

OECD Reference: A.4.1.1.49

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) original equipment, right side, metal end or pad
- (02) original equipment, right side, rubber catch pad
- (03) original equipment, left side, metal end or pad
- (04) original equipment, left side, rubber catch pad
- (05) accessory, installed right side
- (06) accessory, installed left side
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

55. Center-Stand Type

OECD Reference: A.4.1.1.50

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) original equipment, installed
- (02) original equipment, removed
- (03) ride-off stand installed
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

56. Headlamp Assembly Type

OECD Reference: A.4.1.1.51

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) single headlamp
- (02) double headlamp
- (03) single with auxiliary lights
- (04) double with auxiliary lights
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

57. Was Headlamp Illuminated at Time of Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes, rider controlled
- (02) yes, always-on technology
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—interview

Remarks: This variable is assigned by the investigator from the sources.

Always-on technology is equivalent to daytime running lights in some late-model automobiles.

Determination of headlight status may include the following: determining whether or not the motorcycle was equipped with always-on technology, the reviewing post-crash position of the headlight switches, and examining the headlight filament condition. When a headlight is on, the filament is at an extremely high temperature and becomes malleable. During an impact, the hot metal filament stretches. This stretched filament is an indicator that the bulb was on during the impact.

MOTORCYCLE MECHANICAL FORM

58. Was Motorcycle Equipped With an Airbag?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes, but airbag did not deploy
- (02) yes, airbag did deploy
- (99) unknown

Range: 00–02, 99

Source:

- Primary—vehicle inspection
- Secondary—interview

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE MECHANICAL FORM

59. Is Motorcycle Equipped With or Pulling Any of the Following?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no, not applicable
- (01) sidecar
- (02) trailer
- (03) training wheels
- (04) outrigger
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE MECHANICAL FORM

60. Handlebar Type

OECD Reference: A.1.1.52

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ DSI

Element Attributes:

- (01) original equipment
- (02) clip-on, not original equipment
- (03) clubman or racer
- (04) high-sweep or tiller-type touring
- (05) high rise
- (06) motocross, off-road
- (98) other (specify)
- (99) unknown

Range: 01–06, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—rider interview

Remarks: This variable is assigned by the investigator from the sources.

original equipment: This refers to the handlebars originally installed by the manufacturer.

clip-on, not original equipment: The clip-on is a handlebar style popular on sport bikes in which two separate short handles are attached directly to the fork tubes, as opposed to a standard one-piece handlebar attached to the top of the triple tree.

clubman or racer: This style features shortened handlebars with a raised center portion.

high-sweep or tiller-type touring: These handlebars typically have a high profile and are swept rearward. They were originally called “tiller-type touring” handlebars because they resembled the swept-back design typically found on garden tillers.

high rise: This style is designed with a long shaft and long extensions. Handlebars of this type are also known as “ape hangers” because they allow riders to fully extend their arms while steering.

motocross, off-road: This style is generally used in racing bikes.

MOTORCYCLE MECHANICAL FORM

61. Handlebar Mounting

OECD Reference: A.4.1.1.53

Convention/Coding Source: OECD, BMW, DSI

Element Attributes:

- (01) original equipment, solid
- (02) original equipment, rubber bushing
- (03) setbacks
- (04) dog bones
- (05) risers
- (98) other (specify)
- (99) unknown

Range: 01–05, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

original equipment, solid: The handlebar mounting brackets are original equipment and usually constructed of solid steel that is integrated directly to the upper-fork bracket.

original equipment, rubber bushing: The handlebar mounting brackets are original equipment, but they are equipped with rubber bushings to decrease or dampen vibration.

setbacks: These allow the handlebars to be mounted in a raked position, closer to the rider.

dog bones: These are aftermarket setback mounts made of metal with a keyhole design.

risers: These are metal mounts with screws on the top side for easy assembly.

MOTORCYCLE MECHANICAL FORM

62. Handlebar Construction

OECD Reference: A.4.1.1.54

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ DSI

Element Attributes:

- (01) steel tube
- (02) aluminum alloy tube
- (03) titanium alloy tube
- (04) cast steel
- (05) forged steel
- (06) cast aluminum alloy
- (07) forged aluminum alloy
- (08) composite
- (09) cast steel with steel tube
- (98) other (specify)
- (99) unknown

Range: 01–09, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—manufacturer vehicle specifications

Remarks: This variable is assigned by the investigator from the sources.

Handlebars are most commonly made of aluminum alloys or chrome plated steel, but are also made from carbon fiber or titanium.

MOTORCYCLE MECHANICAL FORM

63. Handlebar Measurements

Width ____ . ____
Rise ____ . ____
Sweep ____ . ____

OECD Reference: A.4.1.1.55.1, A.4.1.1.55.2, A.4.1.1.55.3

Convention/Coding Source: OECD

Element Attributes:

(00.1–99.6) actual number
(99.9) unknown

Range: 00.1–99.6, 99.9

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Code to the closest tenth of an inch.

To measure the handlebar width, take a straight linear measurement from the outside edge of one handlebar to the outside edge of the opposite handlebar.

To measure the handlebar rise, place a straight-edge ruler across the top surface of the handlebars to act as a reference guide. Measure from the underside of the lowest point on the handlebar to the lower edge of the straight edge, which is across the upper surface of the handlebars. This value is the rise of the handlebars.

To measure the handlebar sweep, place a straight edge at the front edge of the handlebars perpendicular to the longitudinal axis of the motorcycle. Measure the distance from the straight edge to the center of the handlebar end in the horizontal plane and report to the closest tenth of an inch.

If the handlebars are covered with a plastic casing and the front edge of the handlebars cannot be found, place the straight edge across the back edges of the handlebars and measure the angle between the handlebars and the straight edge. This is equivalent to the angle formed by the front edge of the handlebar and the handlebar end. Measure the distance between the point where the handlebar deviates from the front edge (i.e., starts to bend) and the center of the handlebar end. Multiply this value by the sine of the angle (in degrees) just measured. This value represents the sweep value.

MOTORCYCLE MECHANICAL FORM

64. Seat Type

OECD Reference: A.4.1.1.56

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ Honda, Kawasaki, Harley-Davidson

Element Attributes:

- (01) conventional straddle seat, one level
- (02) straddle type, two level, raised passenger
- (03) bucket, single seat
- (04) bucket, double seat, one level
- (05) bucket, double seat, raised passenger
- (06) single racer seat, tail fairing behind
- (07) single straddle seat, pillion pad behind
- (08) single pad, semibench type
- (98) other (specify)
- (99) unknown

Range: 01–08, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

conventional straddle seat, one level: This is a long tubular seat for one or two riders.

straddle type, two level, raised passenger: This seat features two connected seating positions with a slightly raised back; the passenger seat is mounted higher than the rider seat.

bucket, single seat: This is a contoured rider seat with no passenger seat.

bucket, double seat, one level: This type features separate rider and passenger seats. They are mounted at the same level and contoured.

bucket, double seat, raised passenger: This type features separate rider and passenger seats that are both contoured. The passenger seat is mounted at a higher level than the rider seat.

single racer seat, tail fairing behind: This is a low-slung rider tubular seat with fairing instead of a passenger seat.

single straddle seat, pillion pad behind: This is a rider seat with small pillion pad behind for the passenger position.

single pad, semibench type: This is a single, upholstered flat seat designed for only a rider.

MOTORCYCLE MECHANICAL FORM

65. Seat Fastening

OECD Reference: A.4.1.1.57

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no seat, not attached
- (01) one side hinged, other side latched
- (02) tank tongue, both sides tab and screw attachment
- (03) tank tongue with double-claw latch
- (04) forward hinge, button rest on frame, no latch
- (05) forward hinge, button rest with latch
- (06) multiple tab and screw attachment
- (07) bolted
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

66. Fuel-Tank Type

OECD Reference: A.4.1.1.58

Convention/Coding Source: OECD, Honda, Norton, DSI

Element Attributes:

- (01) saddle
- (02) under seat
- (03) submerged in frame
- (04) perimeter mount
- (98) other (specify)
- (99) unknown

Range: 01–04, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

saddle: This is typical of many fuel-tank types. This type is notched on the underside and straddles the longitudinal frame member.

under seat: The fuel tank is located under the seat.

submerged in frame: This type of fuel tank is integrated into the frame and has a flush profile. Many motocross-style motorcycles have submerged-in-frame tanks.

perimeter mount: This type is mounted externally to the frame.

MOTORCYCLE MECHANICAL FORM

67. Fuel-Tank Material

OECD Reference: A.4.1.1.59

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) steel
- (02) aluminum alloy
- (03) fiberglass composite
- (04) other composite
- (05) injection-molded plastic
- (06) injection-molded plastic covered by metal
- (98) other (specify)
- (99) unknown

Range: 01–06, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

68. Fuel Tank–Cap Type

OECD Reference: A.4.1.1.60

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none, cap missing, fuel filler open or stuffed with cloth, rag, rubber ball, etc.
- (01) external screw type, no cover
- (02) external screw type, covered
- (03) internal screw type, no ratchet, no cover
- (04) internal screw type, ratchet, no cover
- (05) internal screw type, ratchet, covered or recessed
- (06) exposed bayonet type, no cover, no guard
- (07) covered, guarded, or recessed bayonet type
- (08) smooth with tank top surface, covered
- (09) smooth with tank top surface, no cover
- (10) monza, flip-up
- (11) press fit cap
- (98) other (specify)
- (99) unknown

Range: 00–11, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

69. Cap Retention

OECD Reference: A.4.1.1.61

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) retained securely, no venting or fuel loss from cap
- (02) not retained, ejected completely from tank body
- (03) opened but remained attached to tank
- (04) displaced sufficiently to allow fuel loss
- (97) not applicable, cap missing, fuel filler open or stuffed with cloth, rag, rubber ball, etc.
- (98) other (specify)
- (99) unknown

Range: 01–04, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Assess the tank cap and code appropriately.

MOTORCYCLE MECHANICAL FORM

70. Tank Retention

OECD Reference: A.4.1.1.62

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) tank completely retained in motorcycle
- (02) partially separated, displaced from mounting
- (03) completely separated from mounting position
- (99) unknown

Range: 01–03, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

tank completely retained in motorcycle: This is used when it is determined that the fuel tank remained securely mounted to the motorcycle and frame.

partially separated, displaced from mounting: This is used when it is determined that the fuel tank partially separated, became loose, and became displaced from its mounts to the motorcycle and frame.

completely separated from mounting position: This is used when the fuel tank completely separated from the motorcycle and frame mounting position.

MOTORCYCLE MECHANICAL FORM

71. Tank Deformation

OECD Reference: A.4.1.1.63

Convention/Coding Source: OECD

Element Attributes:

- (00) none (skip to # 73)
- (01) mild denting
- (02) moderate denting
- (03) severe damage
- (99) unknown

Range: 00–03, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Tank deformation is measured relative to the initial volume of the tank that has been compromised as a result of the accident. The following guidelines shall be used to determine the appropriate tank-deformation responses.

none: No tank deformation is evident (skip to # 73).

mild denting: The tank volume has been reduced to less than 100 percent but greater than 90 percent of its original volume.

moderate denting: The tank volume has been reduced to less than 90 percent but greater than 60 percent of its original volume.

severe denting: The tank volume has been reduced to less than 60 percent of its original volume.

MOTORCYCLE MECHANICAL FORM

72. Deformation Source

OECD Reference: A.4.1.1.64

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no deformation
- (01) contact from motorcyclist's body
- (02) collision contact from other motorcycle components
- (03) collision contact with other vehicle
- (04) collision contact with roadway surface
- (05) collision contact with other objects in environment
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source:

- Primary—vehicle inspection
- Secondary—interview and official medical reports

Remarks: This variable is assigned by the investigator from the sources.

MOTORCYCLE MECHANICAL FORM

73. Was There a Fuel-Tank Failure?

OECD Reference: A.4.1.1.65

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no (skip to # 75)
- (01) yes
- (99) unknown

Range: 00, 01, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

74. Tank-Damage/Failure Type (Code up to Four; Input 00 for Remaining Responses)

OECD Reference: A.4.1.1.66.1, A.4.1.1.66.2, A.4.1.1.66.3, A.4.1.1.66.4

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) denting or crushing from blunt impact
- (02) laceration or puncture from edge or sharp object
- (03) metal tank welds separated
- (04) metal tank welds defective
- (05) metal tank corrosion weakness
- (06) plastic tank material embrittlement
- (07) plastic tank mold defect
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–07, 97–99

Source: Primary–vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

75. Was There a Fuel Spill or Leak?

OECD Reference: A.4.1.1.67

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no (skip to # 77)
- (01) minor leaks, little or no fire hazard
- (02) moderate leak or spill, some fire hazard
- (03) large quantity of fuel lost with severe fire hazard
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—interview and police sources

Remarks: This variable is assigned by the investigator from the sources.

minor leaks, little or no fire hazard: There is only a small amount of fuel leakage (estimated to be less than 10 percent of the fuel determined to have been in the tank at the time of the crash).

moderate leak or spill, some fire hazard: There is a moderate fuel spill (estimated to be greater than 10 percent, but less than 50 percent, of the fuel determined to have been in the tank at the time of the crash).

large quantity of fuel lost with severe fire hazard: There is a large fuel spill (estimated to be between 50 and 100 percent of the total fuel determined to have been in the tank at the time of the crash).

MOTORCYCLE MECHANICAL FORM

76. Source of Fuel Spills or Leak (Code up to Five; Input 00 for Remaining Responses)

OECD Reference: A.4.1.1.68.1, A.4.1.1.68.2, A.4.1.1.68.3, A.4.1.1.68.4, A.4.1.1.68.5

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no leaks or spills
- (01) primary fuel tank
- (02) auxiliary fuel tank
- (03) fuel lines and fittings
- (04) fuel filter
- (05) exhaust
- (06) carburetor
- (07) fuel-injection system
- (08) fuel cap
- (09) fuel-tank vent
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–09, 97–99

Source: Primary—vehicle and scene inspection

Remarks: This variable is assigned by the investigator from the source.

MOTORCYCLE MECHANICAL FORM

77. Did a Fire Occur?

OECD Reference: A.4.1.1.69

Convention/Coding Source: NASS,⁽⁴⁾ OECD

Element Attributes:

- (00) no (skip to # 82)
- (01) yes
- (97) not applicable
- (99) unknown

Range: 00, 01, 97, 99

Source:

Primary—vehicle inspection

Secondary—interviewee(s), police crash report, and occupant medical records

Remarks: This variable is assigned by the investigator from the sources.

In order to classify fire damage, the vehicle must have caught on fire.

yes: The fire could have resulted from an impact with another vehicle or object that consequently caused a fuel-system-integrity failure or an electrical short circuit. If a fire occurs, the crash circumstances are not considered stabilized until the threat of damage to the vehicle and threat of injury to the vehicle occupants have ceased.

MOTORCYCLE MECHANICAL FORM

78. When Did the Fire Occur?

OECD Reference: A.4.1.1.70

Convention/Coding Source: OECD, NASS,⁽⁴⁾ DSI

Element Attributes:

- (01) pre-crash
- (02) during crash
- (03) post-crash
- (97) not applicable, no fire
- (98) other (specify)
- (99) unknown

Range: 01–03, 97–99

Source:

Primary—vehicle inspection

Secondary—interviewee(s), police crash report, and occupant medical records

Remarks: This variable is assigned by the investigator from the sources.

pre-crash: This is cited if the fire resulted from a noncollision event (e.g., electrical short circuit, fuel leakage) that occurred prior to the vehicle impacting with another vehicle or object.

during crash: In order to classify as having occurred during the crash, the fire and resultant damage must have occurred to the vehicle at the initial point of impact and/or during its post-impact trajectory to its final rest position.

post-crash: This refers to a fire that took place after the vehicle came to its final rest position and could have been the result of a fuel leak or an electrical short-circuit malfunction.

MOTORCYCLE MECHANICAL FORM

79. The Fire Occurred How Long After the Crash?

OECD Reference: A.4.1.1.71

Convention/Coding Source: DSI, OECD

Element Attributes:

(01–96)	actual time in minutes
(97)	not applicable, no fire
(98)	other (specify)
(99)	unknown

Range: 01–99

Source:

Primary—interviewee
Secondary—police crash report and witnesses

Remarks: This variable is assigned by the investigator from the sources.

Code the time frame (in minutes) that took place from the moment the motorcycle came to its final rest position to when the fire was initiated.

This variable only captures a fire that occurred post-crash, not pre-crash or during the crash.

80. Fuel Source for Fire

OECD Reference: A.4.1.1.72

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) other vehicle or environment
- (02) primary fuel tank
- (03) auxiliary fuel tank
- (04) fuel lines and fittings
- (05) fuel filter
- (06) exhaust
- (07) carburetor
- (08) fuel-injection system
- (09) fuel cap
- (10) fuel-tank vent
- (97) not applicable, no fire
- (98) other (specify)
- (99) unknown

Range: 01–10, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

This variable captures the location or component where the fuel source for the fire initiation was identified.

other vehicle or environment: This is used when it can be determined that another vehicle was the fuel source of the fire. If dry shrubs, weeds, or leaves started on fire due to engine heat, then it would be determined that the fuel source for the fire was the environment.

primary fuel tank: This is used when it can be determined that the fuel source of the fire was the fuel tank.

auxiliary fuel tank: This is used when it can be determined that the fuel source of the fire was the auxiliary fuel tank.

fuel lines and fittings: This is used when it can be determined that the fuel source of the fire was isolated to the fuel lines and fittings.

80. Fuel Source for Fire (Continued)

fuel filter: This is used when it can be determined that the fuel source of the fire was the fuel filter.

exhaust: This is used when it can be determined that the fuel source of the fire was the exhaust system.

carburetor: This is used when it can be determined that the fuel source of the fire was the carburetor.

fuel-injection system: This is used when it can be determined that the fuel source of the fire was the fuel-injection system.

fuel cap: This is used when it can be determined that the fuel source of the fire was from the fuel tank due to a displaced or damaged fuel cap.

fuel-tank vent: This is used when it can be determined that the fuel source of the fire was isolated to the fuel-tank vent.

other on motorcycle (specify): This is used when a fire occurred, but the fuel source of the fire is a different component than the other variables.

81. Ignition Source for Fire

OECD Reference: A.4.1.1.73

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) other vehicle or environment
- (02) sliding motorcycle caused friction sparks
- (03) ignition system, high-tension sparks
- (04) violation of electrical system other than lights or lamps
- (05) lights, lamps
- (06) exhaust system
- (07) smoking materials
- (08) cargo, parcels
- (09) traffic-hazard flares
- (97) not applicable, no fire
- (98) other (specify)
- (99) unknown

Range: 01–09, 97–99

Source:

- Primary—vehicle and scene inspection
- Secondary—interviewee and witnesses

Remarks: This variable is assigned by the investigator from the sources.

This variable captures the source that ignited the fire.

other vehicle or environment: This is used when it can be determined that another vehicle or an environmental factor was the ignition source of the fire.

sliding motorcycle caused friction sparks: This is used when it can be determined that sparks from the sliding motorcycle ignited the fire.

ignition system, high-tension sparks: This is used when it can be determined that an electrical current from the ignition system was the fire-ignition source. This is also used if it can be determined that high-tension sparks from surrounding high-tension wires were the ignition source.

violation of electrical system other than lights or lamps: This is used when it can be determined that an alteration or poorly fixed electrical system was the fire-ignition source.

81. Ignition Source for Fire (Continued)

lights, lamps: This is used when it can be determined that the electrical current that flows into the lamps and bulbs (broken filaments) was the fire-ignition source.

exhaust system: This is used when it can be determined that the heat from the exhaust system was the fire-ignition source.

smoking materials: This is used when it can be determined that a lit cigarette, cigar, marijuana cigarette, or pipe was the fire-ignition source.

cargo, parcels: This is used when it can be determined that a cargo piece or parcel pieces were the fire-ignition source.

traffic-hazard flares: This is used when it can be determined that the fire was caused by the use of traffic-hazard flares. The traffic-hazard flares could be either preexisting (perhaps from a previous crash) or placed as a result of this crash.

other (specify): This is used when a fire occurred, but the fire-ignition source for the fire was a different component or object than the other variables.

MOTORCYCLE MECHANICAL FORM

82. Drive-Line Type

OECD Reference: A.4.1.1.74

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) sprockets, exposed chain
- (02) sprockets, enclosed chain
- (03) belt
- (04) shaft
- (98) other (specify)
- (99) unknown

Range: 01–04, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

sprockets, exposed chain: This type features a sprocket at the transmission relayed to a rear sprocket on the wheel with an exposed drive chain. Most drive chains are equipped with partial or top-chain guards. Use this variable if a partial (enclosed) chain exists.

sprockets, enclosed chain: This type features a chain case, which is an enclosed metal covering that encircles the drive and driven sprockets as well as the chain.

belt: This type features a belt that is used to transmit energy from the engine crankcase to the rear wheel. A belt drive can be smoother than a drive chain and easier to maintain the correct tension level. Many Harley-Davidson motorcycles are equipped with belt drives as are many other cruiser-style bikes from other motorcycle manufacturers.

shaft: This type features a rotating shaft that transmits mechanical power from a motor or an engine to a point or region of application, or in the case of a motorcycle, the rear wheel.

other (specify): This is any drive system that is not described by either a sprocket, chain, belt, or shaft drive system.

MOTORCYCLE MECHANICAL FORM

83. Drive-Chain, Belt, or Shaft Condition

OECD Reference: A.4.1.1.75

Convention/Coding Source: OECD, Harley-Davidson

Element Attributes:

- (00) no unusual condition, acceptable adjustment
- (01) excessively loose adjustment, excessive wear
- (02) drive chain or belt adjustment too tight
- (03) chain or belt broken
- (04) chain or belt derailed
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

The following procedures may be used as a guide to determine drive-chain, belt, or shaft condition.

Drive chain–tension measurement is accomplished by applying a force perpendicular to the lower chain at a point midway between the front and rear sprockets. The amount of travel experienced by the chain during this evaluation should be measured. If the travel of the chain is between 0.7 to 1.2 inches (20 and 30 mm), then the chain is considered loose. Evaluation of the drive-chain condition is accomplished by pulling on a single chain link located at the rearmost portion of the rear sprocket. Normal movement of more than three chain links indicates wear to the drive chain.

MOTORCYCLE MECHANICAL FORM

84. When Did This Drive-Line Damage Occur?

OECD Reference: A.4.1.1.76

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no drive-line damage
- (01) pre-crash
- (02) during crash
- (03) post-crash
- (97) not applicable
- (99) unknown

Range: 00–03, 97, 99

Source:

- Primary—vehicle and scene inspection
- Secondary—rider and passenger interview

Remarks: This variable is assigned by the investigator from the sources.

85. Drive-Sprocket Condition

OECD Reference: A.4.1.1.77

Convention/Coding Source: OECD

Element Attributes:

- (00) no unusual condition, acceptable condition
- (01) front-sprocket teeth worn but serviceable
- (02) front-sprocket teeth badly worn, hinders power application
- (03) rear-sprocket teeth worn but serviceable
- (04) rear-sprocket teeth badly worn, hinders power application
- (05) severe sprocket wear, related to chain or belt derailing, drive-line failure
- (97) not applicable, no sprockets
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Drive-sprocket condition is evaluated by visual inspection of the front-sprocket teeth, rear-sprocket teeth, and drive line. The front-sprocket teeth examination is typically accomplished by removing the engine-sprocket cover and inspecting the engine-sprocket assembly. There is no need to inspect the front-sprocket teeth unless the rear-sprocket teeth are very worn or if the chain came off during the accident.

The rear sprocket can usually be inspected without removing any components from the motorcycle. The following guidelines shall be used to determine the appropriate drive-sprocket condition responses.

no unusual condition, acceptable condition: This is when visual inspection has revealed no unusual damage to the sprockets. Examination should be made to note the asymmetry of the sprocket teeth.

front-sprocket teeth are worn but serviceable: This is when the front-sprocket teeth are considered to be worn when there is visible asymmetry of the sprocket teeth when viewed laterally.

front-sprocket teeth badly worn, hinders power application: This is when the front-sprocket teeth are clearly asymmetric in shape, and the leading edge of the sprocket tooth is at such an angle that would cause the chain to slip during power application.

85. Drive-Sprocket Condition (Continued)

rear-sprocket teeth are worn but serviceable: This is when the rear-sprocket teeth are considered to be worn when there is visible asymmetry of the sprocket teeth when viewed laterally.

rear-sprocket teeth badly worn, hinders power application: This is when the rear-sprocket teeth are clearly asymmetric in shape, and the leading edge of the sprocket tooth is at such an angle that would cause the chain to slip during power application.

MOTORCYCLE MECHANICAL FORM

86. Does Throttle Control Work?

OECD Reference: A.4.1.1.78

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (99) unknown

Range: 00, 01, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Grasp the throttle control and rotate wrist so the throttle control turns clockwise. The return should go back easily and unimpeded. If the electrical system is in working order, check any cruise-control device for proper settings.

MOTORCYCLE MECHANICAL FORM

87. Drum Condition

OECD Reference: A.4.1.1.79

Convention/Coding Source: OECD

Element Attributes:

- (00) no drum damage
- (01) grip interference, binds in rotation
- (02) base-adjustment improper, binds in rotation
- (03) drum damaged prior to accident events, binds in rotation
- (04) cable-draw interference, binds in rotation
- (05) needs lubrication, binds in rotation
- (06) foreign matter in throttle base, binds in rotation
- (07) improper tightening of throttle base, rotation causes base rotation
- (97) not applicable, thumb-throttle or squeeze-throttle type
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Evaluate the throttle assembly by initially inspecting the throttle control. Firmly grasp the drum, and rotate the drum counterclockwise (i.e., apply the throttle). If the drum returns back to its normal condition, then the drum is considered normal, and there are no abnormal conditions in the throttle system. Code all cables, slides, and springs as being in normal operating condition. If the drum does not return to its normal position, then there is an abnormal condition in the throttle system that will require further investigation.

MOTORCYCLE MECHANICAL FORM

88. Condition of Cables

OECD Reference: A.4.1.1.80

Convention/Coding Source: OECD

Element Attributes:

- (00) cables not damaged
- (01) bind due to bent sheath
- (02) bind due to corrosion, lack of lubrication
- (03) bind due to frayed wires
- (04) end collets loose
- (05) incorrect size caused malfunction
- (06) improper routing, steering caused throttle action
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–06, 97–99

Source: Primary–vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

If the drum does not return to the normal position, inspect the cable for any crushing or binding due to the accident. The inspection should include a detailed analysis of the cable path from the drum through to the carburetor. Pay specific attention to the cable travel near the triple-clamp assembly as this is a common location for cable crushing and binding.

MOTORCYCLE MECHANICAL FORM

89. Condition of Throttle Plate/Slides

OECD Reference: A.4.1.1.81

Convention/Coding Source: OECD

Element Attributes:

- (00) throttle plates/slides not damaged
- (01) carburetor damaged prior to accident events caused binding, throttle sticking
- (02) throttle plate damaged prior to accident caused throttle sticking
- (03) foreign object in induction system caused throttle malfunction
- (04) missing air cleaner allowed induction system contamination, sticking throttle
- (05) improper reassembly of carburetor after maintenance allowed sticking slide or throttle plate
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

To properly inspect the throttle plates, disassemble the carburetor and inspect the throttle plates/slides for binding or visible damage.

MOTORCYCLE MECHANICAL FORM

90. Return-Springs Condition

OECD Reference: A.4.1.1.82

Convention/Coding Source: OECD

Element Attributes:

- (00) return springs not damaged
- (01) external return springs missing, sticking throttle
- (02) carburetor internal slide springs missing or damaged
- (03) external throttle plate springs altered, weaker springs, sticking throttle
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–03, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

To properly inspect the return springs, disassemble the carburetor and inspect and manually manipulate the return springs to ensure normal operation. If there is binding of or physical damage to the return springs, note it on the inspection sheet.

91. Exhaust-System Condition

OECD Reference: A.4.1.1.83

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no problems, good condition
- (01) worn or damaged
- (02) worn or damaged, excessive noise
- (03) performance equipment, noise level approximately same as original equipment
- (04) high-performance equipment, excessive noise
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

worn or damaged: This is used when the exhaust system exhibits obvious wearing, which could include corrosion degradation to the metal piping. Use this code if the exhaust system appears to be damaged (pre-crash).

worn or damaged; excessive noise: This is used when the exhaust system exhibits obvious wearing, which could include corrosion degradation to the metal piping. Use this code if the exhaust system appears to be damaged (pre-crash). Use this code if it can be determined that the exhaust wearing or pre-crash damage contributed to excessive exhaust noise.

performance equipment; noise level approximately same as original equipment: This is used when it can be determined that the performance exhaust equipment is not the original equipment, and the exhaust noise level is determined to be approximately what the original exhaust equipment would have emanated. This type of exhaust would mostly be found on café-style race bikes.

high-performance equipment; excessive noise: This is used when it can be determined that the high-performance exhaust equipment is not the original equipment, and the exhaust noise level is determined to be excessively loud. This type of exhaust would mostly be found on café-style race bikes.

MOTORCYCLE MECHANICAL FORM

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91. Exhaust-System Condition (Continued)

other (specify): This is used for assessing any other type or condition of the exhaust system that may have contributed to excessive noise and is not captured by the other element attributes.

unknown: This is used when it cannot be determined if the exhaust system is worn or contributed to excessive noise.

CONTROL MOTORCYCLE MECHANICAL FORM

Case Number

OECD Reference: None

Convention/Coding Source: Case number chart

Element Attributes: Case number

Range: 0001–2000

Source: Primary—case number chart

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE MECHANICAL FORM

Control Motorcycle Number

OECD Reference: B.4.1.1.1

Convention/Coding Source: DSI, OECD

Element Attributes: Vehicle number

Range: 01, 02

Source: Primary—investigator determined

Remarks: This variable is assigned by the investigator from the source.

For each case, there will be two control motorcycles: assign 01 for the first selected control motorcycle and 02 for the second control motorcycle.

CONTROL MOTORCYCLE MECHANICAL FORM

Data Collected Using Which Method

OECD Reference: B.2.1.1

Convention/Coding Source: DSI, OECD

Element Attributes:

- (00) control-data collection attempted, no data obtained
- (01) full stop interview and inspection at crash location
- (02) full stop interview, but inspection refused
- (03) full stop interview refused, but inspection obtained
- (04) identification and telephone follow-up
- (05) remote observation at location: photography, video, or both
- (06) interview at nearby location (specify)
- (07) combination of stops and photography or video

Range: 01–07

Source: Primary—investigator determined

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE MECHANICAL FORM

1. Ambient Temperature

+/- _____

OECD Reference: B.3.1.15

Convention/Coding Source: National Oceanic and Atmospheric Administration (NOAA),⁽¹⁷⁾
Weather Underground,⁽¹⁸⁾ DSI, OECD

Element Attributes:

(plus (+) or minus (-) degrees Fahrenheit)

(999) unknown

Range: (-50 °F)–(+120 °F), 999

Source: Primary—investigator determined

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE MECHANICAL FORM

2. Weather Description

OECD Reference: B.3.1.16

Convention/Coding Source: NOAA,⁽¹⁷⁾ DSI, OECD, Weather Underground⁽¹⁸⁾

Element Attributes:

- (01) clear
- (02) cloudy, partly cloudy
- (03) overcast
- (04) drizzle, light rain
- (05) moderate or heavy rain
- (06) snow
- (07) sleet, freezing rain
- (08) hail
- (98) other (specify)
- (99) unknown

Range: 01–08, 98, 99

Source: Primary—investigator determined

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE MECHANICAL FORM

3. Wind Description

OECD Reference: B.3.1.17

Convention/Coding Source: NOAA,⁽¹⁷⁾ Weather Underground,⁽¹⁸⁾ DSI, OECD

Element Attributes:

- (00) none, calm
- (01) light
- (02) moderate
- (03) strong
- (04) light with gusts
- (05) moderate with gusts
- (06) strong with gusts
- (07) variable
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—investigator determined

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE MECHANICAL FORM

4. Wind Description With Respect to MC Path

OECD Reference: B.3.1.18

Convention/Coding Source: NOAA,⁽¹⁷⁾ Weather Underground,⁽¹⁸⁾ DSI, OECD

Element Attributes:

- (00) none, no wind
- (01) left crosswind
- (02) headwind
- (03) right crosswind
- (04) tailwind
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source: Primary—investigator determined

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE MECHANICAL FORM

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5. Manufacturer (Enter Code in Database)

OECD Reference: B.4.1.1.2

Convention/Coding Source: DSI, OECD

Element Attributes:

A02	ATK Motorcycles
A05	Ace Motor Corporation
A06	Alligator (motorcycle manufacturer)
A07	Allstate (scooter manufacturer)
A08	American Eagle Manufacturing Company, Inc.
A09	American IronHorse
A10	American Machine and Foundry
A11	Aprilia
B01	BMW
B02	BSA
B08	Buell
B09	Big Dog Motorcycles
B10	Boss Hoss
B11	BMC
C08	California Motorcycle Company
C09	Confederate Motor Company
C10	Crocker Motorcycles
C11	Cushman
C12	Can-Am
C13	Christini
D03	Ducati
E04	Electric Moto Corporation
E05	Excelsior-Henderson Motorcycle
F03	Falcon Motorcycles
F04	Fischer Motor Company
G01	Genuine Buddy
G02	Genuine Stella
H01	Harley-Davidson
H04	Honda
H06	Henderson Motorcycle
H07	Hyosung
I01	Indian
I03	Iver Johnson
I04	Il Bello
K02	Kawasaki

5. Manufacturer (Continued)

K03 KTM
K04 Kymco
L01 Lance
M08 MOTO-GUZZI
M13 Marine Turbine Technologies
M14 MotoCzysz
M15 Mustang
M16 Motobecane
M17 MV Augusta
M18 Motofino
N02 Norton
O03 Orange County Choppers
P03 Penton
P04 Pierce-Arrow
P05 Piaggio
P06 Puma
P07 Panon
R06 Ridley Motorcycle Company
R07 Roehr Motorcycle Company
R08 Rokon Motorcycle
R09 Royal
S10 Suzuki
S11 Stokers Dallas
S12 Special Construction
S13 Sanyang
S14 Shanghai Meitian
S15 Shenke
T02 Triumph
T03 Tank
T04 Tomos
T05 Titan
U01 U.S. Titan
V03 Vectrix
V04 VéloSoleX
V05 Victory
V06 Vespa
W01 West Coast Choppers
Y01 Yamaha
Y02 Yankee
Z01 Zinn KMD
Z02 Zong

CONTROL MOTORCYCLE MECHANICAL FORM

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5. Manufacturer (Continued)

Z03 Zero
998 other (specify)
999 unknown

Range: A02, A05–A11, B01, B02, B08–B11, C08–C13, D03, E04, E05, F03, F04, G01, G02, H01, H04, H06, H07, I01, I03, I04, K02–K04, L01, M08, M013–M018, N02, O03, P03–P07, R06–R09, S10–S15, T02–T05, U01, V03–V06, W01, Y01, Y02, Z01–Z03, 998, 999

Source:

Primary—vehicle inspection
Secondary—police crash report, registration records, and interviewee

Remarks: This variable is assigned by the investigator from the sources.

Record the manufacturer of the motorcycle. A list of manufacturers is provided; the list is not all inclusive (e.g., there are manufacturers from overseas countries that are not named) and does include some custom manufacturers of motorcycles.

CONTROL MOTORCYCLE MECHANICAL FORM

6. Model (Write in; Do Not Code)

Model _____

OECD Reference: B.4.1.1.3

Convention/Coding Source: NASS,⁽⁴⁾ OECD

Element Attributes: Record the vehicle model as it relates to the vehicle manufacturer.

Range: Record the vehicle model.

Source:

Primary—vehicle inspection

Secondary—police report and interviewee

Remarks: This variable is assigned by the investigator from the sources.

Record the entire model, including the engine displacement associated with that model (if available). Examples would include the following: Honda Shadow VT1100 Spirit, Honda Shadow VT1100 Sabre, Yamaha XJR 1300, Harley-Davidson Sportster XL 883, and Harley-Davidson Dyna Low Rider FXDL.

CONTROL MOTORCYCLE MECHANICAL FORM

7. Year (Code the Four-Digit Year)

Model Year _____

OECD Reference: B.4.1.1.4

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(1900–(current year + 1))	current data-collection year plus one
(9999)	unknown

Range: 1900–(current year + 1), 9999

Source:

Primary—VIN
Secondary—police report and interviews

Remarks: This variable is assigned by the investigator from the sources.

Select the model year for which the vehicle was manufactured. Code 9999 only if the vehicle model year cannot be determined (this should occur rarely).

CONTROL MOTORCYCLE MECHANICAL FORM

8. Motorcycle Legal Category

OECD Reference: B.4.1.1.5

Convention/Coding Source: MAIDS, OECD

Element Attributes:

- (01) L1 vehicle
- (02) L3 vehicle
- (03) mofa
- (98) other (specify)
- (99) unknown

Range: 01–03, 98, 99

Source:

Primary—vehicle inspection

Secondary—registration records, police crash report, and interview

Remarks: This variable is assigned by the investigator from the sources.

L1 vehicle: This is a two-wheeled vehicle with an engine cylinder capacity not exceeding 50cc and, whatever the means of propulsion, a maximum design speed not exceeding 31 mph (50 km/h).

L3 vehicle: This is a two-wheeled vehicle with an engine cylinder capacity exceeding 50cc or, whatever the means of propulsion, a maximum design speed exceeding 31 mph (50 km/h).

mofa: This is a subcategory of L1 vehicle with a maximum design speed not exceeding 16 mph (25 km/h). A mofa may or may not have pedals.

other (specify): This is any type of two-wheeled motorized vehicle that is not described under L1, L3, or mofa types.

unknown: This is selected when the type of two-wheeled motorized vehicle is unknown.

9. Motorcycle Type

OECD Reference: B.4.1.1.5.2

Convention/Coding Source: OECD, Wikipedia⁽⁷⁾

Element Attributes:

- (01) conventional street L1 or L3 vehicle (tank between knees), without modifications
- (02) conventional street L1 or L3 vehicle (tank between knees), with modifications
- (03) dual-purpose, on-road–off-road motorcycle
- (04) sport, race replica
- (05) cruiser
- (06) chopper, modified chopper
- (07) touring
- (08) scooter
- (09) step-through
- (10) sport-touring
- (11) motorcycle plus sidecar, left
- (12) motorcycle plus sidecar, right
- (13) off-road motorcycle, motocross, enduro, trial
- (14) tricycle
- (15) law enforcement
- (98) other (specify)
- (99) unknown

Range: 01–15, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

conventional street L1 or L3 vehicle (tank between knees), without modifications: This is a standard street-style motorcycle with original equipment and no significant modification; it also includes any motorcycle that is of a conventional design with upright handlebars and usually without a fairing.

conventional street L1 or L3 vehicle (tank between knees), with modifications: This is a motorcycle that is of the conventional design, but modifications have been made to the motorcycle. Those modifications should be listed in the data summary sheets.

dual purpose, on-road–off-road motorcycle: This refers to any motorcycle with block/trials universal or semi-knobby tires and high-raised fenders. Since these motorcycles are capable of on-road and off-road use, they will be fitted with signal lamps and other road-safety features to make them legal for street use.

9. Motorcycle Type (Continued)

sport, race replica: This is any motorcycle that has drop handlebars, a small windscreen, and an aerodynamic fairing. The rider is typically in a forward-crouch position during normal vehicle operation.

cruiser: This is a large (greater than 250cc) motorcycle with upright or pulled-back handlebars and large fenders. These motorcycles typically have large padded seats with a low seat height. The rider sits upright or slightly reclined during normal vehicle operation.

chopper, modified chopper: This is any motorcycle that has been modified with an extended front-fork assembly. These vehicles are usually fitted with extended upright handlebars to accommodate a more-reclined riding position.

touring: This is also called a full dresser. It is a large (greater than 250 cc) motorcycle that is primarily designed for travel on highways or motorways. These motorcycles are fitted with side luggage compartments and a rear cargo box and may or may not have trailers. There is typically a large fairing windscreen on the front of the motorcycle.

scooter: This refers to any motorcycle equipped with a floorboard for the rider's feet. The riding position is upright, with the feet firmly planted on the floorboard.

step-through: This is a hybrid of a conventional scooter and a standard motorcycle. The engine can range up to or beyond 250 cc. The tires are usually larger than a conventional scooter, and the suspension can withstand higher speeds.

sport-touring: Sport-touring motorcycles are a hybrid of sport bikes and touring bikes, allowing long-distance riding at higher speeds and with more emphasis on sport-like performance (in both handling and speed) than standard touring bikes; these bikes offer a middle ground between both types.

motorcycle plus sidecar, left: This is a street motorcycle that has been fitted with a sidecar on the left side to accommodate a seated passenger.

motorcycle plus sidecar, right: This is a street motorcycle that has been fitted with a sidecar on the right side to accommodate a seated passenger.

off-road motorcycle, motocross, enduro, trial: This is a motorcycle that is not qualified for street use. Off-road motorcycles may or may not have a plastic gas tank, limited lighting systems (e.g., brake lights, turning lights, and a headlamp), and high fenders.

tricycle: A motorized tricycle's wheels may be arranged in either a delta or tadpole configuration. A delta tricycle has one wheel in front and two in back, and the tadpole tricycle has two wheels in front and one in back.

CONTROL MOTORCYCLE MECHANICAL FORM

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9. Motorcycle Type (Continued)

law enforcement: This is a motorcycle that is being used by law enforcement or security personnel. A police motorcycle is a motorcycle used by various police departments. It may be custom-designed to meet the specific requirements of a particular department. A police motorcycle is often called a “motor” by police officers in the United States. Similarly, motorcycle units are known as “motor units,” and motorcycle officers are known as “motor officers.”

other (specify): Use this for any motorcycle type that is not captured in variables 01–15.

unknown: Use this when the type of motorcycle cannot be determined (this would seldom be coded).

CONTROL MOTORCYCLE MECHANICAL FORM

10. Motorcycle Weight

OECD Reference: B.4.1.1.6

Convention/Coding Source: Wikipedia⁽⁷⁾

Element Attributes:

(0001–9996) actual weight, as specified by manufacturer, in pounds
(9999) unknown

Range: 0001–9996, 9999

Source: Primary—manufacturer specifications

Remarks: This variable is assigned by the investigator from the source.

“Dry weight” is a technical term that refers to the weight of a vehicle without any consumables, passengers, or cargo. It is one of two common weight measurements included in automobile and motorcycle specifications; the other one is curb weight. Dry weight is usually a preferred measure in motorcycle specifications and is provided in kilograms (to convert kilograms to pounds use the following conversion: actual kg/0.4536).

“Wet weight” is a technical term that refers to the weight of a vehicle with varying sets of fluids such as fuel or lubricants. This weight is measured with a battery, a rider, passengers, or cargo.

In motorcycles, manufacturer-published dry-weight figures are used as a marketing tool and, as such, should be taken lightly. For example, the battery is typically excluded from dry weight, although few manufacturers state this explicitly. For a typical sport bike, the difference between wet weight and “manufacturer-claimed” dry weight is around 70 lb (32 kg). This difference includes 25–30 lb of gasoline, 5–7 lb of engine oil, 5–7 lb of coolant, and 7–9 lb of battery.

CONTROL MOTORCYCLE MECHANICAL FORM

11. Vehicle Identification Number

OECD Reference: B.4.1.1.7

Convention/Coding Source: NASS,⁽⁴⁾ OECD

Element Attributes:

(999999999999999) unknown

Range: VIN characters contain 1–9 numerical values, and alphabetical values (except I, O, and Q). For privacy protection, do not code the final three characters

Source:

Primary—vehicle inspection

Secondary—police report

Remarks: This variable is assigned by the investigator from the sources.

Since 1954, American automobile manufacturers have used vehicle identification numbers (VINs). Variations exist in VIN locations and VIN systems used by the different manufacturers as well as from year to year by each manufacturer. Beginning with the 1981 model year, the USDOT required manufacturers selling over-the-road vehicles in the United States to produce vehicles with a 17-character VIN. Prior to 1981, VINs consisted of 11 characters.

unknown: If the entire VIN is unknown or missing, enter a 9 in each position.

CONTROL MOTORCYCLE MECHANICAL FORM

12. Odometer Reading in Miles

OECD Reference: B.4.1.1.9

Convention/Coding Source: OECD, NASS⁽⁴⁾

Element Attributes:

(000001–999996)	actual number of miles
(999999)	unknown

Range: 000001–999996, 999999

Source:

Primary—vehicle inspection
Secondary—interviewee and repair facility

Remarks: This variable is assigned by the investigator from the sources.

Report the number of miles displayed on the odometer. This variable measures the distance the vehicle has traveled. However, in cases where it is known that the odometer was working but had turned over (i.e., recycled) the recorded value represents the total distance traveled by the vehicle rather than the reading on the odometer. Annotate if it is determined that the odometer had turned over.

unknown: Use this when it is known that the odometer was disconnected or broken before the inspection, the vehicle is equipped with an electronic instrument cluster and an analog “back-up” odometer is not present, the vehicle’s odometer reading is unknown, or the vehicle was manufactured without an odometer; enter a 9 in each position.

CONTROL MOTORCYCLE MECHANICAL FORM

13. Registered-Owner Category

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) motorcycle rider
- (02) motorcycle passenger
- (03) operated with consent of owner
- (04) dealer
- (05) stolen
- (97) not applicable, no registration available
- (98) other (specify)
- (99) unknown

Range: 01–05, 97–99

Source:

Primary—vehicle registration records collected during vehicle inspection while on scene
Secondary—interviewee

Remarks: This variable is assigned by the investigator from the sources.

CONTROL MOTORCYCLE MECHANICAL FORM

14. Predominant Color of Motorcycle

OECD Reference: B.4.1.1.10

Convention/Coding Source: DSI, OECD

Element Attributes:

- (01) no dominating color, multicolored
- (02) white
- (03) yellow
- (04) black
- (05) red
- (06) blue
- (07) green
- (08) silver, grey
- (09) orange
- (10) brown, tan
- (11) purple
- (12) gold
- (13) chrome, metallic
- (98) other (specify)
- (99) unknown

Range: 01–13, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Code the response that best describes the color scheme of the vehicle. Select the color that represents 50 percent or greater of the motorcycle's color. If there is no color representing greater than 50 percent, code 01.

CONTROL MOTORCYCLE MECHANICAL FORM

15. Does the Motorcycle Have any Retroreflective Parts, Material, or Paint?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no, none
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—interview

Remarks: This variable is assigned by the investigator from the sources.

Retroreflective refers to a surface, material, or device (retroreflector) that reflects light or other radiation back to its source.

CONTROL MOTORCYCLE MECHANICAL FORM

16. Motor Displacement (Code Number in Cubic Centimeters)

OECD Reference: B.4.1.1.11

Convention/Coding Source: DSI, Wikipedia,⁽⁷⁾ OECD

Element Attributes:

(0001–9996)	actual number
(9999)	unknown

Range: 0001–9996, 9999

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Displacement is defined as the total volume of air/fuel mixture an engine can draw in during one complete engine cycle. In a piston engine, this is the volume that is swept as the pistons are moved from top dead center to bottom dead center. To the layperson, this is the size of the engine. Motorcycle engines range from less than 50 cc, commonly found in many mopeds and small scooters, to a 6,000-cc engine used by Boss Hoss in its cruiser-style motorcycle BHC-3 LS2.

The motorcycle motor displacement is commonly built into the vehicle model (e.g., a Harley-Davidson Sportster 883 has a motor displacement of 883cc).

In some cases, like those of Kawasaki motorcycles, the model motor displacement indicator is rounded to the nearest 100cc (e.g., Kawasaki Vulcan 1600 Classic has a motor displacement of 1,552cc). The investigator should code the actual displacement of the engine. Some models will not designate a motor displacement indicator in the model number (e.g., Yamaha FZ6). In such cases, use one of several online VIN-decoding applications to decipher and breakdown VINs for the purpose of deciphering engine displacement. In addition, NICB manuals can be used for the same purpose.

Most manufacturers have a website that lists their models, and motor displacement details are usually available.

17. Number of Cylinders (Code Number of Cylinders)

OECD Reference: B.4.1.1.12

Convention/Coding Source: Wikipedia,⁽⁷⁾ OECD

Element Attributes:

(01–06)	actual number
(99)	unknown

Range: 01–06, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Enter the number of cylinders; use the following information.

Motorcycles have mostly, but not exclusively, been produced with one to four cylinders, and designers have tried every imaginable layout. Engines with more cylinders provide more power for the same displacement and feel smoother to ride. Engines with fewer cylinders are cheaper, lighter, and easier to maintain.

single cylinder: One-cylinder motorcycles are known as “singles,” and in larger capacities as “thumpers” (for the sound they make). In some singles, the cylinder points up and slightly forward (spark plug on top), but the most common arrangement is a horizontal cylinder, such as used by Honda in its C-series singles (the highest volume motorcycle of all time, with over 40 million units); it is the most common of all configurations.

two cylinders: Two-cylinder motorcycles are called “twins.” The two most common cylinder arrangements are the V-twin and the inline twin (or straight-two), which is also known as the parallel twin because the cylinders share a common crank pin.

In the V-twin, the cylinders form a V around the crankshaft, which is oriented transversely (i.e., perpendicular to the direction of travel). The angle in the V-twins varies from around 45 to 90 degrees. Harley-Davidson and Vincent engines typically are arranged around 45 degrees and tend to vibrate more because of their firing order. Ducati and Moto Guzzi make V-twins with cylinders arranged at 90 degrees to quell primary vibrations. Some Moto Guzzi motorcycles have V-twins oriented transversely (one cylinder to the left, one to the right).

The inline twin, or straight-two (common in classic British and Japanese motorcycles), is known as the parallel twin because the cylinders share a common crank pin. In this design the cylinders are side by side vertically above the crankcase. If not oriented vertically, they are generally nearly so in order to maximize airflow cooling.

17. Number of Cylinders (Continued)

The parallel twin engine configuration was made famous by Edward Turner's Triumph Speed Twin design as used on the Triumph Bonneville. In the famous BMW flat-twin (boxer twin) engine, the cylinders are horizontally opposed, protruding from either side of the frame. The boxer is the only twin-cylinder arrangement that has inherent primary balance without a rocking couple, producing low vibration levels without the use of counterbalance shafts. Narrow angle V-twins vibrate. Sunbeam produced an air-cooled inline twin driving a propeller shaft.

Narrow-angle V-twin engines dominate the cruiser motorcycle segment.

three cylinders: Three-cylinder designs are unusual. They are referred to as "triples" and are normally inline triples in layout. The British Hinkley-built Triumph, the Italian Benelli, and the Japanese Yamaha are three motorcycle manufacturers who have used triples in their large-displacement motorcycles. The Italian firm Laverda was also known for their 1,000 and 1,200cc triples.

Before emissions requirements limited the production of two-stroke motorcycles, triples were more common. In the 1970s, Kawasaki had its 250, 350, 500, and 750 triples, which were known for their power (but maybe not rideability), and Suzuki had 380, 550, and 750 triples (the last one was water cooled and thus gained the nickname "Water Buffalo" or "Kettle") All the others were air cooled. Honda also produced a water-cooled V-3 two-stroke.

four cylinders: Four-cylinder engines are colloquially known as "four-bangers." They are quite similar to car engines and most commonly have a transverse-mounted inline four layout, although some are longitudinal (as in the earlier BMW K series). V-4 and boxer designs (as in the Honda Gold Wing series) have been produced. One of the more unusual designs was the Ariel Square Four, which was effectively two parallel-twin engines one in front of the other in a common crankcase. It had remarkably little vibration because of the contra-rotating crankshafts. Yamaha and Suzuki used the same concept in their water-cooled two-stroke engines (RZ500 and RG500, respectively). Since the advent of Honda's CB750 straight-four engine, straight-fours have dominated the noncruiser street-motorcycle segments.

five cylinders: Honda has produced a five-cylinder engine for racing, the RCV, but no five-cylinders exist for commercial production motorcycles.

six cylinders: Six-cylinder engines are uncommon and usually found only on the biggest motorcycles. Two of the best six-cylinder examples are the Honda CBX and the Kawasaki KZ1300. Nowadays the most famous six-cylinder engine is the boxer used on the Honda Valkyrie series and Honda Gold Wing.

17. Number of Cylinders (Continued)

more than six cylinders: No major motorcycle manufacturer currently mass-produces motorcycles with more than six cylinders. However, motorcycles with more than six cylinders have been produced experimentally or in limited numbers. Galbusera built their V-8 in 1938, and Moto Guzzi experimented over a period of 2 yr with their dual overhead cam 500cc V8 (the Otto Cylindri) in the 1950s. A number of custom and one-off motorcycles use more than six cylinders. For example, the Boss Hoss motorcycle uses a Chevy V-8 motor (5,700 and 6,000cc). In the mid-90s, Daimler-Chrysler manufactured a limited number of Tomahawk concept bikes featuring a Dodge Viper's V-10 engine. The Australian company Drysdale has built short runs of 750cc V-8 superbikes and 1L V-8 road-going motorcycles, both with engines specifically developed for the purpose.

CONTROL MOTORCYCLE MECHANICAL FORM

18. Number of Passengers

OECD Reference: B.5.1.1

Convention/Coding Source: NASS,⁽⁴⁾ OECD

Element Attributes:

(00–96)	actual number of passengers
(99)	unknown

Range: 00–96, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Passenger numbers must be assigned sequentially, beginning with the passenger behind the rider with 02. Assign numbers front to back and left to right for the passengers on the motorcycle/sidecar or tricycle.

CONTROL MOTORCYCLE MECHANICAL FORM

19. Cargo/Luggage on Motorcycle (Code up to Three Responses)

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no cargo/luggage
- (01) carried on rear rack
- (02) carried in saddle bag
- (03) carried by passenger
- (04) carried on seat or tank ahead of rider
- (05) carried between legs of rider (step-through frame or scooter)
- (06) carried between rider's arms
- (07) trunk
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE MECHANICAL FORM

20. Are the Tires Original Equipment?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) yes
- (02) no, but are standard size
- (03) no, modified size
- (98) other (specify)
- (99) unknown

Range: 01–03, 98, 99

Source:

- Primary—rider interview
- Secondary—vehicle inspection

Remarks: This variable is assigned by the investigator from the sources.

21. Tread Type

Front ____
Rear ____

OECD Reference: None

Convention/Coding Source: OECD

Element Attributes:

- (00) no tread pattern, slick
- (01) straight-rib tread pattern
- (02) block pattern, trials type
- (03) knobby pattern, motocross type
- (04) all weather, cross or dog-bone pattern
- (05) all weather, diagonal or diamond pattern
- (06) all weather, angle groove
- (07) racing design, minimum groove design
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

The following tread-type descriptions may be used as a guideline to determine tread typology.

no tread pattern, slick: The tire has no specific tread pattern.

straight-rib tread pattern: The tire-tread pattern is perpendicular to the tire’s axis of rotation (i.e., the tread pattern is parallel to the tire’s direction of rotation). There may be a slight offset in the rib pattern as well.

block pattern, trials type: The tire-tread pattern is similar to the knobby pattern; however, there is closer knob spacing, and the tire is approved for street use. The tire-tread pattern is parallel to the tire’s axis of rotation.

knobby pattern, motocross type: The tire tread is raised and consists of individual knob-like raised areas primarily designed for improved traction in off-road conditions.

all weather, cross or dog bone pattern: The tire tread has interlocking tread components (dog bone shape, flag shape, etc.) that may either be parallel or perpendicular to the tire’s axis of rotation.

21. Tread Type (Continued)

all weather diagonal or diamond pattern: The tire-tread pattern forms a closed diamond pattern or a closed diagonal pattern.

all weather, angle groove: The tire-tread pattern has an angle groove pattern that originates at the center of the tire tread and radiates on an angle to the edge of the tire tread.

racing design, minimum groove design: There is a very shallow tread pattern on the tire. These tires are very similar to slick tires, yet they have a slight tread pattern on them when compared to all-weather tires.

other (specify): This is selected when none of the tread types capture the tread type of the inspected motorcycle. Specify the tread type.

unknown: This is used when the tire-tread type is unknown.

CONTROL MOTORCYCLE MECHANICAL FORM

22. Measured Tread Depth (Code in 32nds)

Front _____/32nds
Rear _____/32nds

OECD Reference: B.4.1.1.20

Convention/Coding Source: OECD

Element Attributes:

(00–96/32nds)	actual tread depth
(99/32nds)	unknown

Range: 00–96/32nds, 99/32nds

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Tread-depth measurement is accomplished by using an imperial tread-depth gauge, which is commercially available through many automotive supply facilities. Measure the tread depth at the center of the tread with the depth gauge. The tire may wear unevenly; therefore, it is best to take measurements at several places and compute the average tread depth (e.g., 07/32).

CONTROL MOTORCYCLE MECHANICAL FORM

23. Are the Wheels Original Equipment?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) yes
- (02) no, but are standard size
- (03) no, modified size
- (98) other (specify)
- (99) unknown

Range: 01–03, 98, 99

Source: Primary—vehicle inspection and rider interview

Remarks: This variable is assigned by the investigator from the sources.

CONTROL MOTORCYCLE MECHANICAL FORM

24. Is the Suspension Original Equipment?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes, all original equipment
- (02) partially original equipment
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Primary—vehicle inspection and rider interview

Remarks: This variable is assigned by the investigator from the sources.

25. Suspension Type, Front

OECD Reference: None

Convention/Coding Source: SAE,⁽⁹⁾ Wikipedia⁽⁷⁾

Element Attributes:

- (00) none, rigid wheel mount
- (01) telescoping tube, conventional lower fork legs
- (02) telescoping tube, inverted fork legs
- (03) springer
- (04) girder
- (05) leading link, single- or double-sided
- (06) articulated multiple link
- (07) trailing link, single- or double-sided
- (08) telelever (BMW only)
- (09) lower suspension
- (98) other (specify)
- (99) unknown

Range: 00–09, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

suspension: This refers to the assembly of mechanical devices that connects the axle of the rotating wheel to the main vehicle. It can include links, slider tracks, pivots, springs, and dampers.

The following explanations of front-suspension types are currently available.

none, rigid wheel mount: Modern designs have the two wheels of a motorcycle connected to the chassis by a suspension arrangement; however, chopper-style motorcycles often elect to forgo rear suspension, using a rigid frame.

telescoping tube, conventional lower fork legs: The front suspension is usually built into the front fork and may consist of telescoping tubes, called fork tubes, that contain the suspension inside or some multibar linkage that incorporates the suspension externally. Most front forks incorporate telescopic hydraulic shock absorbers to absorb the vertical shock of the front wheel when hitting bumps, thus providing a smooth ride. This telescopic motorcycle front-suspension system has been designed to contain a pair of upper-fork tubes containing lower-fork sliders that move into one another. Inside each of the telescopic forks is a spring and a damping-rod system.

25. Suspension Type, Front (Continued)

telescoping tube, inverted fork legs: The inverted cartridge-fork assembly is basically an upside-down fork that has a cartridge within it; it operates very similarly to a cartridge damper-fork system. The upper tubes in the inverted-fork design have a greater diameter than those of the standard right-side-up fork system. This larger upper tube gives this fork design more surface area, which increases the front fork's resistance to unwanted fork flexing.

springer: The springer fork assembly was an outdated system until it was redesigned by an American motorcycle manufacturer. It uses a rigid fork, which is attached to and pivots in the frame's steering-head bearing area. There is also a spring fork that slides through the rigid-fork bushings. This unit is attached to the rigid fork by two rockers. These rockers pivot on self-lubricating bushings. The suspension in this design is provided by six compression springs and two rebound springs. There is a newer version of the springer front-end suspension that uses a single hydraulic shock for suspension damping.

girder: Girder front suspensions are nearly as old as motorcycles and are seen on custom bikes but not often on sport bikes. A girder fork is a solid unit that is attached to the rest of the motorcycle with a parallel link arrangement. It works similarly to a set of parallel rulers. One ruler represents the motorcycle's steering head, and the other represents the top of the fork. A girder is a solid unit, not necessarily one single solid fork leg on each side, because most of those girder forks use lighter weight tubing to make the entire girder. That tubing does not move in relation to itself, so the girder as a whole is solid. A disadvantage to girder forks is that as the suspension moves, the wheelbase changes, which seriously affects handling.

leading link, single- or double-sided: This system uses a link to mount the wheel to the front of the tubes. This system works well, but it is very expensive to manufacture.

articulated multiple link: This multilink suspension is a type of vehicle suspension design typically used in independent suspensions; it uses three or more lateral arms and one or more longitudinal arms. These arms do not have to be of equal length and may be angled away from their obvious direction. Typically, each arm has a spherical joint (ball joint) or rubber bushing at the end. Consequently, they react to loads along their own length, in tension and compression, but not in bending. Some multilinks use a trailing arm, or wishbone, which has two bushings at one end.

trailing link, single- or double-sided: This system uses a link to mount the front wheel to the rear of the front tubes. The drawback to this system is that it does not cushion the braking load efficiently.

25. Suspension Type, Front (Continued)

telelever (BMW only): The Saxon-Motodd design (marketed as Telelever by BMW) has an additional swing arm that mounts to the frame and supports the spring. This causes the trail and caster angle (rake) to increase during braking instead of decreasing as with traditional telescopic forks.

lower suspension: This refers to a lower-front-fork tube shock-absorber system not described by other front systems.

other (specify): This is any type of front-suspension system that is not described in the previous variables.

26. Suspension Type, Rear

OECD Reference: None

Convention/Coding Source: SAE,⁽⁹⁾ Wikipedia⁽⁷⁾

Element Attributes:

- (00) none, rigid wheel mount
- (01) conventional fork swing arm, double exterior tubular shocks
- (02) conventional fork swing arm, mono-shock
- (03) conventional fork swing arm, linkage-articulated mono-shock
- (04) one-sided swing arm, single exterior tubular shock
- (05) one-sided swing arm, mono-shock
- (06) one-sided swing arm, linkage-articulated mono-shock
- (07) lower suspension
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

swing arm: This is the linkage that connects the rear-wheel axle to the rear-frame assembly. It is sometimes called the rear fork.

conventional fork swing arm, mono-shock: This rear suspension consists of a conventional swing arm with a mono-shock absorber located forward of the rear wheel. In a motorcycle with a mono-shock rear suspension, there is only one shock that connects the rear swing arm to the motorcycle's frame. Typically, this lone shock is in front of the rear wheel and uses a linkage to connect to the swing arm. Mono-shocks eliminate torque on the swing arm and provide more consistent handling and braking. They are also easier to adjust, since there is only one shock to adjust, and there is no worry about matching two shocks. Also, the linkages used to connect the shock to the swing arm are frequently designed to give a rising rate of damping for the rear.

conventional fork swing arm, linkage-articulated mono-shock: The mono-shock is attached to the swing arm and can move independently (up and down) through an articulated cylindrical joint.

26. Suspension Type, Rear (Continued)

one-sided swing arm, single exterior tubular shock: A single-sided swing arm is a style of motorcycle swing arm. As its name implies, it lies along only one side of the motorcycle's rear wheel, unlike the conventional swing arm, which lies along both sides. It allows the rear wheel to be mounted like those of an automobile. This makes wheel maintenance simpler since removal involves the loosening of a set of lugs or a single nut, sliding the wheel forward to slacken and uncouple the drive chain (when fitted with a chain or belt drive), and then pulling out the axle shaft. When made with an S-shaped contour, these swing arms need to be much stiffer than the double-sided versions to accommodate the new torsional forces incurred by holding onto the wheel by just one side. Having a single mounting point also guarantees proper wheel alignment. The single-sided swing arm is also found on small machines, where a robust chain case acts as the swing arm connecting the engine and rear wheel.

one-sided swing arm, linkage-articulated mono-shock: In the one-sided swing arm with the linkage-articulated mono-shock, the mono-shock is attached to the swing arm and can move independently (up and down) through an articulated cylindrical joint. This type of suspension is most commonly found with high-performance Ducati, Moto-Guzzi, and Triumph motorcycles.

lower suspension: This refers to customized rear shocks that are installed and intended to lower the profile of the motorcycle and create less ground clearance.

CONTROL MOTORCYCLE MECHANICAL FORM

27. Rider Brake-Control Type

Lever/Pedal 1 _____

Lever/Pedal 2 _____

OECD Reference: None

Convention/Coding Source: DSI, OECD

Element Attributes:

- (00) none, not present
- (01) hand
- (02) foot
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE MECHANICAL FORM

28. Brake Control–System Type

Lever/Pedal 1 _____

Lever/Pedal 2 _____

OECD Reference: None

Convention/Coding Source: DSI, MSF, Honda

Element Attributes:

- (01) independent front brake
- (02) independent rear brake
- (03) combined front and rear brakes, CBS
- (97) not applicable
- (99) unknown

Range: 01–03, 97, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

independent front brake: The vast majority of motorcycles use an independent system for the front and rear wheels, with a lever on the right handlebar controlling the front brake.

independent rear brake: This is a foot pedal located on the right side or a hand lever located on the left handlebar of motorcycle that actuates the rear brake when applied.

combined front and rear brakes, CBS: For a conventional combined or CBS motorcycle, the breaks work simultaneously on the front and rear wheels by operation of the pedal (left lever). Honda has also developed a dual CBS for application for much larger sports models. For the front double-disc brake and rear disc brake, this not only brakes the front and rear wheels at the same time by applying the pedal, but also applies braking force on the rear wheel when the right lever is operated. The dual CBS enables the driver to efficiently decelerate and reduce nosedive.

CONTROL MOTORCYCLE MECHANICAL FORM

29. ABS

Front _____
Rear _____

OECD Reference: None

Convention/Coding Source: SAE,⁽⁹⁾ Wikipedia⁽⁷⁾

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable
- (99) unknown

Range: 00, 01, 97, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

ABS is a braking system that automatically controls the slip ratios of one or more wheels of the vehicle during braking and allows the rider to apply maximum braking force without fear of wheel lock-up and the resulting loss of control, providing the bike is not leaned over. Under many pavement conditions, ABS allows the rider to stop a motorcycle more rapidly while maintaining steering control even during situations of extreme panicked braking.

ABS maintains separate operation of front and rear brakes. Steel-braided lines run from both master cylinders to a controller unit located under the right-side panel, then back to the brake rotors. If the wheel sensors detect lock-up, the control unit pulses the brakes up to seven times per second to prevent the wheels from locking up.

CONTROL MOTORCYCLE MECHANICAL FORM

30. Has the Frame Been Modified?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—interview

Remarks: This variable is assigned by the investigator from the sources.

A motorcycle-frame modification may consist of a subtle reinforcement tubing welded in areas to stiffen the structure (e.g., racing-style and café-style race bikes) or could be as obvious as a customized chopper. Several customized bike/chopper companies include Jesse G. James's West Coast Choppers, Orange County Choppers, Indian Larry, Falcon Motorcycles, and Von Dutch Kustom Cycles.

31. Frame Type/Configuration

OECD Reference: None

Convention/Coding Source: SAE,⁽⁹⁾ Motorcycle Frame Technology,⁽¹⁶⁾ Wikipedia⁽⁷⁾

Element Attributes:

- (01) step-through, formed sheet metal
- (02) step-through, tubular frame
- (03) conventional tube-cradle type with single-down tube
- (04) conventional tube-cradle type with double-down tubes
- (05) backbone type, motor transmission mounted independently
- (06) backbone type, motor transmission integral with frame
- (07) perimeter frame, tube type
- (08) perimeter frame, extrusion-element type
- (09) monocoque, shell-only structure
- (98) other (specify)
- (99) unknown

Range: 01–09, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

frame: The structural parts of the rear-frame assembly are the fork assembly, the motor and transmission, the rear swing arm and suspension, the rider’s seat, and a number of other mechanical components. Motorcycle frames are usually made from welded aluminum, steel, or alloy, but carbon-fiber is used in some expensive or custom frames. The purpose of a motorcycle frame is to act as a base onto which all the various components can be bolted. The engine generally sits inside the frame, the rear swing-arm is attached by a pivot bolt (allowing the suspension to move), and the front forks are attached to the front of the frame. The frame can also help protect the more sensitive parts of a motorcycle in a crash.

step-through, formed sheet metal: The classic scooter design features a step-through frame and a flat floorboard for the rider’s feet. This design is possible because the scooter engine and drive system transferring power to the rear wheel is attached to the rear axle or under the seat. Unlike a motorcycle, where the engine is mounted on the frame, this front-hinged arrangement allows the engine to swing vertically together with the rear wheel.

31. Frame Type/Configuration (Continued)

step-through, tubular frame: This is much the same as the step-through, formed sheet metal frame, but it is constructed from tubular framing that is usually welded at structure points. The tubular frame offers a more rigid platform to mount a larger engine than smaller-sized scooter-type bikes.

conventional tube-cradle type with single-down tube: The single-cradle frame is the simplest type of motorcycle frame and looks similar to the first-ever motorcycle frames. It is made from steel tubes that surround the engine, with a main tube above and other, smaller diameter tubes beneath. If a single cradle becomes double at the exhaust, as frequently occurs, it is referred to as a split single-cradle frame. Single-cradle frames are usually found in off-road motorcycles.

conventional tube-cradle type with double-down tubes: The double-cradle frames are descended from single-cradle frames. They consist of two cradles that support the engine, one on either side. Double-cradle frames are commonly used in custom motorcycles and simpler road bikes. They offer a good compromise between rigidity, strength, and lightness, though they have now been technically surpassed by perimeter frames.

backbone type, motor-transmission mounted independently: Although not the most desirable frame, the backbone frame comprises a single, wide main beam from which the engine is suspended. The backbone frame allows for great flexibility in design since it is concealed inside the finished motorcycle. The engine seems to hang in midair. It is simple and cheap to make and is used mainly on naked and off-road motorcycles.

backbone type, motor-transmission integral with frame: Although not the most desirable frame, the backbone frame comprises a single, wide main beam from which the engine is suspended. The backbone frame allows for great flexibility in design since it is concealed inside the finished motorcycle. The engine seems to hang in midair. It is simple and cheap to make and is used mainly on naked and off-road motorcycles. The motor transmission mount is welded or integrated directly within the frame.

perimeter frame, tube type: Motorcycle racing research has shown that major advantages are to be gained in terms of rigidity by joining the steering head to the swing arm in as short a distance as possible. Flexure and torsion are dramatically reduced.

31. Frame Type/Configuration (Continued)

This is the concept behind the perimeter frame. Two robust beams descend in the most direct way from the steering head to the swing arm, passing around the engine. The earliest perimeter frames were made from steel, but the need to improve rigidity to weight ratios led most manufacturers to adopt aluminum instead. Aluminum is now by far the most common road bike frame material, and the aluminum perimeter frame is the most popular frame for modern super-sports motorcycles. This type of perimeter frame is designed from tubular steel or aluminum and is a welded design.

perimeter frame, extrusion-element type: Motorcycle racing research has shown that major advantages are to be gained in terms of rigidity by joining the steering head to the swing arm in as short a distance as possible. Flexure and torsion are dramatically reduced. This is the concept behind the perimeter frame. Two robust beams descend in the most direct way possible from the steering head to the swing-arm, passing around the engine. The earliest perimeter frames were made from steel, but the need to improve rigidity to weight ratios led most manufacturers to adopt aluminum instead. Aluminum is now by far the most common road bike frame material, and the aluminum perimeter frame is the most popular frame for modern super-sports motorcycles.

monocoque, shell-only structure: Monocoque, meaning “single shell” in French, is a construction technique that uses the external skin to support some or most of the load. This is as opposed to using an internal frame or chassis that is then covered with cosmetic body panels. The monocoque frame is used nearly exclusively on competition bikes and is very rarely found on road-going bikes. Monocoque frames act as a single-piece unit that functions as a seat mounting, tank, and tail section. Though they offer certain advantages in terms of rigidity, monocoque frames are heavy.

CONTROL MOTORCYCLE MECHANICAL FORM

32. Is the Motorcycle Equipped With Pedals?

OECD Reference: B.1.1.5.1

Convention/Coding Source: DSI, OECD

Element Attributes:

(00) no
(01) yes
(99) unknown

Range: 00, 01, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE MECHANICAL FORM

33. Headlamp Assembly Type

OECD Reference: B.4.1.1.24

Convention/Coding Source: DSI, OECD

Element Attributes:

- (00) none
- (01) single headlamp
- (02) double headlamp
- (03) single with auxiliary lights
- (04) double with auxiliary lights
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE MECHANICAL FORM

34. Was Headlamp Illuminated Prior to Stopping for the Interview?

OECD Reference: B.4.1.1.25

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes, rider controlled
- (02) yes, always-on technology
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source:

- Primary—investigator observation
- Secondary—rider interview

Remarks: This variable is assigned by the investigator from the sources.

Always-on technology is equivalent to daytime running lights in some late-model automobiles.

Determination of headlight status may include the following: determining whether or not the motorcycle was equipped with always-on technology, reviewing the post-crash position of headlight switches, and examining of the headlight filament condition. When a headlight is on, the filament is at an extremely high temperature and becomes malleable. During an impact, the hot metal filament stretches. This stretched filament is an indicator that the bulb was on during the impact.

CONTROL MOTORCYCLE MECHANICAL FORM

35. Is Motorcycle Equipped With an Airbag?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00) no
(01) yes
(99) unknown

Range: 00, 01, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Newer Honda Goldwing models can be equipped with an airbag.

CONTROL MOTORCYCLE MECHANICAL FORM

36. Is Motorcycle Equipped With or Pulling Any of the Following?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no, not applicable
- (01) sidecar
- (02) trailer
- (03) training wheels
- (04) outrigger
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

CONTROL MOTORCYCLE MECHANICAL FORM

37. Have the Handlebars Been Modified?

OECD Reference: None

Convention/Coding Source: Wikipedia,⁽⁷⁾ DSI

Element Attributes:

- (00) original equipment
- (01) clip-on, not original equipment
- (02) clubman or racer
- (03) high-sweep or tiller-type touring
- (04) high rise
- (05) motocross, off-road
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—rider interview

Remarks: This variable is assigned by the investigator from the sources.

original equipment: This refers to the handlebars originally installed by the manufacturer.

clip-on, not original equipment: The clip-on is a handlebar style, popular on sport bikes, in which two separate short handles are attached directly to the fork tubes, as opposed to a standard one-piece handlebar attached to the top of the triple tree.

clubman or racer: This style features shortened handlebars with a raised center portion.

high-sweep or tiller-type touring: These handlebars typically have a high profile and are swept rearward. They were originally called “tiller-type touring” handlebars because they resembled the swept-back design typically found on garden tillers.

high rise: This style is designed with a long shaft and long extensions. Handlebars of this type are also known as “ape hangers” because they allow riders to fully extend their arms while steering.

motocross, off road: This style is generally used in racing bikes.

CONTROL MOTORCYCLE MECHANICAL FORM

38. Has the Seat Been Modified?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source: Primary—vehicle inspection and rider interview

Remarks: This variable is assigned by the investigator from the sources.

CONTROL MOTORCYCLE MECHANICAL FORM

39. Seat Type

OECD Reference: None

Convention/Coding Source: Wikipedia,⁽⁷⁾ Honda, Kawasaki, Harley-Davidson

Element Attributes:

- (01) conventional straddle seat, one level
- (02) straddle type, two level, raised passenger
- (03) bucket, single seat
- (04) bucket, double seat, one level
- (05) bucket, double seat, raised passenger
- (06) single racer seat, tail fairing behind
- (07) single straddle seat, pillion pad behind
- (08) single pad, semibench type
- (98) other (specify)
- (99) unknown

Range: 01–08, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

conventional straddle seat, one level: This is a long tubular seat for one or two riders.

straddle type, two level, raised passenger: This seat features two connected seating positions with a slightly raised back; the passenger seat is mounted higher than the rider seat.

bucket, single seat: This is a contoured rider seat with no passenger seat.

bucket, double seat, one level: This type features separate rider and passenger seats. They are mounted at the same level and contoured.

bucket, double seat, raised passenger: This type features separate rider and passenger seats that are both contoured. The passenger seat is mounted at a higher level than the rider seat.

single racer seat, tail fairing behind: This is a low-slung rider tubular seat with fairing instead of a passenger seat.

single straddle seat, pillion pad behind: This is a rider seat with small pillion pad behind for the passenger position.

single pad, semibench type: This is a single, upholstered flat seat designed for only a rider.

CONTROL MOTORCYCLE MECHANICAL FORM

40. Has the Exhaust System Been Modified?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes, performance equipment; noise level approximately same as original equipment
- (02) yes, high-performance equipment; excessive noise
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE MECHANICAL FORM

41. Has the Windshield Been Modified?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable, no windshield
- (98) other (specify)
- (99) unknown

Range: 00, 01, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

CONTROL MOTORCYCLE MECHANICAL FORM

42. Is This Motorcycle Equipped With Crash Bars?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (02) previously equipped, but crash bars have been removed
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Crash bars consist of tubular steel framing and surround or shroud the engine components. They are helpful in decreasing the amount of damage to a motorcycle in the event that the bike is dropped or the rider lays the bike down in an evasive maneuver.

CONTROL MOTORCYCLE MECHANICAL FORM

43. Is This Motorcycle Equipped With Engine Guards?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (02) previously equipped, but engine guards have been removed
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Engine guards (like crash guards) consist of tubular steel framing and surround or shroud the engine components. They are helpful in decreasing the amount of damage to a motorcycle in the event that the bike is dropped or the rider lays the bike down in an evasive maneuver.

MOTORCYCLE DYNAMICS FORM

Case Number

OECD Reference: None

Convention/Coding Source: Case number chart

Element Attributes: Case number

Range: 0001–2000

Source: Primary—case number chart

Remarks: This variable is assigned by the investigator from the source.

1. Pre-Crash Motion Prior to Precipitating Event

OECD Reference: A.4.2.1

Convention/Coding Source: NASS,⁽⁴⁾ OECD

Element Attributes:

- (00) stopped in traffic, speed is zero
- (01) moving in a straight line, constant speed
- (02) moving in a straight line, throttle off
- (03) moving in a straight line, braking
- (04) moving in a straight line, accelerating
- (05) turning right, constant speed
- (06) turning right, throttle off
- (07) turning right, braking
- (08) turning right, accelerating
- (09) turning left, constant speed
- (10) turning left, throttle off
- (11) turning left, braking
- (12) turning left, accelerating
- (13) stopped at roadside or parked
- (14) backing up in a straight line
- (15) backing up, steering left
- (16) backing up, steering right
- (17) making U-turn, right
- (18) making U-turn, left
- (19) making Y-turn, right
- (20) making Y-turn, left
- (21) changing lanes to left
- (22) changing lanes to right
- (23) merging to left
- (24) merging to right
- (25) entering traffic from right shoulder, median, or parked
- (26) entering traffic from left shoulder, median, or parked
- (27) leaving traffic or drifting to the right
- (28) leaving traffic or drifting to the left
- (29) passing maneuver, passing on right
- (30) passing maneuver, passing on left

MOTORCYCLE DYNAMICS FORM

Page 2 of 2

1. Pre-Crash Motion Prior to Precipitating Event (Continued)

- (31) crossing opposing lanes of traffic
- (32) traveling wrong way, against opposing traffic
- (33) stripe-riding, filtering forward between lanes, longitudinal motion only
- (34) filtering between lanes, lateral motion only
- (35) filtering forward between lanes, both longitudinal and lateral motion
- (36) collision-avoidance maneuver to avoid a different collision
- (37) negotiating a curve, constant speed
- (38) negotiating a curve, throttle off
- (39) negotiating a curve, braking
- (40) negotiating a curve, accelerating
- (41) wheelie
- (42) negotiating a curve, not further specified
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–42, 97–99

Source: Primary—scene inspection, interviews, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the attribute that best describes this vehicle's activity prior to the driver's realization of an impending critical event or just prior to the precipitating event. A precipitating event is the failure or maneuver that immediately led to the accident. For instance, if the precipitating event is a mechanical failure, these variables are intended to capture the movement or activity of the motorcycle just prior to the mechanical failure or precipitating event.

A Y-turn is a three-point turn maneuver that is commonly used to change directions.

other (specify): This is used when this vehicle's pre-crash movement is known, but none of the specified attributes are applicable.

unknown: This is used when the vehicle's pre-crash movement prior to the driver's realization of an impending critical event is unknown.

MOTORCYCLE DYNAMICS FORM

2. Travel Speed

OECD Reference: A.4.2.2.a

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(000)	stopped in traffic, speed is zero
(001–996)	actual speed
(999)	unknown

Range: 000–996, 999

Source:

Primary—rider interview
Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

Enter the travel speed for the vehicle if it can be determined by any available sources, including estimates by drivers or witnesses. Enter the nearest mile per hour, or if the travel speed is reported as a range, enter the average. Enter “000 mph” if the vehicle is stopped or indicated by police as traveling less than 0.5 mph.

unknown: This is selected if the estimated travel speed is unknown.

MOTORCYCLE DYNAMICS FORM

3. Travel Speed Confidence Interval (Code in Miles per Hour, Whole Numbers Only)

OECD Reference: A.4.2.2.b

Convention/Coding Source: DSI

Element Attributes:

(plus (+) or minus (-) in miles per hour)

(99) unknown

Range: +/-00-96, 99

Source: Primary—investigator determined

Remarks: This variable is assigned by the investigator from the source.

This variable is intended to record the investigator's assessment of the recorded travel speed variable. For example: If the travel speed is recorded to reflect 60 mph per the rider interview (variable number 2, Travel Speed), then this variable is intended to allow the investigator to "fine tune" the previous estimate provided for the travel speed. In this case, the investigator might determine that the provided estimated speed of 60 mph is either too high (+) or too low (-). If it is determined that the travel speed was likely closer to 70 mph, record +10. Conversely, if it is determined that the travel speed was more likely to be 40 mph, record -20.

unknown: This is used when there is not enough reasonable information available for the investigator to provide a different travel-speed assessment than the one provided in variable number 2, Travel Speed.

MOTORCYCLE DYNAMICS FORM

4. Line of Sight to Other Vehicle (Clock-Face Direction Relative to Motorcycle Centerline)

OECD Reference: A.4.2.3

Convention/Coding Source: OECD

Element Attributes:

- (01) 1 o'clock
- (02) 2 o'clock
- (03) 3 o'clock
- (04) 4 o'clock
- (05) 5 o'clock
- (06) 6 o'clock
- (07) 7 o'clock
- (08) 8 o'clock
- (09) 9 o'clock
- (10) 10 o'clock
- (11) 11 o'clock
- (12) 12 o'clock
- (97) not applicable
- (99) unknown

Range: 01–12, 97, 99

Source: Primary—scene inspection and investigator scene (scaled) drawing

Remarks: This variable is assigned by the investigator from the sources.

The line of sight to the other vehicle should be recorded as if just prior to the precipitating event (i.e., during the pre-crash phase of the accident). A clock-face direction shall be used relative to the centerline of the motorcycle. Examples of typical clock-face directions are as follows:

- Code 12 if OV is directly in front of the motorcycle.
- Code 09 if OV is to the left of the motorcycle.
- Code 03 if OV is to the right of the motorcycle.
- Code 06 if OV is directly behind the motorcycle.

The response is coded based on the line of sight to the other vehicle. The specific orientation or direction of the other vehicle just prior to the precipitating event does not influence the line of sight response. For example, if a vehicle is backing out of an alley or a driveway and approaching the motorcycle from the left, its actual orientation will be opposite to a vehicle that is traveling in a forward direction and approaching the motorcycle from the left; however, both cases would have the same coding response, 9, meaning the OV is approaching the motorcycle from the left.

5. Pre-Crash Motion After Precipitating Event

OECD Reference: A.4.2.4

Convention/Coding Source: NASS,⁽⁴⁾ OECD

Element Attributes:

- (00) stopped in traffic, speed is zero
- (01) moving in a straight line, constant speed
- (02) moving in a straight line, throttle off
- (03) moving in a straight line, braking
- (04) moving in a straight line, accelerating
- (05) turning right, constant speed
- (06) turning right, throttle off
- (07) turning right, braking
- (08) turning right, accelerating
- (09) turning left, constant speed
- (10) turning left, throttle off
- (11) turning left, braking
- (12) turning left, accelerating
- (13) stopped at roadside or parked
- (14) backing up in a straight line
- (15) backing up, steering left
- (16) backing up, steering right
- (17) making U-turn, right
- (18) making U-turn, left
- (19) making Y-turn, right
- (20) making Y-turn, left
- (21) changing lanes to left
- (22) changing lanes to right
- (23) merging to left
- (24) merging to right
- (25) entering traffic from right shoulder, median, or parked
- (26) entering traffic from left shoulder, median, or parked
- (27) leaving traffic or drifting to the right
- (28) leaving traffic or drifting to the left
- (29) passing maneuver, passing on right
- (30) passing maneuver, passing on left

5. Pre-Crash Motion After Precipitating Event (Continued)

- (31) crossing opposing lanes of traffic
- (32) traveling wrong way, against opposing traffic
- (33) stripe-riding, filtering forward between lanes, longitudinal motion only
- (34) filtering between lanes, lateral motion only
- (35) filtering forward between lanes, both longitudinal and lateral motion
- (36) collision-avoidance maneuver to avoid a different collision
- (37) negotiating a curve, constant speed
- (38) negotiating a curve, throttle off
- (39) negotiating a curve, braking
- (40) negotiating a curve, accelerating
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–40, 97–99

Source: Primary—scene inspection, interviews, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

A precipitating event is the failure or maneuver that immediately led to the crash.

Record the attribute that best describes this vehicle’s activity immediately following the precipitating event. For instance, if the precipitating event is a mechanical failure, these variables are intended to capture the movement or activity of the motorcycle immediately following the mechanical failure or precipitating event.

other (specify): This is used when the vehicle’s pre-crash movement after the precipitating event is known, but none of the specified attributes are applicable.

unknown: This is used when the vehicle’s pre-crash movement after the precipitating event is unknown.

6. Collision-Avoidance Action

OECD Reference: A.4.2.5.1, A.4.2.5.2, A.4.2.5.3, A.4.2.5.4

Convention/Coding Source: NASS,⁽⁴⁾ OECD, MSF

Element Attributes:

- (00) none
- (01) braking
- (02) swerving
- (03) accelerating
- (04) countersteering
- (05) cornering
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source: Primary—driver interview, police report, and scene inspection

Remarks: This variable is assigned by the investigator from the sources.

Attempted avoidance maneuvers are movements or actions taken by the rider within a critical crash envelope in response to a critical pre-crash event. Attempted avoidance maneuvers occur after the rider realizes an impending danger. This variable assesses what the rider's actions were in response to his or her realization. Most crashes have only one critical crash envelope and, thus, only one critical pre-crash event; however, multiple critical crash envelopes with their respective critical pre-crash events can exist.

The Collision-Avoidance Action variable may be used independently of any maneuvers associated with the rider's crash type and the vehicle's first associated crash event.

Select the element value that best describes the actions taken by the rider in response to the critical pre-crash event within the critical crash envelope that occurred just prior to the vehicle's impact. When there was a known action (e.g., braking), but it cannot be determined whether there was more than one action (e.g., braking and steering left), default to the known action (e.g., braking).

none: This is selected when the rider did not attempt any evasive (pre-impact) maneuvers.

braking: This is selected when there are indications that the brakes locked up or the interviewee stated that pre-crash braking was used as an avoidance maneuver.

6. Collision-Avoidance Action (Continued)

swerving: This is selected if there are indications that the motorcycle rider applied a sudden deviation in the path of the motorcycle as a result of turning actions.

accelerating: This is selected if there are indications that the motorcycle rider applied a sudden throttle acceleration as an attempted avoidance maneuver. For example, if the motorcycle rider enters a four-leg intersection and detects a vehicle violating the overhead traffic signal and encroaching from the right, the rider applies a quick burst of acceleration in an attempt to place the motorcycle ahead of the impending impact.

countersteering: This is used when the rider applied a countersteering input in an attempt to avoid the collision. Countersteering refers to turning the handlebars in one direction to make the bike lean in the opposite direction. For motorcycles, the handlebar input is immediately translated by gyroscopic precession into a lean in the opposite direction. Since the front wheel is attached to the bike's frame, the body of the bike also attempts to lean. It is the lean of the bike that overwhelms the handlebar effort and drags the front wheel over with it—gyroscopic precession merely facilitates the process and is essentially inconsequential in the outcome.

cornering: This is used when the motorcycle rider used a cornering maneuver as an attempt to avoid the crash. A cornering maneuver involves taking a position on the road to begin the turn-in-point (banking), initiating a change in direction. This maneuver involves achieving an apex point, which is best described as the innermost place on the road that the rider will pass through during the maneuver and usually occurs moments before the midpoint of the corner. This maneuver also involves the exit point. This is where the rider is almost upright once more and can accelerate away strongly and safely.

other (specify): This is used when the avoidance action cannot be described by any of the other maneuvers.

MOTORCYCLE DYNAMICS FORM

7. Braking Skid Marks on Roadway

OECD Reference: A.4.2.6

Convention/Coding Source: SAE,⁽⁹⁾ Wikipedia,⁽⁷⁾ OECD, Mechanical Forensics Engineering Services⁽¹⁹⁾

Element Attributes:

- (00) none
- (01) skid marks from rear tire only
- (02) skid marks from front tire only
- (03) skid marks from both front and rear tires, front and rear equivalent and overlaying
- (04) long skid mark from rear tire, short terminal skid mark from front tire
- (05) light skid marks from both front and rear tires, no wheel lockup evidence
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

Select the variable options that best describe the skid-mark evidence documented at the scene. Skid marks from the rear and front tires are distinctively different in their appearance. The residual skid mark of a front tire due to being locked from a heavy brake application is very short in length. The steering geometry will result in the motorcycle being “laid down.” A heavy front-brake application that results in a frontal skid mark will trail off to the side on which the motorcycle makes contact with the pavement or ground.

skid mark: This is the situation in which the entire tire-contact path is relative to the pavement surface as specified in SAE J1451.⁽⁹⁾ It is also known as the mark a tire makes when a motorcycle wheel loses traction and skids on the surface of the road. Skid marks are caused by rubber from the tire of a motorcycle being deposited on the road and can come about when a motorcycle suddenly accelerates on a slippery surface or takes a hard corner. The rubber of motorcycle tires heats up with sliding friction, degrades and disintegrates at the road–tire interface, and is deposited on the road surface.

MOTORCYCLE DYNAMICS FORM

8. Length of Skid Marks on Roadway (Code in Feet and Inches)

OECD Reference: A.4.2.7.1, A.4.2.7.2

Convention/Coding Source: DSI

Element Attributes:

(000.00)	none
(000.01–999.96)	actual length of skid marks in feet and inches
(999.97)	not applicable
(999.99)	unknown

Range: 000.00–999.97, 999.99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

Record the actual total length of the residual skid mark from each respective tire (front, rear, or both). This is a direct measurement recorded from the initiating point of the skid mark to the point where the skid mark is no longer visible.

MOTORCYCLE DYNAMICS FORM

9. Braking Skid-Mark Evidence on Roadway

OECD Reference: A.4.2.8

Convention/Coding Source: OECD, Contractor derived (DSI)

Element Attributes:

- (00) none
- (01) dry roadway, braking skid marks confirmed from crash motorcycle
- (02) wet roadway, braking skid marks confirmed from crash motorcycle
- (03) deep water on roadway, aquaplaning most likely, no braking skid marks remaining
- (04) wet reverted rubber skidding in evidence, white steam-cleaned skid paths shown on roadway confirmed from crash motorcycle
- (05) braking skid-mark evidence most likely present but degraded by traffic after crash, no confirmation at scene examination
- (06) snow/ice on roadway, braking skid marks confirmed from crash motorcycle
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–06, 97–99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

This variable is intended to record the varying degrees of residual skid-mark evidence deposited on the roadway surface. A dry roadway surface at the time of a heavy-braking application will leave the most obvious skid marks. A wet roadway surface will reduce the coefficient of friction and diminish the amount of rubber being transferred to the roadway surface.

If deep standing water exists at the time of a heavy-braking application or skidding, aquaplaning can occur. Although the tires may be locked and skidding, they are not actually marking the roadway surface. If this occurs, no skid-mark evidence will be present; code 03. In some instances, there may be just the right amount of water on the roadway surface where the locked tires are actually squeegeeing the roadway surface. The result is that the tire is not transferring rubber deposits but scrubbing the roadway surface clean, which will leave a residual “white mark.” If this occurs, code 04.

10. Braking Tire-Striation Evidence

OECD Reference: A.4.2.9

Convention/Coding Source: OECD

Element Attributes:

- (00) none, front or rear tire
- (01) rear tire only
- (02) front tire only
- (03) both front and rear tires
- (04) prolonged skid patch on rear tire only
- (05) prolonged skid patch on rear tire, braking striations on front tire
- (06) prolonged skid patch on rear tire, slide-out striations on front tire
- (07) prolonged skid patch on rear tire, slide-out striations on both front and rear tires
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source: Primary—vehicle inspection and scene inspection

Remarks: This variable is assigned by the investigator from the sources.

This variable refers to linear marks or scoring on the tire surface, both of which are a result of tire braking.

Braking evidence is determined by close examination of the front and rear tires of the motorcycle. Flat spots or patches will appear on the tire where the contact of the tires occurred with the roadway surface.

rear tire only: Linear marks or scoring is noted on the rear-tire surface only.

front tire only: Linear marks or scoring is noted on the front-tire surface only.

both front and rear tires: Linear marks or scoring is noted on both the rear- and front-tire surfaces.

prolonged skid patch on rear tire only: This is used when the rear tire is locked and results in a longitudinal skid pattern. The rear tire will exhibit a prominent patch area.

10. Braking Tire-Striation Evidence (Continued)

prolonged skid patch on rear tire, braking striations on front tire: This is used when the rear tire is locked and results in a skid and prominent patch area to the tire surface. This happens when the rider applies a steering input while applying the front brakes, resulting in the front tire scuffing the roadway surface. These braking striations should be evident on the front tire in one location where the scuffing originated.

prolonged skid patch on rear tire, slide-out striations on front tire: This is used when the rear tire is locked and results in a skid and prominent patch area to the tire surface. This happens when the rider applies a steering input with no front-brake application, resulting in the front tire scuffing the roadway surface while still rotating or centrifugal scuff marks. The striations on the front tire will involve the complete diameter of the tire if this is the case.

prolonged skid patch on rear tire, slide-out striations on front and rear tires: This is used when the rear tire is locked and results in a skid and prominent patch area to the tire surface. This happens when the rider applies a steering input with no front-brake application. The motorcycle initiates a yaw, and both the front and rear tires scuff the roadway surface resulting in tire striations.

not applicable: This is used when brakes were not applied prior to the crash.

11. Swerve

OECD Reference: A.4.2.10

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no swerve
- (01) swerve to right, correct decision
- (02) swerve to right, incorrect decision
- (03) swerve to left, correct decision
- (04) swerve to left, incorrect decision
- (97) not applicable
- (99) unknown

Range: 00–04, 97, 99

Source:

- Primary—rider/passenger interview
- Secondary—police crash report and other vehicle interview

Remarks: This variable is assigned by the investigator from the sources.

This variable captures those situations where the rider applied a swerve maneuver in an attempt to avoid an impending danger. A “swerve” is defined as a sudden deviation in the path of the motorcycle as a result of turning actions. For example, a rider may apply a swerve maneuver to avoid a pothole, an animal in the roadway, or a vehicle encroaching on the motorcycle’s lane of travel.

swerve to right, correct decision: This is used when the rider applied a right-sswerve maneuver to avoid an impending danger that emanated or encroached from the left. The crash with the encroaching object occurred, but the rider’s reaction to swerve opposite to the encroaching object was the correct decision.

swerve to right, incorrect decision: This is used when the rider applied a right-sswerve maneuver to avoid an impending danger that emanated or encroached from the right, thus swerving into the encroaching object.

swerve to left, correct decision: This is used when the rider applied a left-sswerve maneuver to avoid an impending danger that emanated or encroached from the right. The crash with the encroaching object occurred, but the rider’s reaction to swerve opposite to the encroaching object was the correct decision.

11. Swerve (Continued)

swerve to left, incorrect decision: This is used when the rider applied a left-swerve maneuver to avoid an impending danger that emanated or encroached from the left, thus swerving into the encroaching object.

not applicable: This is used when a swerve maneuver was not applied.

unknown: This is used when there is not enough information available to determine whether a swerve maneuver was applied.

MOTORCYCLE DYNAMICS FORM

12. Acceleration Evidence on Rear Tire

OECD Reference: A.4.2.11

Convention/Coding Source: OECD

Element Attributes:

- (00) none
- (01) moderate slip striations and tread block–edge erosion
- (02) severe slip striations and tread block–edge erosion
- (03) extreme slip striations, tread block–edge erosion and tread-rubber reversion
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–03, 97–99

Source: Primary—vehicle inspection and scene inspection

Remarks: This variable is assigned by the investigator from the sources.

This variable is designed to gauge the extent of slip striations to a rear tire due to rapid rear-tire acceleration or “burn out.” The tread-block edge should be closely examined to evaluate the extent of the rubber erosion.

13. Countersteering

OECD Reference: A.4.2.12

Convention/Coding Source: OECD

Element Attributes:

- (00) no countersteering
- (01) countersteering proper, produced desired swerve
- (02) countersteering improper, produced undesired direction change
- (97) not applicable
- (99) unknown

Range: 00–02, 97, 99

Source:

- Primary—rider/passenger interview
- Secondary—police crash report and other vehicle interview

Remarks: This variable is assigned by the investigator from the sources.

This variable is designed to capture the proper decision and proper application of a countersteering input. Countersteering is used when the rider applied a countersteering input in an attempt to avoid the collision. Countersteering refers to turning the handlebars in one direction to make the bike lean in the opposite direction.

For motorcycles, the handlebar input is immediately translated by gyroscopic precession into a lean in the opposite direction. Since the front wheel is attached to the bike's frame, the body of the bike also attempts to lean. It is the lean of the bike that overwhelms the handlebar effort and drags the front wheel over with it—gyroscopic precession merely facilitates the process and is essentially inconsequential in the outcome.

no countersteering: This is used when it can be determined that the rider did not apply a countersteering input.

countersteering proper, produced desired swerve: This is used when the rider applied a countersteering input that resulted in the desired swerve in an attempt to avoid an impending or encroaching danger. The impact still occurred, but the countersteering input and subsequent swerve produced the desired effect in relation to the encroaching danger.

countersteering improper, produced undesired direction change: This is used when the rider applied a countersteering input improperly, which resulted in a swerve that occurred in an undesired direction. The countersteering resulted in impacting the object that the rider was attempting to avoid.

13. Countersteering (Continued)

not applicable: This is used when no countersteering input was applied.

unknown: This is used when there is insufficient information available to determine whether or not a countersteering input was applied.

MOTORCYCLE DYNAMICS FORM

14. Cornering Skid-Mark Evidence on Roadway

OECD Reference: A.4.2.13

Convention/Coding Source: OECD

Element Attributes:

- (00) none
- (01) dry roadway, cornering skid marks confirmed from crash motorcycle
- (02) wet roadway, cornering skid marks confirmed from crash motorcycle
- (03) deep water on roadway, aquaplaning most likely, no cornering skid marks remaining
- (04) wet reverted rubber skidding in evidence, white steam-cleaned cornering skid paths shown on roadway confirmed from crash motorcycle
- (05) cornering skid-mark evidence most likely present but degraded by traffic after crash, no confirmation at scene examination
- (06) snow/ice on roadway, cornering skid marks confirmed from crash motorcycle
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–06, 97–99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

During higher-speed cornering maneuvers, tires can slip while still rotating, resulting in centrifugal scuffing striations. These striation marks should be evident during the scene and tire inspections.

This variable is intended to record the varying degrees of residual cornering scuff-mark evidence that was deposited on the roadway surface. A dry roadway surface at the time of a cornering maneuver will leave the most obvious skid marks. A wet roadway surface will reduce the coefficient of friction and diminish the amount of rubber being transferred to the roadway surface.

If deep standing water exists at the time of the cornering maneuver, aquaplaning can occur, which may not produce obvious markings on the roadway surface; code 03. In some instances, there may be just the right amount of water on the roadway surface where the locked tires are actually squeegeeing the roadway surface. The result is that the tire is not transferring rubber deposits, but scrubbing the roadway surface clean, which will leave a residual “white mark.” If this occurs, code 04.

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15. Cornering Tire-Striation Evidence

OECD Reference: A.4.2.14

Convention/Coding Source: OECD

Element Attributes:

- (00) none
- (01) right-cornering tire striations, rear tire
- (02) right-cornering tire striations, front tire
- (03) right-cornering striations, both front and rear tires
- (04) left-cornering tire striations, rear tire
- (05) left-cornering tire striations, front tire
- (06) left-cornering tire striations, both front and rear tires
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–06, 97–99

Source: Primary—scene inspection and vehicle inspection

Remarks: This variable is assigned by the investigator from the sources.

During higher-speed cornering maneuvers, tires can slip while still rotating, resulting in centrifugal scuffing striations. These striation marks should be evident during the scene and tire inspections.

MOTORCYCLE DYNAMICS FORM

16. Motorcycle First Collision–Contact Code

OECD Reference: A.4.2.17

Convention/Coding Source: OECD, NASS⁽⁴⁾

Element Attributes:

- (LF) left front
- (CF) center front
- (RF) right front
- (LC) left center
- (RC) right center
- (LR) left rear
- (CR) center rear
- (RR) right rear
- (EL) entire left side
- (ER) entire right side
- (TF) top front
- (TC) top center
- (TR) top rear
- (UF) undercarriage front
- (UC) undercarriage center
- (UR) undercarriage rear
- (NC) no direct contact to motorcycle
- (98) other (specify)
- (99) unknown

Range: LF, CF, RF, LC, RC, LR, CR, RR, EL, ER, TF, TC, TR, UF, UC, UR, NC, 98, 99

Source:

- Primary—vehicle inspection and scene inspection
- Secondary—police report and interviews

Remarks: This variable is assigned by the investigator from the sources.

This variable indicates the location of the motorcycle that sustained direct-contact damage due to the initial collision sequence.

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17. Object(s) Contacted

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

Collision With Other Vehicle

- (01) other vehicle # 1
- (02) other vehicle # 2
- (03) other vehicle # 3

Collision With Fixed Object

- (04) tree (less than or equal to 4 inches in diameter)
- (05) tree (greater than 4 inches in diameter)
- (06) shrubbery or bush
- (07) embankment
- (08) concrete traffic barrier
- (09) other traffic barrier (includes guardrail) (specify)
- (10) impact attenuator
- (11) bridge
- (12) curb
- (13) fire hydrant
- (14) ground
- (15) ditch or culvert
- (16) building
- (17) wall
- (18) fence
- (19) nonbreakaway pole or post (less than or equal to 4 inches in diameter)
- (20) nonbreakaway pole or post (greater than 4 inches but less than or equal to 12 inches in diameter)
- (21) nonbreakaway pole or post (greater than 12 inches in diameter)
- (22) nonbreakaway pole or post (diameter unknown)
- (23) breakaway pole or post (any diameter)
- (24) paved roadway surface
- (25) roadway surface (other)
- (26) sidewalk
- (27) wooden post (any diameter)
- (28) other fixed object (specify)
- (29) unknown fixed object

MOTORCYCLE DYNAMICS FORM

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17. Object(s) Contacted (Continued)

Collision With Nonfixed Object

- (30) pedestrian
- (31) train
- (32) object that fell from vehicle in transport
- (33) trailer, disconnected in transport
- (34) animal
- (35) cyclist or cycle
- (36) vehicle occupant
- (37) other nonmotorist or conveyance (specify)
- (38) other nonfixed object (specify)
- (39) unknown nonfixed object

Noncollision

- (40) overturn->rollover (excludes end-over-end)
- (41) rollover->end-over-end
- (42) fire or explosion
- (43) jackknife
- (44) other intraunit damage (specify)
- (45) noncollision injury
- (48) other noncollision (specify)
- (49) noncollision details unknown
- (97) not applicable
- (98) other event (specify)
- (99) unknown event or object

Range: 01–45, 48, 49, 97–99

Source:

Primary—scene inspection and vehicle inspection
Secondary—police report and interviewees

Remarks: This variable is assigned by the investigator from the sources.

Enter the element attribute code for the appropriate object contacted, capturing three crash events, in sequence. There could be more than three crash events or objects contacted; however, code only the first three in the order that they occurred.

17. Object(s) Contacted (Continued)

vehicle number: If the object contacted by the vehicle under consideration was a motor vehicle, select the vehicle number assigned to the motor vehicle.

collision with fixed object: When a vehicle impacts a tree, shrubbery, bush, pole, or post and causes the fixed object or any portion thereof to become dislodged or airborne such that the object or portion thereof subsequently falls on the vehicle, the appropriate attribute for the object is the same as what the object was initially.

tree (less than or equal to 4 inches in diameter); tree (greater than 4 inches in diameter): These attributes are used to reference the diameter of the tree, which is measured on the horizontal plane at the point of impact.

shrubby or bush: This refers to vegetation that is usually of a woody multistem variety and, in most instances, is low growing rather than tall. Some common examples are boxwood, hawthorn, and mountain laurel.

embankment: This is used only when damage or injury results from a vehicle impacting an embankment.

concrete traffic barrier: This refers to the longitudinal traffic barriers constructed of concrete located on the outside of the road surface, in medians, or in gore areas. This includes all temporary concrete barriers regardless of location (e.g., a temporary Jersey barrier on a bridge being used to control traffic during bridge repair or construction). Concrete walls (vertical side surfaces) do not apply here; see description for “wall.”

other traffic barrier: This refers to any longitudinal barrier not constructed of concrete. This includes all permanent guardrails and median barriers not on a bridge.

impact attenuator: This refers to crash cushions, which are barriers placed in front of fixed objects on the highway to absorb energy, and thus, to mitigate the injury effects of collisions. A number of common impact-attenuating devices may be encountered; therefore, be sure to photograph them when encountered.

bridge: This encompasses all structural members of an overpass structure used for vehicular or pedestrian traffic. This attribute includes guardrails, permanent concrete barriers, bridge rail/walls, bridge piers, bridge abutments, bridge parapet ends, wing walls associated with bridge abutments, and support columns.

17. Object(s) Contacted (Continued)

curb: This is used when the vehicle contacts a raised element at the edge of a roadway. Curbs are used to control drainage, act as deterrents to vehicles leaving the pavement at hazardous points, delineate the edge of the pavement, present a more finished appearance, and assist in the orderly development of the roadway edge. A curb often serves two or more of these purposes.

fire hydrant: This refers to the roadside device that provides water used by fire departments to fight fires. Usually made of steel, these devices are also referred to as fire plugs or fire-stand pipes.

ground: This refers to an impact with the ground. Collisions that may be classified using this attribute include but are not limited to vehicles that sustain undercarriage damage by straddling the pavement and shoulder and impacting a prominent pavement lip or by free falling or vaulting from the road surface to the ground.

ditch or culvert: This refers to a manmade structure for drainage purposes or a manmade structure that allows passage over a drainage area and is that part of the structure that is intended to channel flow through the structure and maintain the stability and integrity of the road bed. If the culvert structure has a portion above the road surface that is of sufficient height to engage above the wheels of an errant applicable vehicle and redirect it, then that part of the structure is considered an “other traffic barrier.” When the sides of the ditch are approximately of equal height, it makes no difference which side of the ditch was struck; however, if the struck side is substantially higher than the other side, code 07 (embankment) as the object contacted. (“Substantially higher” means that an embankment exists with or without a ditch.)

building: This is used when the vehicle impacts a roofed-and-walled structure built for permanent use. The type of construction material used is not of interest, nor is the use of the building.

wall: This refers to a solid, vertical-faced, concrete, brick, stone, or other structurally sound roadside device that may act as a traffic barrier in some locations. Do not confuse this attribute with a fence or building. In most instances, a wall will be backfilled with soil and will act as a vertically faced embankment.

fence: This includes the fence material and support posts.

nonbreakaway pole or post: When a vehicle impacts a pole or post and causes the fixed object or any portion thereof to become dislodged or airborne such that the object or portion thereof subsequently falls on the vehicle, the appropriate attribute for the object is the same as what the object was initially.

17. Object(s) Contacted (Continued)

nonbreakaway pole or post (less than or equal to 4 inches in diameter): This refers to a pole or post whose diameter, is less than or equal to 10 cm, and the pole or post is not mounted on a breakaway base.

nonbreakaway pole or post (greater than 4 but less than or equal to 12 inches in diameter): This refers to a pole or post that is not mounted on a breakaway base and whose diameter is within the range specified.

nonbreakaway pole or post (greater than 12 inches in diameter): This refers to poles or posts that are equal to or greater than 12 inches in diameter and are not mounted on a breakaway base.

pole or post (diameter unknown): This is used for any pole or post, not on a breakaway base, of unknown diameter.

Use the words “pole” and “post” in a general sense and include all types of supports for utility lines, light standards, post-mounted mailboxes, warning devices, signs, and traffic-control signals. Privately owned, as well as publicly owned, highway devices are included in these attributes. They may be made of wood, metal, or concrete and may have various cross-sectional shapes and dimensions. The pole or post must be nontemporary (i.e., have a permanent base or be anchored in the ground). Fence posts are not included in these attributes.

breakaway pole or post (any diameter): This refers to a pole or post that is mounted on a base designed to readily disengage or fracture from an impacting vehicle above a predetermined force level. A pole or post fitted with such a device is a breakaway pole or post; otherwise, it is a nonbreakaway pole or post.

paved roadway surface: This includes asphalt, bituminous, concrete, block, and other solid road surfaces.

roadway surface (other): This refers to dirt, gravel, sand, and other unimproved roadway surfaces.

sidewalk: This includes publicly and privately owned concrete, brick, and other paved pedestrian walkways.

wooden post (any diameter): This includes any wooden post used for signage, lighting support, or other purposes along the side of the roadway.

other fixed object (specify): This is used for any other object of sufficient mass or anchored so that it is not readily movable; compare to the attribute “other nonfixed object.” Examples include large boulders and large logs (fallen trees).

17. Object(s) Contacted (Continued)

unknown fixed object: This is used when it is known that the vehicle struck a fixed object, but the specific type of object is not known.

pedestrian: This is defined as any person who is on a trafficway or on a sidewalk or path contiguous with a trafficway and who is not in or on a nonmotorist conveyance. This includes persons who are in contact with the ground, roadway, etc., but who are holding onto a vehicle in motion. A nonmotorist conveyance is defined as any human-powered device by which a nonmotorist may move or by which a pedestrian or nonmotorist may move another nonmotorist other than by pedaling. A nonmotorist conveyance includes the following: Segway®, baby carriage, coaster wagon, ice skates, roller skates, push cart, scooter, skateboard, skis, sled, wheelchair, rickshaw, etc. This includes persons in a nonmotorist conveyance who are holding onto a vehicle in motion. Pedalcyclists are excluded.

train: This refers to any railway train, moving or not moving.

object that fell from vehicle in transport: This is used when the vehicle is contacted by or contacts an object that was carried by or attached to a vehicle in transport but fell or became detached from that vehicle. For example, a detached side mirror, spare tire, or cargo. Detached trailers are entered under “trailer, disconnected in transport.”

trailer, disconnected in transport: This is used when the vehicle is contacted by or contacts a trailer that has become detached from its towing unit while the towing unit was in transport. The type of trailer is not of interest; the only factors to consider are the detachment of the trailer and the transport status of the towing unit.

animal: This is used if the object contacted was an animal (stationary or nonstationary). Where a nonmotorist was associated with the animal (e.g., on the animal or on or in an animal-powered nonmotor vehicle transport device) use the following scheme. If the contact is to the animal; the animal and the person; the animal and the conveyance; or the animal, conveyance, and the person; use the attribute “animal.” If the contact is to the conveyance, the person, or both the conveyance and the person, use the attribute “other nonmotorist or conveyance.”

cyclist or cycle: This refers to any occupant of a pedalcycle, the cycle, or both. This includes cyclists who hold onto a vehicle in motion.

vehicle occupant: This is used when the object contacted was any person who was an occupant of a motor vehicle in transport. Use this attribute for an occupant who falls from a vehicle and is subsequently run over before stabilization occurred and for any motorcyclist who separates from his/her motorcycle during impact and subsequently impacts a motor vehicle before stabilization occurred.

17. Object(s) Contacted (Continued)

other nonmotorist or conveyance: This refers to a person who is not an occupant of a motor vehicle in transport, pedestrian, or cyclist. A nonmotorist conveyance includes the following: Segway®, a baby carriage, a coaster wagon, ice skates, roller skates, push cart, scooter, skateboard, skis, sled, wheelchair, rickshaw, etc. This attribute includes persons in a nonmotorist conveyance who are holding onto a vehicle in motion. Pedalcyclists are excluded. Use this attribute if the impact was with a nonmotorist conveyance or a nonmotorist associated with a nonmotorist conveyance (if an animal is associated with this impact, see “**animal**”). This attribute would also be used for the occupants of a motor vehicle not in transport, but only if they become separated from the not-in-transport vehicle.

other nonfixed object: This refers to any moveable object that is either readily moveable or is moving and is not specifically named in another element attribute. Examples include trash cans, grocery carts, unoccupied pedalcycles, small boulders, and sheared poles.

noncollision: This refers to crash circumstances that result in nonimpact-related damage or harm.

rollover, overturn (excludes end-over-end): This is used whenever a vehicle rolls over or overturns primarily about the longitudinal axis of the vehicle. This event is reported in the crash sequence variables on the case form. It is assumed that a rollover will generally involve contact with the road surface or ground. In this situation, the object contacted is coded “overturn, rollover and not ground.” In the event another object in the environment is contacted during the rollover sequence, the rollover may not be encoded in the CDC unless the rollover is applicable to CDC.⁽¹¹⁾

rollover, end-over-end: This is used whenever a vehicle rolls over or overturns primarily about the lateral axis of the vehicle.

fire or explosion: This is used whenever a vehicle fire or explosion occurs during the crash sequence or as a result of the crash.

jackknife: This is used whenever there is sufficient uncontrolled rotation (articulation) between a towing unit and a trailing unit such that they contact each other resulting in direct damage to the towing unit. A jackknife may occur to any vehicle that is pulling a trailing unit by a fixed linkage so long as the trailing unit and the pulling vehicle are capable of rotating (articulating) with respect to each other.

other intraunit damage (specify): This is used whenever there is sufficient uncontrolled motion (other than a jackknife) between a towing unit and a trailing unit such that they contact each other resulting in direct damage to the towing unit.

noncollision injury: This is used when the event is a noncollision injury (e.g., fell from vehicle).

17. Object(s) Contacted (Continued)

noncollision (details unknown): This is used when it is known that the event was a noncollision, but the specifics are not known.

other event (specify): This is used when an event occurs that cannot be classified using one of the existing attributes or definitions. A complete description should be given as well as describing the event in the case summary.

unknown event or object: This is used whenever the object contacted is not known or if an unknown event occurs and the researcher cannot determine what the event consisted of and how to enter it.

MOTORCYCLE DYNAMICS FORM

18. Motorcycle Impact Speed in MPH

OECD Reference: A.4.2.18

Convention/Coding Source: OECD, MAIDS, NASS⁽⁴⁾

Element Attributes:

(000)	stopped in traffic, speed is zero
(001–996)	actual impact speed in miles per hour
(999)	unknown

Range: 000–996, 999

Source:

Primary—calculations based on physical evidence at the scene
Secondary—rider interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

impact speed: This refers to the magnitude of the velocity relative to the ground immediately prior to impact.

MOTORCYCLE DYNAMICS FORM

19. Roll Attitude Angle in Degrees (Indicate “+” Right-Side Down or “-” Left-Side Down)

OECD Reference: A.4.2.19

Convention/Coding Source: OECD, SAE⁽⁹⁾

Element Attributes:

(-090+090)	roll attitude angle degrees
(997)	not applicable
(999)	unknown

Range: -090+090, 997, 999

Source: Primary—scene inspection and vehicle inspection

Remarks: This variable is assigned by the investigator from the sources.

This variable defines the attitude or angle of the motorcycle at the rollover point. The angle or attitude of the motorcycle is determined by the initial component (e.g., foot peg, exhaust) that contacts the ground.

roll attitude angle: The roll attitude angle is the angle between a horizontal line and the vehicle *y*-axis and is measured in the plane of the vehicle *y*-axis and *z*-axis. The roll attitude angle is positive when the motorcycle is leaning to the right, as specified in SAE J1451.⁽⁹⁾ For example, in a single-vehicle accident in which a motorcycle impacts the road when the rider’s right foot peg contacts the pavement, the roll attitude angle is +50 degrees.

MOTORCYCLE DYNAMICS FORM

20. Sideslip Angles in Degrees (Indicate “+” Clockwise or “-” Counterclockwise Relative to the Motorcycle Centerline)

OECD Reference: A.4.2.20

Convention/Coding Source: OECD, SAE⁽⁹⁾

Element Attributes:

(000–359)	sideslip angle degrees
(997)	not applicable
(999)	unknown

Range: 000–359, 997, 999

Source: Primary—scene inspection and vehicle inspection

Remarks: This variable is assigned by the investigator from the sources.

sideslip angle: The sideslip angle is the angle measured in the ground plane between the vehicle x -axis and the direction of motion of the vehicle center of gravity (ground plane, x -axis). The sideslip angle is positive when the vehicle is sliding (i.e., translating) to the right, as specified in SAE 670e, definition 8.4.4.⁽⁹⁾ Indicate the angle as either a (+) or (–) as it relates to the motorcycle heading angle at the point of impact. For example, a motorcycle turns and rolls (i.e., leans) to the left as the rider tries to avoid a car in its path. The rider overbrakes the rear wheel, and the motorcycle slides out to the right. At first collision contact, the motorcycle is pointed north, but its skid marks indicate that it is moving to the east. The sideslip angle is +90 degrees.

MOTORCYCLE DYNAMICS FORM

21. Relative Heading Angle

OECD Reference: A.4.2.21

Convention/Coding Source: OECD, ISO

Element Attributes:

(000–360)	relative heading angle degrees
(997)	not applicable
(999)	unknown

Range: 000–360, 997, 999

Source: Primary—scene diagram

Remarks: This variable is assigned by the investigator from the source.

The relative heading angle (for impact with the other vehicle) is the angle measured in a horizontal plane between the x -axis of the motorcycle and the x -axis of the other vehicle, irrespective of the contact locations on each vehicle. The relative heading angle is positive when the other vehicle is rotated clockwise relative to the motorcycle when viewed from above.

Example A: A motorcycle traveling north impacts a car traveling east. The relative heading angle is +90 degrees.

Example B: With the motorcycle in a fixed position, rotate the OV clockwise until the angle of the OV matches the configuration angle from the crash. This will form a triangle indicating the orientation of the front of the OV. The relative heading angle is the total number of degrees as measured by the scene diagram:

1. Head-on collision: relative heading angle = 180 degrees.
2. Rear-end collision: relative heading angle = 000 degrees.

The response convention 000 was used to code those accidents in which no OV is involved. If the relative heading angle between the motorcycle and the OV is determined to be 000 degrees based on the accident reconstruction, code 001. This will allow data analysts to identify cases of a head-on collision (i.e., relative heading angle of 180) versus those cases where there was no OV involved.

MOTORCYCLE DYNAMICS FORM

22. Principal Direction of Force (PDOF) in Degrees

OECD Reference: None

Convention/Coding Source: SAE J224 MAR80,⁽⁹⁾ NASS⁽⁴⁾

Element Attributes:

(000)	nonhorizontal force
(010–360)	PDOF degrees
(997)	not applicable
(999)	unknown

Range: 000, 010–360, 997, 999

Source: Primary—vehicle inspection and scene inspection, postimpact ejected driver/passenger trajectories and/or photographs

Remarks: This variable is assigned by the investigator from the sources.

The principal direction of force can be determined by examining the flow of damage to components on the motorcycle and other vehicle. Postimpact trajectories of ejected drivers/passengers can also be used.

nonhorizontal force: Select this anytime a vehicle becomes inverted and impacts an object or vehicle while inverted. In addition, use this selection in any other circumstance that is consistent with the directions contained in SAE J224 MAR80.⁽⁹⁾

degrees: In this estimate, write the principal direction of force in positive increments of 10 degrees. If the direction appeared to be approximately 10 degrees to the right of straight ahead, code 010. If the direction of force appeared to be 10 degrees left of straight ahead, code 350. The final coding of the PDOF reflects the direction of force in degrees.

unknown: Select this when the force direction cannot be determined via the vehicle inspection or photographs.

MOTORCYCLE DYNAMICS FORM

23. Calculated Time From Precipitating Event to Impact (Code in Seconds)

OECD Reference: A.4.2.22

Convention/Coding Source: OECD, Contractor derived (DSI)

Element Attributes:

(00.00–60.00)	calculated time in seconds
(99.99)	unknown

Range: 00.00–60.00, 99.99

Source:

Primary—rider interview
Secondary—scene evidence and police crash report

Remarks: This variable is assigned by the investigator from the sources.

This variable is intended to calculate the time frame (in seconds) from the initial precipitating event to the initial point of impact.

For example, the rider of the motorcycle approaches an intersection at a high rate of speed and the driver applies a heavy rear-braking input. The rear tire locks as the motorcycle initiates a longitudinal skid and then initiates a side slip, counterclockwise rotation. The motorcycle is laid down on its left-side plane and subsequently impacts the rear plane of a stopped other vehicle.

This crash scenario has two crash events: the lay down or rollover event and the impact with the other stopped vehicle.

The precipitating event to this crash is the motorcycle rear tire–braking lock-up. This was the precipitating event leading to the initial impact (lay-down or rollover event).

In order for this calculation to be made, a reasonable assumption must be derived as to the motorcycle travel speed at the point of initial braking application. The motorcycle skidding distance to the lay-down location or POI must be determined, and the travel distance can be calculated by travel distance (feet per second).

MOTORCYCLE DYNAMICS FORM

24. Motorcycle Motion Code

OECD Reference: A.4.2.23

Convention/Coding Source: OECD

Element Attributes:

- (00) none, stopped at POI; POR and POI coincide
- (01) stopped within 6 ft of POI
- (02) rolled on wheels from POI to POR
- (03) rolled on wheels from POI, then impacted other object at POR
- (04) vehicle rollover from POI to POR
- (05) skidded, slid from POI to POR
- (06) skidded, slid from POI, then impacted other object at POR
- (07) vaulted above ride height from POI, then rolled to POR
- (08) vaulted above ride height from POI, then slid to POR
- (09) vaulted above ride height from POI, then impacted other object at POR
- (10) run over at POI
- (11) run over, dragged from POI to POR
- (12) caught by or landed on other vehicle; carried to POR, different from other vehicle POR
- (13) engaged, entangled, or entrapped with other vehicle (other than run over); POR same as other vehicle POR
- (14) vehicles did not separate; PORs are essentially same for motorcycle and other vehicle
- (15) spun or yawed, sliding from POI to POR
- (16) hit and run, rider departed scene of crash, with motorcycle, immediately after collision
- (17) rider/passenger departed scene immediately after collision, but motorcycle is still at scene
- (98) other (specify)
- (99) unknown

Range: 00–17, 98, 99

Source:

- Primary—scene inspection and vehicle inspection
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

These variables are intended to capture the motion of the motorcycle from the point of impact (POI) to the point of rest (POR) or the motorcycle's final rest position. Choose the variable that best describes the motion of the motorcycle during its postimpact (initial impact) trajectory to its final rest position.

MOTORCYCLE DYNAMICS FORM

25. Distance From POI to Motorcycle POR (Code Distance in Feet and Inches)

OECD Reference: A.4.2.24

Convention/Coding Source: Contractor derived (DSI)

Element Attributes:

(000.00–999.95)	actual distance in feet and inches
(999.96)	999.96 feet or more
(999.99)	unknown

Range: 000.00–999.96, 999.99

Source:

- Primary—scene inspection
- Secondary—police crash report and scene photographs

Remarks: This variable is assigned by the investigator from the sources.

This variable records the distance (measured in feet and inches that the motorcycle traveled from the point of impact (POI) to its point of rest (POR) or final rest position). The distance traveled is recorded as a positive (+) or negative (–) value utilizing an x, y coordinate system, with the x coordinate always originating from the motorcycle heading angle. The initial “distance along POI path” measurement is a longitudinal postimpact measurement along the x -axis in relation to the established coordinate system. The “offset” measurement records the lateral postimpact movement along the y -axis in relation to the established coordinate system.

26. Post-Crash Scrape Marks on Motorcycle

OECD Reference: A.4.2.25

Convention/Coding Source: OECD, MSF, DSI

Element Attributes:

- (00) none
- (01) motorcycle down on right side, sliding high side first
- (02) motorcycle down on right side, sliding low side first
- (03) motorcycle down on right side, sliding front end first
- (04) motorcycle down on right side, sliding rear end first
- (05) motorcycle down on left side, sliding high side first
- (06) motorcycle down on left side, sliding low side first
- (07) motorcycle down on left side, sliding front end first
- (08) motorcycle down on left side, sliding rear end first
- (09) motorcycle tumbling, side over side
- (10) motorcycle tumbling, end over end
- (11) scrape marks with unknown motorcycle dynamics
- (98) other (specify)
- (99) unknown

Range: 00–11, 98, 99

Source: Primary—vehicle inspection and scene inspection

Remarks: This variable is assigned by the investigator from the sources.

This variable records the attitude of the motorcycle as it is sliding on a surface.

It is important to observe and document the flow of the scraping or abrasion markings. In a high-side slide, the scraping should initiate at the top surface and flow downward. Typically, the scraping marks will initially be heavy and become lighter as the flow of damage descends to the bottom of the bike. The same is true for a low-side slide out. Observe the flow of scraping and damage, as it should be apparent that damage initiates from the low side of the bike and ascends upward. Be aware of the flow of damaged components. In a low-side slide, the leading foot peg will sometimes be damaged upward or show signs of significant grinding-type damage. Keep in mind that the same is true if the vehicle is leading with either the front or rear of the bike.

Damaged components will flow or be damaged opposite to the direction of force. In those cases where it is suspected that the bike tumbled side over side, both the left- and right-side planes should exhibit damage and scraping. If the bike is engaged in an end-over-end-type tumble, then deformation should be evident with the end plane components and possibly the front forks depending on the severity of the ground impact.

26. Post-Crash Scrape Marks on Motorcycle (Continued)

high-side slide-out: This refers to a motorcycle sideward upset involving an extreme rolling and capsizing motion where the upper part of the vehicle rolls toward the direction of travel. A high-side crash usually involves either over-throttle application into a curve or an aggressive rear-braking input. Both situations result in the rear tire losing traction and initiating a yaw. The lateral motion regains traction, or “trips” the motorcycle, and initiates the capsizing motion. The rider typically exits on the high side of the bike (the side not closest to the ground).

In a high-side crash, the vehicle is leading with the top or upper surface of the bike in relation to its direction of travel. High-side crashes usually result in more severe rider injuries because the rider is essentially being ejected over the top side of the vehicle.

low-side slide-out: This refers to a vehicle upset involving an extreme rolling and capsizing motion where the upper part of the vehicle rolls away from the direction of travel (e.g., a lay down). A low-side crash is simply where the bike loses traction and skids into the ground with the rider remaining on the low side of the bike, the side closest to the ground.

27. Rider Motion Code

OECD Reference: A.4.2.26

Convention/Coding Source: OECD, NASS,⁽⁴⁾ DSI

Element Attributes:

- (00) none, stopped at POI; POR and POI coincide
- (01) stopped within 6 ft of POI
- (02) tumbled and rolled from POI to POR
- (03) tumbled and rolled from POI, then impacted other object at POR
- (04) skidded, slid from POI to POR
- (05) skidded, slid from POI, then impacted other object at POR
- (06) vaulted above ride height from POI, then rolled to POR
- (07) vaulted above ride height from POI, then slid to POR
- (08) vaulted above ride height from POI, then impacted other object at POR
- (09) run over at POI
- (10) run over, dragged from POI to POR
- (11) caught by or landed on other vehicle; carried to POR, different from other vehicle POR
- (12) engaged, entangled, or entrapped with other vehicle (other than run over); POR same as other vehicle POR
- (13) did not separate from motorcycle, rode from POI to POR; POR same as motorcycle POR
- (14) hit and run, departed scene of crash immediately after collision
- (15) rider departed scene immediately after collision, but motorcycle is still at scene
- (98) other (specify)
- (99) unknown

Range: 00–15, 98, 99

Source: Primary—vehicle inspection and scene inspection, interviewee, medical records, and police crash reports

Remarks: This variable is assigned by the investigator from the sources.

Variables in this section provide an assessment of the movement of the rider from the point of impact to point of rest. These variables are intended to capture the incidence of ejection from the motorcycle and the rider's motion or movement as a result of the ejection.

Other variables capture whether the rider stayed with the bike after the point of impact, whether the rider may have been impacted or run over by another vehicle, and whether the rider may have impacted other stationary or moving objects.

MOTORCYCLE DYNAMICS FORM

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27. Rider Motion Code (Continued)

hit and run, departed scene of crash immediately after collision: This should be used when the rider and the motorcycle departed the scene (hit and run) immediately after the crash.

rider departed scene immediately after collision, but motorcycle is still at scene: This should be used for hit-and-run situations where the rider departed the scene, but the bike was left at the scene.

other (specify): This applies to any other postimpact rider movements or trajectory patterns that were not captured in variables 00–15.

unknown: This is used when the researcher cannot reasonably determine the postimpact movement and trajectory of the rider to the point of rest.

MOTORCYCLE DYNAMICS FORM

28. Distance From POI to Rider POR (Code in Feet and Inches)

OECD Reference: A.4.2.27

Convention/Coding Source: OECD, DSI

Element Attributes:

(000.00–999.96)	actual distance from POI to rider POR in feet and inches
(999.99)	unknown

Range: 000.00–999.96, 999.99

Source:

Primary—scene inspection and physical evidence

Secondary—police crash reports with scaled scene diagrams and interviewee information

Remarks: This variable is assigned by the investigator from the sources.

This variable is intended to capture the distance that the rider traveled from the point of impact to the rider's final rest position. This is a direct measurement based on evidence at the crash scene. For the purpose of this variable, it is not relevant whether the rider slid with the bike or became separated/ejected from the point of impact to the rider's point of rest position.

29. Passenger Motion Code

OECD Reference: A.4.2.28

Convention/Coding Source: OECD, NASS,⁽⁴⁾ DSI

Element Attributes:

- (00) none, stopped at POI; POR and POI coincide
- (01) stopped within 6 ft of POI
- (02) tumbled and rolled from POI to POR
- (03) tumbled and rolled from POI, then impacted other object at POR
- (04) skidded, slid from POI to POR
- (05) skidded, slid from POI, then impacted other object at POR
- (06) vaulted above ride height from POI, then rolled to POR
- (07) vaulted above ride height from POI, then slid to POR
- (08) vaulted above ride height from POI, then impacted other object at POR
- (09) run over at POI
- (10) run over, dragged from POI to POR
- (11) caught by or landed on other vehicle; carried to POR, different from other vehicle POR
- (12) engaged, entangled, or entrapped with other vehicle (other than run over); POR same as other vehicle POR
- (13) did not separate from motorcycle, rode from POI to POR; POR same as motorcycle POR
- (14) hit and run, departed scene of crash immediately after collision
- (15) rider departed scene immediately after collision, but motorcycle is still at scene
- (97) not applicable, no passenger
- (98) other, specify
- (99) unknown

Range: 00–15, 97–99

Source: Primary—vehicle inspection and scene inspection, interviewee, medical records, and police crash reports

Remarks: This variable is assigned by the investigator from the sources.

Variables in this section provide an assessment of the movement of the motorcycle passenger from the point of impact to point of rest. These variables are intended to capture the incidence of ejection from the motorcycle and the passenger's motion or movement as a result of the ejection.

Other variables capture whether the passenger stayed with the bike after the point of impact, whether the passenger may have been impacted or run over by another vehicle, and whether the passenger may have impacted other stationary or moving objects.

29. Passenger Motion Code (Continued)

hit and run, departed scene of crash immediately after collision: This should be used when the passenger and the motorcycle departed the scene (hit and run) immediately after the crash.

rider departed scene immediately after collision, but motorcycle is still at scene: This should be used for hit-and-run situations where the passenger departed the scene, but the bike was left at the scene.

other: This applies to any other postimpact passenger movements or trajectory patterns that were not captured in variables 00–15.

unknown: This is used when the researcher cannot reasonably determine the postimpact movement and trajectory of the passenger to the point of rest.

MOTORCYCLE DYNAMICS FORM

30. Distance From POI to Passenger POR (Code in Feet and Inches)

OECD Reference: A.4.2.29

Convention/Coding Source: OECD, DSI

Element Attributes:

(000.00–999.96)	actual distance from POI to passenger POR in feet and inches
(999.99)	unknown

Range: 000.00–999.96, 999.99

Source:

Primary—scene inspection and physical evidence

Secondary—police crash reports with scaled scene diagrams and interviewee information

Remarks: This variable is assigned by the investigator from the sources.

This variable is intended to capture the distance that the motorcycle passenger traveled from the point of impact to the passenger's final rest position. This is a direct measurement based on evidence at the crash scene. For the purpose of this variable, it is not relevant whether the passenger slid with the bike or became separated or ejected from the point of impact to the passenger's point of rest position.

MOTORCYCLE DYNAMICS FORM

31. Post-Crash Crash-Scene Scrape Marks

OECD Reference: A.4.2.30

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) made by motorcycle
- (02) made by other vehicle
- (03) made by motorcycle and other vehicle
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source: Primary—scene inspection and vehicle inspection

Remarks: This variable is assigned by the investigator from the sources.

The intent of this variable is to provide an assessment of either roadway-surface or ground-surface scrape marks that were residually created by the motorcycle, the other vehicle, or a combination of the involved vehicles. The surface scrape marks should be assessed from the initial harmful event or crash event. The initial harmful event or crash event may be the motorcycle making contact with the roadway or ground surface.

other: This should be used when the roadway-surface or ground-surface scrape marks were the result of something other than the motorcycle or other vehicle (e.g., cargo or luggage objects).

unknown: This is used when it is unknown what caused the roadway-surface or ground-surface scrape marks at the crash scene.

MOTORCYCLE DYNAMICS FORM

32. Tire Size

OECD Reference: None

Convention/Coding Source: Motorcycle Tire/Tyre Maintenance Guide⁽²⁰⁾

Element Attributes:

- (01) original equipment
- (02) not original equipment, but specified size
- (03) proper rim size, oversize section
- (04) proper rim size, undersize section
- (05) improper rim size, too large
- (06) improper rim size, too small
- (98) other (specify)
- (99) unknown

Range: 01–06, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Inspect the tire size–specification stamp on the inside of the rim (if present) and match it with the installed tire. Measure the rim diameter and match it with the designated tire rim size.

MOTORCYCLE DYNAMICS FORM

33. Tire Inflation Pressure, Post Crash

OECD Reference: None

Convention/Coding Source: OECD, Motorcycle Tire/Tyre Maintenance Guide⁽²⁰⁾

Element Attributes:

- (01) tire deflated during crash events
- (02) tire inflation within 15 percent of recommended pressure
- (03) tire inflation between 16 and 39 percent of recommended pressure
- (04) tire grossly underinflated, greater than 40 percent below recommended pressure
- (05) tire grossly overinflated, greater than 40 percent above recommended pressure
- (98) other (specify)
- (99) unknown

Range: 01–05, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

Tire inflation pressure is reported relative to the recommended tire pressure. Provide the best response that describes the investigator's comparison between the measured tire pressure and the proper tire pressure recommended by the manufacturer.

Using a tire pressure gauge, record the actual post-crash PSI for the front and rear tires. Calculate the inflation percentage by comparing the post-crash PSI to the manufacturer-recommended pressure.

MOTORCYCLE DYNAMICS FORM

34. Contributing Factor Related to Tire or Wheel

OECD Reference: None

Convention/Coding Source: Michelin North America, The Damage Seminar “101,”
Tire Damages Only⁽²¹⁾

Element Attributes:

- (00) no wheel or tire condition related to crash causation
- (01) tire mechanical failure caused loss of control
- (02) tire puncture/flat caused loss of control
- (03) tire beads unseated and caused loss of control
- (04) gross underinflation contributed to loss of tire traction and caused loss of control
- (05) gross overinflation caused loss of traction and caused loss of control
- (06) gross error of inflation contributed to stability problem and caused loss of control
- (07) wheel mechanical failure caused loss of control, including valve failure
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

These variables record the damage to the motorcycle tires that occurred during or precipitated the crash events. The objective of these variables is to identify post-crash damage aspects of the tire(s) to determine the potential loss of vehicle control. Be sure to photograph the damaged tire(s) so that the damage and potential failure are captured from several angles. In addition, annotate any pre-crash existing damage or uneven wear patterns on the tire(s).

MOTORCYCLE DYNAMICS FORM

35. Contributing Factor Related to Suspension Condition

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) suspension condition made no contribution to crash causation
- (01) deteriorated suspension caused control distress, limited collision avoidance
- (02) deteriorated suspension caused unstable dynamics, loss of control
- (97) not applicable, rigid suspension
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

These variables record the pre-crash degradation damage to the motorcycle suspension systems. The objective of these variables is to identify pre-crash damage aspects of the motorcycle suspension(s) to determine if the state of degradation resulted in precipitating the crash events.

MOTORCYCLE DYNAMICS FORM

36. Contributing Factor Related to Frame Condition

OECD Reference: None

Convention/Coding Source: Utah State University Department of Mechanical and Aerospace Engineering⁽²²⁾

Element Attributes:

- (00) no contribution
- (01) cracked or broken frame caused loss of control
- (02) loose motor-transmission mounting bolts or screws caused loss of control
- (03) deteriorated steering head bearings/steering stem caused loss of control
- (04) deteriorated rear swing arm bearings caused loss of control
- (05) general frame deterioration caused uncontrolled dynamic response
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source: Primary—vehicle inspection

Remarks: This variable is assigned by the investigator from the source.

These variables record the pre-crash degradation or deterioration to frame components. The objective of these variables is to identify any pre-crash damage or degradation aspects of the motorcycle frame to determine if the state of degradation or damage resulted in precipitating the crash events.

Thoroughly inspect frame solder joints for evidence of any pre-crash compromising and tubing for indications of torsion bending.

MOTORCYCLE DYNAMICS FORM

37. Contributing Factor Related to Cornering Clearance

OECD Reference: None

Convention/Coding Source: Contractor derived (DSI)

Element Attributes:

- (00) no contribution
- (01) exhaust system grounded out first
- (02) foot pegs, foot rests grounded out first
- (03) side stand not retracted, grounded out first
- (04) side stand retracted but grounded out first
- (05) center stand grounded out first
- (06) accessory or cargo limited ground clearance
- (07) passenger weight or extremities limited ground clearance
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source: Primary—vehicle inspection and scene inspection

Remarks: This variable is assigned by the investigator from the sources.

These variables record the actual component that initially contacted either the roadway surface or ground surface while the rider was negotiating a curve or involved in a turning maneuver.

Observe and document components that initially contacted the ground surface. Photograph and document surface scraping and abraded areas to components that likely contacted the surface prior to the collision or bike being laid down. Corresponding roadway surface gouge marks or scraping should be evident during the scene inspection. These initial roadway-surface or ground-surface marks will precede the collision or lay down roadway or ground marking.

MOTORCYCLE DYNAMICS FORM

38. Contributing Factor Related to the Seat

OECD Reference: None

Convention/Coding Source: Contractor derived (DSI)

Element Attributes:

- (00) no contribution
- (01) seat came loose, distracted rider
- (02) seat came loose, caused rider loss of control
- (03) seat-cover material slippery, caused rider displacement and loss of control
- (04) seat cover treated with slippery preservative, caused rider displacement and loss of control
- (05) seat cover and cushion severely deteriorated, caused rider displacement and loss of control
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source:

- Primary—vehicle inspection
- Secondary—rider/passenger interview

Remarks: This variable is assigned by the investigator from the sources.

These variables capture potential seat failures due to seat displacement and rider loss of control caused by slippery seat-cover material or a deteriorated seat-cover surface.

MOTORCYCLE DYNAMICS FORM

Page 1 of 2

39. Contributing Factor Related to the Drive-Chain, Belt, or Shaft Condition

OECD Reference: None

Convention/Coding Source: MSF, OECD, DSI, Contractor derived

Element Attributes:

- (00) no contribution
- (01) chain or belt broken or derailed, drive failure was crash related
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source:

- Primary—vehicle inspection and scene inspection
- Secondary—rider/passenger interview

Remarks: This variable is assigned by the investigator from the sources.

These variables capture pre-crash drivetrain failures that precipitated the crash events. Closely examine the motorcycle chain or belt and photograph (document) breaks or damage to these components. Shaft examination may be more difficult to thoroughly examine due to cover boots and shroud covers. A loose chain or belt drive will ultimately result in irregular wear patterns to the rear-wheel sprocket.

If a drive shaft, chain, or belt failure is suspected, it is likely to lock the rear tire, resulting in a rapid longitudinal skid pattern. Fully document the pre-crash skid patterns and use the rider/passenger interview information.

Drivetrain Problems (MSF)

The drivetrain for a motorcycle uses either a chain, belt, or drive shaft to transfer power from the engine to the rear wheel. Routine inspection, adjustment, and maintenance make failure a rare occurrence. A chain or belt that slips or breaks while someone is riding could lock the rear wheel and cause the motorcycle to skid.

If the chain or belt breaks, there will be a noticeable instant loss of power to the rear wheel. On models with a drive shaft, loss of oil in the rear differential can cause the rear wheel to lock, and a skid might not be preventable.

The following procedures may be used as a guide to determine the condition of the drive chain, belt, or shaft.

39. Contributing Factor Related to the Drive-Chain, Belt, or Shaft Condition (Continued)

Drive chain–tension measurement is accomplished by applying a force perpendicular to the lower chain at a point midway between the front and rear sprockets. A measurement should be made of the amount of travel experienced by the chain during this evaluation. If the travel of the chain is between 20 and 30 inches, the chain is considered loose. Evaluation of the drive-chain condition is accomplished by pulling on a single chain link located at the rearmost portion of the rear sprocket. Normal movement of more than three chain links indicates wear to the drive chain.

Drive-sprocket condition is evaluated by visual inspection of the front-sprocket teeth, rear-sprocket teeth, and drive line. Examination of the front-sprocket teeth is typically accomplished by removing the engine-sprocket cover and inspecting the engine-sprocket assembly. Note any indications of abnormal teeth wear that may have existed pre-crash. The rear sprocket can usually be inspected without removing any components from the motorcycle.

MOTORCYCLE DYNAMICS FORM

40. Contributing Factor Related to the Exhaust-System Condition

OECD Reference: None

Convention/Coding Source: Contractor derived (DSI)

Element Attributes:

- (00) no contribution
- (01) hot exhaust system caused contact burns
- (02) exhaust-system components involved in contact impact injury
- (03) hot exhaust-system components were fire ignition source
- (04) exhaust-system noise prevented motorcyclist from hearing critical traffic sounds
- (05) exhaust-system noise caused motorcyclist fatigue and inattention (as claimed by rider)
- (06) exhaust-system noise alerted other-vehicle driver of motorcycle presence, but could not avoid collision
- (97) not applicable, no exhaust system
- (98) other (specify)
- (99) unknown

Range: 00–06, 97–99

Source:

Primary—rider and passenger interviews

Secondary—medical reports, autopsies, police crash report, and witness accounts

Remarks: This variable is assigned by the investigator from the sources.

These variables capture any pre-crash conditions that may have precipitated the ensuing crash events and could be linked to the exhaust system. In addition, any injuries that can be linked to the exhaust system as a result of contact with that component while the vehicle is in a down position should be fully documented.

Unprotected leg contact with the exhaust pipes can result in severe third-degree burns. If leg contact with an exhaust pipe occurs, it could cause the rider to lose control of the vehicle resulting in a crash or lay down.

A loud exhaust system might also be the primary contributing factor in a crash occurrence. A loud exhaust system might mask or prevent the rider from hearing important traffic sounds and factors that could result in a crash.

41. Contributing Motorcycle-Vehicle Failure

OECD Reference: None

Convention/Coding Source: OECD, MSF

Element Attributes:

- (00) no contribution
- (01) tire or wheel failure
- (02) brake failure
- (03) steering failure
- (04) power-transmission failure
- (05) electrical failure
- (06) suspension failure
- (07) vehicle structural failure, other than suspension, tire, or wheel
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—vehicle inspection and scene inspection
- Secondary—rider and passenger interviews

Remarks: This variable is assigned by the investigator from the sources.

These variables capture any pre-crash mechanical conditions that may have precipitated the crash events and could be linked to the tires, braking system, steering components, transmission, electrical components, suspension structure, and any other components.

tire failure: Riding on tires with too little air pressure is dangerous. The tires will build excessive heat. This can cause a sudden tire failure that could lead to serious personal injury or death. Underinflation may also damage the tire and lead to tire failure, adversely affect vehicle cornering, reduce tire life, increase fuel consumption, and lead to fatigue cracking.

Riding on tires with too much air can be dangerous. The tires are more likely to be cut, punctured, or broken by sudden impact. Serious personal injury or death could result. Do not exceed the pressure indicated on the tire sidewall. Consult an owner’s manual for the recommended inflation and other tire information.

valve stems, cores, and caps: Old or damaged valve stems and cores may cause air loss.

41. Contributing Motorcycle-Vehicle Failure (Continued)

spotting damaged tires: After striking anything unusual in the roadway, a tire may not have visible signs of damage on the tire surface. Yet, the tire may suddenly fail without warning a day, a week, or even months later.

Inspect tires for cuts, cracks, splits, or bruises in the tread and sidewall areas. Bumps or bulges may indicate a separation within the tire body.

Inspect tires for adequate tread depth. When the tire is worn to the built-in indicators, at 1/32 of an inch (0.8 mm) or less of tread-groove depth, or the tire cord or fabric is exposed, the tire is dangerously worn and must be replaced immediately.

Inspect tires for uneven wear. Wear on one side of the tread or flat spots in the tread may indicate a problem with the tire or vehicle. Also inspect the rims, and note any aberrations, dents, or cracks on the rim surface.

minimum tread depth: Excessively worn tires are more susceptible to penetrations and road hazards. Riders should always remove a tire from service once the wear reaches the tread wear-indicator bars (indicating 1/32 of an inch of tread-groove depth) located in the grooves of the tire.

brake failure: If the friction surfaces are noted to have significant signs of wearing, they may be directly linked to precipitating the crash events. The braking system should be closely inspected for deterioration of the friction surfaces beyond the original design service limit and damage to the components of the braking operating system.

Also note pre-crash damage to brake-system components. Brake-system components may show clear signs of physical damage unrelated to this particular accident (e.g., cut cables).

See if the brakes show improper adjustment and if there is excessive play in the brakes (above standard design limitations). Severe adjustment problems should be noted. These situations will usually render the braking system inoperable (e.g., excessive play in the brake pedal or brake lever that causes it to bottom out prior to brake actuation).

Be aware of a brake system that appears to be inoperable due to sabotage or modifications that may have rendered the system inoperable.

41. Contributing Motorcycle-Vehicle Failure (Continued)

steering failure: Check for poorly adjusted steering; worn steering parts; a front wheel that is bent, misaligned, or out of balance; loose wheel bearings or spokes; and worn swing-arm bearings. A pre-existing steering component failure can contribute to or be the catalyst (precipitating event) that resulted in the crash occurrence.

Check the steering stem for indications of overtightening. If the handlebar does not begin to turn due to gravity, then the steering stem is overtightened.

Steering modifications like extended forks should be closely documented as they may have been contributing factors to the crash occurrence.

power-transmission failure: A sudden disruption in the transmission power could lead to a precipitating event that resulted in a crash event. Closely inspect the drive chain, belt, or shaft for any indications of sudden disruption of power.

Drive chain-tension measurement is accomplished by applying a force perpendicular to the lower chain at a point midway between the front and rear sprockets. The amount of travel experienced by the chain should be measured during this evaluation. If the travel of the chain is between 20 and 30 inches, the chain is considered loose. Evaluation of the drive-chain condition is accomplished by pulling on a single chain link located at the rearmost portion of the rear sprocket. Normal movement of more than three chain links indicates wear to the drive chain.

electrical failure: Thoroughly inspect the wiring harnesses for indications of pre-existing breakage or wear that might have disrupted the electrical contacts, resulting in a sudden loss of power. A pre-existing electrical failure may also result in a pre-crash fire scenario.

suspension failure: Thoroughly inspect the suspension components that might include a telescoping tube, leading-link types (single or double sided), articulated links (multiple links), a trailing link (single or double sided), springers, and girders for indications of pre-crash component failures that may have resulted in a precipitating event.

structural failure, other than suspension, tire, or wheel: The frame may have had a pre-existing defect at a weld point, or the tubing may have been fatigued through the course of operations and vibration. Any compromise in the frame structure may be a direct link to the precipitating event or crash occurrence.

MOTORCYCLE DYNAMICS FORM

42. Was a Pre-Crash Fire a Contributing Factor?

OECD Reference: None

Convention/Coding Source: Contractor derived (DSI)

Element Attributes:

- (00) no
- (01) yes
- (99) unknown

Range: 00, 01, 99

Source:

- Primary—vehicle inspection
- Secondary—rider interview

Remarks: This variable is assigned by the investigator from the sources.

This variable identifies situations where it can be determined that a pre-crash fire occurred and that the fire was the contributing factor to the crash occurrence.

no: This is used when there was no pre-crash fire.

yes: This is used when it can be determined that a pre-crash fire occurred and was a contributing factor in the crash occurrence.

unknown: This is used when it is known that a pre-crash fire occurred, but it cannot be determined that the fire was a contributing factor in the crash occurrence. This is also used when it is unknown if there was a pre-crash fire.

MOTORCYCLE DYNAMICS FORM

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43. Was the Cargo/Luggage a Contributing Factor?

OECD Reference: None

Convention/Coding Source: Contractor derived (DSI), *Motorcycle Cruiser Magazine*

Element Attributes:

- (00) no contribution
- (01) cargo/luggage came loose, caused rider loss of control
- (02) cargo/luggage interfered with controls, caused loss of control
- (03) cargo/luggage interfered with controls, prevented successful collision-avoidance action
- (04) cargo/luggage entrapped in rear suspension or wheel
- (05) cargo/luggage entrapped in front suspension or wheel
- (06) cargo/luggage against motor and exhaust system, heat damage or fire caused rider distraction
- (07) cargo/luggage container began to spill contents, distracted rider
- (97) not applicable, no cargo or luggage
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source: Primary—rider interview

Remarks: This variable is assigned by the investigator from the source.

This variable identifies situations where the critical factor leading to the collision involved cargo or luggage that interfered with the proper operation of the motorcycle.

no contribution: This is used when it is determined that the cargo or luggage was not a contributing factor in the precipitating the crash sequence.

cargo/luggage came loose, caused rider loss of control: This is used when it can be determined that cargo or luggage came loose or was dislodged and resulted in the rider losing control of the vehicle.

cargo/luggage interfered with controls, caused loss of control: This is used when the cargo or luggage became dislodged or straps came into contact with the motorcycle controls (e.g., hand brakes, turn signal, throttle, foot transmission shift, or foot brake) and is determined to have precipitated the crash events.

43. Was the Cargo/Luggage a Contributing Factor? (Continued)

cargo/luggage interfered with controls, prevented successful collision avoidance action:

This is used when it can be determined that the cargo or luggage inhibited the rider from applying a successful avoidance maneuver to avoid a collision. For example, a fuel tank–mounted luggage strap becomes entangled in the hand brake and handlebar and ultimately inhibits the rider from braking and steering.

cargo/luggage entrapped in rear suspension or wheel: This refers to a situation where the cargo or luggage item or the strap becomes dislodged and entrapped or lodged in the rear suspension or wheel. This incidence would have precipitated the crash event.

cargo/luggage against motor and exhaust system, heat damage or fire caused rider distraction: This refers to a situation where the cargo or luggage item came in contact with either the engine or exhaust components and resulted in damage or a fire. A fire or heat-induced damage to a cargo or luggage item precipitated a rider distraction that ultimately resulted in the loss of vehicle control.

cargo/luggage container began to spill contents, distracted rider: This is used when it can be determined that the cargo or luggage container opened during vehicle operation, and the contents began to spill or became dislodged. This situation resulted in a distraction that precipitated the crash event.

not applicable, no cargo or luggage: This is used when the motorcycle was not carrying any cargo or luggage items.

other (specify): This is used when it is known that cargo or luggage items precipitated the crash sequence, but none of the specified attributes are applicable.

unknown: This is used when it cannot be determined that the cargo or luggage items played a role in precipitating the crash event.

43. Was the Cargo/Luggage a Contributing Factor? (Continued)

Additional Information

For riders, mass centralization simply means keeping the mass as close to the motorcycle's center of gravity (CG) as possible. The CG is usually somewhere near the top of the transmission case. When riders start placing weight far from that point, they will feel repercussions in the handling response of the bike. A heavy tool bag strapped atop a sissy bar will have a measurable effect. A light sleeping bag, though it may be bulkier, will have a lesser effect. The ideal places to put heavy items so that their weight does not degrade handling are on top of the fuel tank or in a saddlebag (preferably low and toward the front). The next best location is on the seat close behind the rider. Racks, trunks, and the area up by the headlight are best reserved for lighter items, though a light but bulky object like a sleeping bag can make a good windbreak up front. Tank bags are not really suitable for cruisers with tank-top instruments. Even for those who are riding with people they trust and do not feel the need to consult the speedometer, there is still a need to see the warning lights. Riders should limit tank-top luggage on such bikes to miniature tank bags or a tank-divider strip with a pocket.

There are many load limits for bikes and gear; these reflect the concern of motorcycle and luggage makers about the potential dangers of overloading or incorrect load placement. The owner's manual and the VIN plate both list the gross vehicle weight rating (GVWR) and the maximum total weight of the bike, fluids, riders, and luggage that the manufacturer recommends. There is also a gross axle weight rating (GAWR) for front and rear wheels. Spec charts can help motorcyclists determine if they are close to these. The charts list total vehicle wet weight and the percent of that figure that rests on the rear wheel. Although anything added will fall on both axles, more will rest on the axle to which it is closest. A passenger sitting far back on the seat will be carried almost entirely by the rear suspension. A tank bag will be split fairly evenly.

Soft saddlebags often shift or sag and touch the pipe even though they seem to be safely above the pipe when they are originally installed. Besides the fire danger, contact with exhaust pipes will destroy the bag and, if they are synthetic bags, leave an almost impervious blob of melted plastic on the pipe. Even with leather bags, the contents might catch fire. On cruisers with the exhaust system on one side, riders may have to hang the bags unevenly to keep them out of harm's way.

Drive chains are another possible danger point. Remember that the bag comes closer to a chain or belt as the suspension compresses. Inspectors should make sure there is still some space between the bag and the chain, even with the rear suspension fully compressed. If there are straps or fringe on the bag, make sure neither could get caught in the chain or belt, which could cause a very sudden and unexpected stop when the bag is pulled into the chain or belt.

INJURY FORM

Case Number

OECD Reference: None

Convention/Coding Source: Case number chart

Range: 0001–2000

Source: Primary—case assignment chart

Remarks: This variable is assigned by the investigator from the source.

INJURY FORM

Motorcycle or Motor-Vehicle Number

OECD Reference: None

Convention/Coding Source: None

Element Attributes: Vehicle number

Range: 0–2

Source: Primary—Crash Form and Other Vehicle Form

Remarks: This variable is assigned by the investigator from the sources.

For each crash, there will be one crash motorcycle; if the crash is a multivehicle crash, additional vehicles and motorcycles may be involved. Assign the number as determined on the Crash Form.

INJURY FORM

Rider/Occupant Number

OECD Reference: None

Convention/Coding Source: None

Element Attributes: Person number

Range: 0–7

Source: Primary—motorcycle rider, motorcycle passenger, other-vehicle driver, and other-vehicle passenger

Remarks: This variable is assigned by the investigator from the sources.

INJURY FORM

1, 16, 31, ..., 136. Source of Injury Data

OECD Reference: None

Convention/Coding Source: None

Element Attributes:

Official Records

- (1) autopsy records with or without hospital/medical records
- (2) hospital/medical records other than emergency room (e.g., discharge summary)
- (3) emergency room records only (including associated X-rays or other laboratory reports)
- (4) private physician, walk-in, or emergency clinic

Unofficial Records

- (5) lay coroner report
- (6) EMS personnel
- (7) interviewee
- (8) other source (specify)
- (9) police

Range: 1–9

Source: None

Remarks: This variable is assigned by investigator.

INJURY FORM

2, 17, 32., 137. Body Region

OECD Reference: None

Convention/Coding Source: None

Element Attributes:

- (0) other trauma
- (1) head
- (2) face
- (3) neck
- (4) thorax
- (5) abdomen
- (6) spine
- (7) upper extremity
- (8) lower extremity
- (9) external (skin) and thermal

Range: 0–9

Source: Primary—medical records, police reports, and occupant interview

Remarks: This variable is assigned by investigator from the sources.

INJURY FORM

3, 18, 33, ..., 138. Type of Anatomical Structure

OECD Reference: None

Convention/Coding Source: None

Element Attributes

- (0) whole area NFS
- (1) skin
- (2) vessels
- (3) nerves
- (4) organs, including muscles, ligaments, and tendons
- (5) skeletal
- (6) head, concussive injury
- (7) joints

Range: 0–7

Source: Primary—Abbreviated Injury Scale© 2005 Update 2008 is available from the Association for the Advancement of Automotive Medicine

Remarks: This variable is assigned by the investigator from the source.

INJURY FORM

4, 19, 34, ..., 138. Specific Anatomical Structure

OECD Reference: None

Convention/Coding Source: AIS© 2005 Update 2008

Range: Various

Source: Primary—Abbreviated Injury Scale© 2005 Update 2008 is available from the Association for the Advancement of Automotive Medicine

Remarks: This variable is assigned by the investigator from the source.

INJURY FORM

5, 20, 35, ..., 139. Level of Injury

OECD Reference: None

Convention/Coding Source: AIS© 2005 Update 2008

Source: Primary—Abbreviated Injury Scale© 2005 Update 2008 is available from the Association for the Advancement of Automotive Medicine

Remarks: This variable is assigned by the investigator from the source.

INJURY FORM

6, 21, 36, ..., 140. Severity

OECD Reference: None

Convention/Coding Source: AIS© 2005 Update 2008

Element Attributes:

- (1) minor injury
- (2) moderate injury
- (3) serious injury
- (4) severe injury
- (5) critical injury
- (6) maximum (untreatable)
- (9) injured, unknown severity

Range: 1–6, 9

Source: Primary—Abbreviated Injury Scale© 2005 Update 2008 is available from the Association for the Advancement of Automotive Medicine

Remarks: This variable is assigned by the investigator from the source.

INJURY FORM

7, 22, 37, ..., 141. Localizer 1

OECD Reference: None

Convention/Coding Source: AIS© 2005 Update 2008

Range: Various

Source: Primary—Abbreviated Injury Scale© 2005 Update 2008 is available from the Association for the Advancement of Automotive Medicine

Remarks: This variable is assigned by the investigator from the source.

INJURY FORM

8, 23, 38, ..., 143. Localizer 2

OECD Reference: None

Convention/Coding Source: AIS© 2005 Update 2008

Range: Various

Source: Primary—Abbreviated Injury Scale© 2005 Update 2008 is available from the Association for the Advancement of Automotive Medicine

Remarks: This variable is assigned by the investigator from the source.

INJURY FORM

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9, 24, 39, ..., 144. 1st Injury Source

OECD Reference: None

Convention/Coding Source: None

Element Attributes: Motor vehicle (MV)

Front

- (001) windshield
- (002) mirror
- (003) sun visor
- (004) steering-wheel rim
- (005) steering-wheel hub/spoke
- (006) steering wheel (combination of codes 004 and 005)
- (007) steering column, transmission selector lever, or other attachment
- (008) cellular telephone or CB radio
- (009) add-on equipment (e.g., tape deck and air conditioner)
- (010) left instrument panel and below
- (011) center instrument panel and below
- (012) right instrument panel and below
- (013) glove-compartment door
- (014) knee bolster
- (015) windshield, including one or more of the following: front header, A (A1/A2)-pillar, instrument panel, mirror, or steering assembly (driver side only)
- (016) windshield, including one or more of the following: front header, A (A1/A2)-pillar, instrument panel, or mirror (passenger side only)
- (017) windshield, reinforced by exterior object (specify)
- (019) other front object (specify)

MV Left Side

- (051) left-side interior surface, excluding hardware or armrests
- (052) left-side hardware or armrest
- (053) left A (A1/A2)-pillar
- (054) left B-pillar
- (055) other left pillar (specify)
- (056) left-side window glass

INJURY FORM

Page 2 of 6

9, 24, 39, ..., 144. 1st Injury Source (Continued)

- (057) left-side window frame
- (058) left-side window sill
- (059) left-side window glass, including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail
- (060) other left-side object (specify)

MV Right Side

- (101) right-side interior surface, excluding hardware or armrests
- (102) right-side hardware or armrest
- (103) right A (A1/A2)-pillar
- (104) right B-pillar
- (105) other right pillar (specify)
- (106) right-side window glass
- (107) right-side window frame
- (108) right-side window sill
- (109) right-side window glass, including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail
- (110) other right-side object (specify)

MV Interior

- (151) seat, back support
- (152) belt-restraint webbing/buckle
- (153) belt-restraint B-pillar or doorframe attachment point
- (154) other restraint-system component (specify)
- (155) head-restraint system
- (160) other occupants (specify)
- (161) interior loose objects
- (162) child-safety seat (specify)
- (163) other interior object (specify)

MV Airbag

- (170) airbag (driver side)
- (171) airbag (driver side) and eyewear
- (172) airbag (driver side) and jewelry
- (173) airbag (driver side) and object held
- (174) airbag (driver side) and object in mouth
- (175) airbag-compartment cover (driver side)
- (176) airbag-compartment cover (driver side) and eyewear
- (177) airbag-compartment cover (driver side) and jewelry
- (178) airbag-compartment cover (driver side) and object held
- (179) airbag-compartment cover (driver side) and object in mouth

INJURY FORM

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9, 24, 39, ..., 144. 1st Injury Source (Continued)

- (180) airbag (passenger side)
- (181) airbag (passenger side) and eyewear
- (182) airbag (passenger side) and jewelry
- (183) airbag (passenger side) and object held
- (184) airbag (passenger side) and object in mouth
- (185) airbag-compartment cover (passenger side)
- (186) airbag-compartment cover (passenger side) and eyewear
- (187) airbag-compartment cover (passenger side) and jewelry
- (188) airbag-compartment cover (passenger side) and object held
- (189) airbag-compartment cover (passenger side) and object in mouth
- (190) other airbag (specify)
- (195) other airbag-compartment cover (specify)

MV Roof

- (201) front header
- (202) rear header
- (203) roof left-side rail
- (204) roof right-side rail
- (205) roof or convertible top

MV Floor

- (251) floor (including toe pan)
- (252) floor- or console-mounted transmission lever (including console)
- (253) parking-brake handle
- (254) foot controls (including parking brake)

MV Rear

- (301) backlight (rear window)
- (302) backlight storage rack, door, etc.
- (303) other rear object (specify)

MV Adaptive (Assistive) Driving Equipment

- (401) hand controls for braking/acceleration
- (402) steering-control devices (attached to OEM steering wheel)
- (403) steering knob attached to steering wheel
- (404) replacement steering wheel (e.g., reduced diameter)
- (405) joystick steering controls
- (406) wheelchair tie-downs
- (407) modification to seat belts (specify)

INJURY FORM

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9, 24, 39, ..., 144. 1st Injury Source (Continued)

Exterior of Other MV

- (501) front bumper
- (502) hood edge
- (503) other front of vehicle (specify)
- (504) hood
- (505) hood ornament
- (506) windshield, roof rail, A (A1/A2)-pillar
- (507) side surface
- (508) side mirrors
- (509) other side protrusions (specify)
- (510) rear surface
- (511) undercarriage
- (512) tires and wheels
- (513) other exterior of other motor vehicle (specify)
- (514) unknown exterior of other motor vehicle

Other Vehicle or Object in the Environment

- (551) ground
- (552) utility pole
- (553) building
- (554) guardrail
- (555) tree
- (598) other vehicle or object (specify)
- (599) unknown vehicle or object

Noncontact Injury

- (601) fire in vehicle
- (602) flying glass
- (603) other noncontact injury source (specify)
- (604) airbag exhaust gases
- (697) injured, unknown source

Injury Source Motorcycle

- (701) front crash bars
- (702) rear crash bars
- (703) engine guard
- (704) windscreen
- (705) fairing
- (706) headlamps
- (707) front reflector
- (708) front turn signals

INJURY FORM

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9, 24, 39, ..., 144. 1st Injury Source (Continued)

- (709) instrument panel
- (710) GPS/navigation system
- (711) entertainment/radio/CD controls
- (712) cruise control
- (713) ignition/power control
- (714) intercom/two-way radio control
- (715) handlebar
- (716) throttle
- (717) clutch lever
- (718) brake lever
- (719) right-side rearview mirrors, posts
- (720) left-side rearview mirrors, posts
- (721) front suspension
- (722) front tire/wheel
- (723) front fender
- (724) front brakes
- (725) seat
- (726) sissy bar/passenger backrest
- (727) side reflectors
- (728) frame
- (729) grab rails/handholds
- (730) armrests
- (731) fuel tank
- (732) auxiliary fuel tank
- (733) radiator
- (734) battery, battery box
- (735) rear brake pedal
- (736) shift lever
- (737) foot pegs, footrests
- (738) highway pegs/footrests
- (739) side stand
- (740) center stand
- (741) muffler/exhaust system
- (742) drive chain/belt
- (743) drive shaft
- (744) tank bag
- (745) luggage/cargo rack
- (746) parcel rack
- (747) saddlebags
- (748) rear-position lamps
- (749) stop lamp

INJURY FORM

Page 6 of 6

9, 24, 39, ..., 144. 1st Injury Source (Continued)

- (750) rear reflectors
- (751) rear turn signals
- (752) rear tire/wheel
- (753) rear fender
- (754) rear brakes
- (755) tools, toolbox
- (756) cupholder
- (757) side covers
- (758) trailer
- (759) sidecar
- (798) other motorcycle component (specify)
- (799) unknown motorcycle component

Other

- (996) helmet
- (997) not applicable
- (998) other (specify)
- (999) unknown injury source

Range: 001–017, 019, 051–060, 101–110, 151–155, 160–163, 170–190, 195, 201–205, 251–254, 301–303, 401–407, 501–514, 551–555, 598, 599, 601–604, 697, 701–759, 798, 799, 996–999

Source: Primary—motorcycle rider, motorcycle passenger, other-vehicle driver, and other-vehicle passenger

Remarks: This variable is assigned by the investigator from the sources.

INJURY FORM

Page 1 of 6

10, 25, 40, ..., 145. 2nd Injury Source

OECD Reference: None

Convention/Coding Source: None

Element Attributes: Motor vehicle (MV)

Front

- (001) windshield
- (002) mirror
- (003) sun visor
- (004) steering-wheel rim
- (005) steering-wheel hub/spoke
- (006) steering wheel (combination of codes 004 and 005)
- (007) steering column, transmission selector lever, other attachment
- (008) cellular telephone or CB radio
- (009) add-on equipment (e.g., tape deck and air conditioner)
- (010) left instrument panel and below
- (011) center instrument panel and below
- (012) right instrument panel and below
- (013) glove-compartment door
- (014) knee bolster
- (015) windshield, including one or more of the following: front header, A (A1/A2)-pillar, instrument panel, mirror, or steering assembly (driver side only)
- (016) windshield, including one or more of the following: front header, A (A1/A2)-pillar, instrument panel, or mirror (passenger side only)
- (017) windshield, reinforced by exterior object (specify)
- (019) other front object (specify)

MV Left Side

- (051) left-side interior surface, excluding hardware or armrests
- (052) left-side hardware or armrest
- (053) left A (A1/A2)-pillar
- (054) left B-pillar
- (055) other left pillar (specify)
- (056) left-side window glass
- (057) left-side window frame
- (058) left-side window sill
- (059) left-side window glass, including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail
- (060) other left-side object (specify)

INJURY FORM

Page 2 of 6

10, 25, 40, ..., 145. 2nd Injury Source (Continued)

MV Right Side

- (101) right-side interior surface, excluding hardware or armrests
- (102) right-side hardware or armrest
- (103) right A (A1/A2)-pillar
- (104) right B-pillar
- (105) other right pillar (specify)
- (106) right-side window glass
- (107) right-side window frame
- (108) right-side window sill
- (109) right-side window glass, including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail
- (110) other right-side object (specify)

MV Interior

- (151) seat, back support
- (152) belt-restraint webbing/buckle
- (153) belt-restraint B-pillar or doorframe attachment point
- (154) other restraint-system component (specify)
- (155) head restraint system
- (160) other occupants (specify)
- (161) interior loose objects
- (162) child-safety seat (specify)
- (163) other interior object (specify)

MV Airbag

- (170) airbag (driver side)
- (171) airbag (driver side) and eyewear
- (172) airbag (driver side) and jewelry
- (173) airbag (driver side) and object held
- (174) airbag (driver side) and object in mouth
- (175) airbag-compartment cover (driver side)
- (176) airbag-compartment cover (driver side) and eyewear
- (177) airbag-compartment cover (driver side) and jewelry
- (178) airbag-compartment cover (driver side) and object held
- (179) airbag-compartment cover (driver side) and object in mouth
- (180) airbag (passenger side)
- (181) airbag (passenger side) and eyewear
- (182) airbag (passenger side) and jewelry
- (183) airbag (passenger side) and object held
- (184) airbag (passenger side) and object in mouth
- (185) airbag-compartment cover (passenger side)

INJURY FORM

Page 3 of 6

10, 25, 40, ..., 145. 2nd Injury Source (Continued)

- (186) airbag-compartment cover (passenger side) and eyewear
- (187) airbag-compartment cover (passenger side) and jewelry
- (188) airbag-compartment cover (passenger side) and object held
- (189) airbag-compartment cover (passenger side) and object in mouth
- (190) other airbag (specify)
- (195) other airbag-compartment cover (specify)

MV Roof

- (201) front header
- (202) rear header
- (203) roof left-side rail
- (204) roof right-side rail
- (205) roof or convertible top

MV Floor

- (251) floor, including toe pan
- (252) floor- or console-mounted transmission lever, including console
- (253) parking-brake handle
- (254) foot controls, including parking brake

MV Rear

- (301) backlight (rear window)
- (302) backlight storage rack, door, etc.
- (303) other rear object (specify)

MV Adaptive (Assistive) Driving Equipment

- (401) hand controls for braking/acceleration
- (402) steering-control devices (attached to OEM steering wheel)
- (403) steering knob attached to steering wheel
- (404) replacement steering wheel (e.g., reduced diameter)
- (405) joystick steering controls
- (406) wheelchair tie-downs
- (407) modification to seat belts (specify)

Exterior of Other MV

- (501) front bumper
- (502) hood edge
- (503) other front of vehicle (specify)
- (504) hood
- (505) hood ornament
- (506) windshield, roof rail, A (A1/A2)-pillar

INJURY FORM

Page 4 of 6

10, 25, 40, ..., 145. 2nd Injury Source (Continued)

- (507) side surface
- (508) side mirrors
- (509) other side protrusions (specify)
- (510) rear surface
- (511) undercarriage
- (512) tires and wheels
- (513) other exterior of other motor vehicle (specify)
- (514) unknown exterior of other motor vehicle

Other Vehicle or Object in the Environment

- (551) ground
- (552) utility pole
- (553) building
- (554) guardrail
- (555) tree
- (598) other vehicle or object (specify)
- (599) unknown vehicle or object

Noncontact Injury

- (601) fire in vehicle
- (602) flying glass
- (603) other noncontact injury source (specify)
- (604) airbag exhaust gases
- (697) injured, unknown source

Injury Source Motorcycle

- (701) front crash bars
- (702) rear crash bars
- (703) engine guard
- (704) windscreen
- (705) fairing
- (706) headlamps
- (707) front reflector
- (708) front turn signals
- (709) instrument panel
- (710) GPS/navigation system
- (711) entertainment/radio/CD controls
- (712) cruise control
- (713) ignition/power control
- (714) intercom/two-way radio control
- (715) handlebar

INJURY FORM

Page 5 of 6

10, 25, 40, ..., 145. 2nd Injury Source (Continued)

- (716) throttle
- (717) clutch lever
- (718) brake lever
- (719) right-side rearview mirrors, posts
- (720) left-side rearview mirrors, posts
- (721) front suspension
- (722) front tire/wheel
- (723) front fender
- (724) front brakes
- (725) seat
- (726) sissy bar/passenger backrest
- (727) side reflectors
- (728) frame
- (729) grab rails/handholds
- (730) armrests
- (731) fuel tank
- (732) auxiliary fuel tank
- (733) radiator
- (734) battery, battery box
- (735) rear brake pedal
- (736) shift lever
- (737) foot pegs, footrests
- (738) highway pegs/footrests
- (739) side stand
- (740) center stand
- (741) muffler/exhaust system
- (742) drive chain/belt
- (743) drive shaft
- (744) tank bag
- (745) luggage/cargo rack
- (746) parcel rack
- (747) saddlebags
- (748) rear-position lamps
- (749) stop lamp
- (750) rear reflectors
- (751) rear turn signals
- (752) rear tire/wheel
- (753) rear fender
- (754) rear brakes
- (755) tools, toolbox
- (756) cupholder

INJURY FORM

Page 6 of 6

10, 25, 40, ..., 145. 2nd Injury Source (Continued)

- (757) side covers
- (758) trailer
- (759) sidecar
- (798) other motorcycle component (specify)
- (799) unknown motorcycle component

Other

- (996) helmet
- (997) not applicable
- (998) other (specify)
- (999) unknown injury source

Range: 001–017, 019, 051–060, 101–110, 151–155, 160–163, 170–190, 195, 201–205, 251–254, 301–303, 401–407, 501–514, 551–555, 598, 599, 601–604, 697, 701–759, 798, 799, 996–999

Source: Primary—motorcycle rider, motorcycle passenger, other-vehicle driver, and other-vehicle passenger

Remarks: This variable is assigned by the investigator from the sources.

INJURY FORM

11, 26, 40, ..., 145. Injury Source Confidence Level 1

OECD Reference: None

Convention/Coding Source: None

Element Attributes:

- (1) certain
- (2) probable
- (3) possible
- (9) unknown

Range: 1–3, 9

Source: None

Remarks: This variable is assigned by the investigator.

INJURY FORM

12, 27, 42, ..., 147. Injury Source Confidence Level 2

OECD Reference: None

Convention/Coding Source: None

Element Attributes:

- (1) certain
- (2) probable
- (3) possible
- (9) unknown

Range: 1–3, 9

Source: None

Remarks: This variable is assigned by the investigator.

INJURY FORM

13, 28, 43, ..., 148. Occupant Direct/Indirect Injury

OECD Reference: None

Convention/Coding Source: None

Element Attributes:

- (1) direct-contact injury
- (2) indirect-contact injury
- (3) noncontact injury
- (7) injured, unknown source

Range: 1–3, 7

Source: Primary—motorcycle rider, motorcycle passenger, other-vehicle driver, and other-vehicle passenger

Remarks: This variable is assigned by the investigator.

INJURY FORM

14, 29, 44, ..., 149. FCI

OECD Reference: None

Convention/Coding Source: Functional Capacity Index (FCI)

Element Attributes: None

Range: Various

Source: Primary—FCI codes can be found in the Abbreviated Injury Scale© 2005 Update 2008, which is available from the Association for the Advancement of Automotive Medicine

Remarks: This variable is assigned by the investigator from the source.

INJURY FORM

15, 30, 45, ..., 156. ICD-9

OECD Reference: None

Convention/Coding Source: International Classification of Diseases, Version 9⁽²³⁾

Element Attributes: None

Range: Various

Source: Primary—International Classification of Diseases, Version 9 and the International Classification of Diseases, Clinical Modification⁽²³⁾

Remarks: This variable is assigned by the investigator from the source.

INJURY FORM

157. Injury Severity Score

OECD Reference: None

Convention/Coding Source: Injury Severity Score

Element Attributes:

00–98 ISS

99 unknown

Range: 00–99

Source: None

Remarks: This variable is calculated by the investigator. The Injury Severity Score (ISS) is determined by using the ISS worksheet in the Injury Form. The sum of the maximum AIS© severity score squared for the three worst-injured body regions equals the ISS.

INJURY FORM

158. Trauma Status

OECD Reference: None

Convention/Coding Source: None

Element Attributes:

- (00) no medical aid sought
- (01) first aid at scene only
- (02) treated at hospital/clinic and released
- (03) hospitalized (code number of days in # 159)
- (04) disabled, institutionalized
- (05) fatal, dead on scene
- (06) fatal, dead on arrival at hospital
- (07) fatal, other (code number of days until death in # 160)
- (08) treated at scene and transported to hospital, not further specified (NFS)
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source: Primary—autopsy reports, medical records, police accident reports, and interviews

Remarks: This variable is assigned by the investigator from the sources.

INJURY FORM

159. Number of Days of Hospital Admission

OECD Reference: None

Convention/Coding Source: None

Element Attributes:

(00)	not hospitalized
(01–95)	actual number of days
(96)	96 days or more
(98)	other (specify)
(99)	unknown

Range: 00–96, 98, 99

Source: Primary—autopsy reports, medical records, and interviews

Remarks: This variable is assigned by the investigator from the sources.

INJURY FORM

160. Death Within How Many Days?

OECD Reference: None

Convention/Coding Source: None

Element Attributes:

(00)	not fatal
(01–30)	actual number of days
(98)	other (specify)
(99)	unknown

Range: 00–30, 98, 99

Source: Primary—autopsy reports, medical records, police accident reports, and interviews

Remarks: This variable is assigned by the investigator from the sources.

The U.S. Department of Transportation defines traffic-related deaths as occurring within 30 days of a crash.

OTHER VEHICLE DRIVER FORM

Case Number

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes: Case number

Range: 0001–2000

Source: Primary—case assignment chart

Remarks: This variable is assigned by the investigator from the source.

OTHER VEHICLE DRIVER FORM

Other-Vehicle Number

OECD Reference: A.4.3.1

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes: Vehicle number

Range: 001–010

Source:

Primary—police crash report and on scene investigation

Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

If there is only one motorcycle involved, then this is assigned “MC 1.” If more than one motorcycle is involved, then the motorcycle of interest is assigned “MC 1” by the investigator. The other motorcycles are considered other vehicles for the particular case investigation.

Each in-transport motor vehicle is assigned a unique number. After the motorcycles involved in the crash are assigned a number (as either the case vehicle or other vehicles), vehicle numbers are assigned consecutively according to the order in which the vehicles are listed on the police crash report, except in the following circumstances: if there are any in-transport vehicles not listed on the police crash report, then use the next consecutive number; or if there are any not-in-transport vehicles that are struck by an in-transport vehicle, then treat them as fixed objects (i.e., parked car).

An example is when the police crash report stated that Vehicle 3, a Honda motorcycle, struck Vehicle 2, a Chevrolet Impala, and the Impala rebounded into vehicle 1, a legally parked Toyota Corolla. In this case, the Honda motorcycle is MC 1, the Impala is OV 1, and the Toyota Corolla is a fixed object.

OTHER VEHICLE DRIVER FORM

Page 1 of 4

1. How Were You Operating Your Motor Vehicle/Motorcycle Immediately Prior to the Crash?

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) stopped in traffic, speed is zero
- (01) moving in a straight line, constant speed
- (02) moving in a straight line, foot off accelerator/throttle
- (03) moving in a straight line, braking
- (04) moving in a straight line, accelerating
- (05) turning right, constant speed
- (06) turning right, foot off accelerator/throttle
- (07) turning right, braking
- (08) turning right, accelerating
- (09) turning left, constant speed
- (10) turning left, foot off accelerator/throttle
- (11) turning left, braking
- (12) turning left, accelerating
- (13) stopped at roadside or parked
- (14) backing up in a straight line
- (15) backing up, steering left
- (16) backing up, steering right
- (17) making U-turn, right
- (18) making U-turn, left
- (19) making Y-turn, right
- (20) making Y-turn, left
- (21) changing lanes to left
- (22) changing lanes to right
- (23) merging to left
- (24) merging to right
- (25) entering traffic from right shoulder, median, or parked
- (26) entering traffic from left shoulder, median, or parked
- (27) leaving traffic, turn out to right
- (28) leaving traffic, turn out to left
- (29) passing maneuver, passing on right
- (30) passing maneuver, passing on left

OTHER VEHICLE DRIVER FORM

Page 2 of 4

1. How Were You Operating Your Motor Vehicle/Motorcycle Immediately Prior to the Crash? (Continued)

- (31) crossing opposing lanes of traffic
- (32) traveling wrong way, against opposing traffic
- (33) stripe riding, filtering forward between lanes, longitudinal motion only
- (34) filtering forward between lanes, lateral motion only
- (35) filtering forward between lanes, both longitudinal and lateral motions
- (36) collision-avoidance maneuver to avoid a different collision
- (37) negotiating a curve, constant speed
- (38) negotiating a curve, foot off accelerator/throttle
- (39) negotiating a curve, braking
- (40) negotiating a curve, accelerating
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–40, 97–99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the attribute that best describes this vehicle's activity prior to the rider's/driver's realization of an impending critical event or just prior to the precipitating event. For instance, if the precipitating event is a mechanical failure, these variables are intended to capture the movement or activity of the motorcycle/motor vehicle just prior to the mechanical failure or precipitating event. A precipitating event is the failure or maneuver that immediately led to the crash.

stopped in traffic, speed is zero: This is selected when this motorcycle/vehicle was stopped momentarily within the traffic lane (e.g., stopped for traffic signal) with the motor running.

moving in a straight line: This is selected when this motorcycle's/vehicle's path of travel was straight ahead without any attempted or intended changes.

turning right: This is selected when this motorcycle/vehicle was moving forward and turned right, changing lanes from one roadway to a different roadway (e.g., from or to a driveway, parking lot, or intersection).

OTHER VEHICLE DRIVER FORM

Page 3 of 4

1. How Were You Operating Your Motor Vehicle/Motorcycle Immediately Prior to the Crash? (Continued)

turning left: This is selected when this motorcycle/vehicle was moving forward and turned left, changing lanes from one roadway to a different roadway (e.g., from or to a driveway, parking lot, or intersection).

backing up (other than for parking position): This is selected when this motorcycle/vehicle was traveling backward within the trafficway. Do not use this attribute if the vehicle was backing into a parking space (see “entering a parking position”).

making a U-turn: This is selected when this motorcycle/vehicle was making a U-turn on the trafficway.

making a Y-turn: This is a three-point turn maneuver that is commonly used to change directions.

changing lanes: This is selected when this motorcycle/vehicle was traveling straight ahead and changed travel lanes to the right or left while on the same roadway.

merging: This is selected when this motorcycle/vehicle was moving forward and merging from the left or right into a traffic lane (e.g., roadway narrows, exit/entrance ramps).

entering a parking position: This is selected when this motorcycle/vehicle was leaving the travel lane and moved into a parking area adjacent to the traffic lanes (i.e., in the process of parking).

leaving traffic: This is selected when this motorcycle/vehicle was leaving the roadway by turning out to the right or left from the traffic lanes.

passing maneuver: This is selected when this motorcycle/vehicle was traveling straight ahead and was in the process of passing another vehicle on the left or right.

stripe riding, filtering forward between lanes, longitudinal motion only: This is filtering forward between lanes, using a lateral (i.e., longitudinal) motion only. It is selected when the motorcycle was in the process of passing other vehicles on the left and right of the motorcycle.

OTHER VEHICLE DRIVER FORM

Page 4 of 4

1. How Were You Operating Your Motor Vehicle/Motorcycle Immediately Prior to the Crash? (Continued)

filtering forward between lanes, both longitudinal and lateral motions: This is selected when the motorcycle was traveling between two vehicles and was in the process of passing other vehicles on the left and right of the motorcycle (i.e., splitting lanes/riding on or near the lane line that separates travel lanes). This maneuver is legal in California. California law allows for motorcycles to split lanes only under certain conditions. First, it is not legal to lane split on the outside lanes with a solid white or yellow line; it is only legal where there is a broken white line. Second, traffic has to be at a stop or close to a stop, and the cyclist can only travel 10 to 15 mph faster than the traffic they are passing.

negotiating a curve: This is selected when this motorcycle/vehicle was continuing along a roadway that curved to the right or left.

other (specify): This is used when this motorcycle's/vehicle's pre-crash movement is known, but none of the specified attributes are applicable.

unknown: This is used when the motorcycle's/vehicle's pre-crash movement prior to the driver's realization of an impending critical event is unknown.

OTHER VEHICLE DRIVER FORM

2. Where Were You Looking Prior to the Start of the Crash Sequence?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) looking straight ahead
- (02) looking right
- (03) looking left
- (04) looking rearward
- (05) looking at own motorcycle
- (06) scanning, not further specified
- (98) other (specify)
- (99) unknown

Range: 01–06, 98, 99

Source:

- Primary— rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the attribute that best describes where the rider/driver was looking at the start of the crash sequence.

other (specify): This is used when the rider/driver is looking somewhere, but none of the specified attributes are applicable.

unknown: This is used when the investigator does not know where the rider/driver was looking at the start of the crash sequence.

OTHER VEHICLE DRIVER FORM

3. In Which Lane Were You Traveling Just Before the Precipitating Event?

OECD Reference: None

Convention/Coding Source: OECD

Element Attributes:

- (01) lane one (right curb lane)
- (02) lane two
- (03) lane three
- (04) lane four
- (05) designated right-turn lane(s)
- (06) designated left-turn lane(s)
- (07) lane splitting
- (08) wrong way in opposing lanes
- (97) not applicable, not in a travel lane
- (98) other (specify)
- (99) unknown

Range: 01–08, 97–99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The lane of travel for any vehicle is determined using a numbering system that considers the lane closest to the curb or roadway edge to be the number one lane. Each lane is then sequentially numbered from this initial lane designation.

OTHER VEHICLE DRIVER FORM

4. What Was Your Travel Speed Just Before the Precipitating Event?

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(00)	stopped
(01–95)	actual miles per hour
(96)	96 mph or greater
(98)	other (specify)
(99)	unknown

Range: 00–96, 98, 99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Enter the travel speed for this motorcycle/motor vehicle if it can be determined through all sources available. Enter the nearest mile-per-hour measurement, or if the travel speed is reported as a range, enter the average.

00 mph: This is entered if this vehicle is stopped or indicated by the police as traveling less than 0.5 mph.

unknown: This is selected if the estimated travel speed is unknown.

OTHER VEHICLE DRIVER FORM

Page 1 of 2

5. What Collision-Avoidance Actions Were You Taking (If Any)? (Code up to Three)

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) no avoidance actions
- (01) braking
- (02) steering
- (03) braking and steering
- (04) accelerating
- (05) steering and accelerating
- (06) releasing brakes
- (07) honked horn
- (08) flashing headlamps
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the attributes (up to three) that best describe what collision-avoidance actions were taken prior to the crash. This refers to attempted avoidance actions taken by the rider/driver within a critical crash envelope in response to a critical pre-crash event. Attempted avoidance actions occur after the rider/driver realizes an impending danger. This variable determines what the rider's/driver's actions were, if any, in response to his/her realization.

Most crashes have only one critical crash envelope and, thus, only one critical pre-crash event; however, multiple critical crash envelopes with their respective critical pre-crash events can exist.

This variable may be used independently of (1) any actions associated with this rider's/driver's crash type and (2) this motorcycle's/vehicle's first associated crash event.

OTHER VEHICLE DRIVER FORM

Page 2 of 2

5. What Collision Avoidance Actions Were You Taking (If Any)? (Continued)

Select the element value that best describes the action(s) taken by the rider/driver in response to the critical pre-crash event within the critical crash envelope that occurred just prior to this motorcycle's/vehicle's impact. When there was a known action (e.g., braking), but it cannot be determined whether there was more than one action (e.g., braking and steering left), default to the known action (e.g., braking).

no avoidance actions: This is selected whenever the rider/driver did not attempt any evasive (pre-impact) action.

other (specify): This is used when the rider/driver has taken collision-avoidance action(s), but none of the specified attributes are applicable.

unknown: This is used when the investigator does not know what collision-avoidance actions were taken by the rider/driver in response to the critical pre-crash event.

OTHER VEHICLE DRIVER FORM

6. Was There Any Control Loss Due to Weather, Roadway, or Mechanical Problems?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no control loss due to weather, roadway, or mechanical problems
- (01) yes, control loss due to weather
- (02) yes, control loss due to mechanical problems
- (03) yes, control loss due to both weather and mechanical problems
- (04) yes, control loss due to roadway problems
- (05) yes, control loss due to weather and roadway problems
- (06) yes, control loss due to roadway and mechanical problems
- (07) yes, control loss due to all three
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

7. How Many Passengers Were in Your Vehicle?

OECD Reference: A.5.1.3.46

Convention/Coding Source: DSI

Element Attributes:

(00)	none (skip to # 9)
(01–08)	actual number of passengers
(09)	nine or more
(99)	unknown

Range: 00–09, 99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Do not count the rider/driver of the motor vehicle.

OTHER VEHICLE DRIVER FORM

8. Did the Passengers in Your Vehicle Contribute to the Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) passengers present, but they made no contribution to the crash
- (01) yes, passenger activities distracted driver and contributed to the crash
- (02) yes, passenger interfered with vehicle control and contributed to the crash
- (97) not applicable, no passengers
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

This variable records when the rider/driver was distracted or interfered with by a passenger on the motorcycle or in a vehicle prior to realization of impending danger. Examples of passenger distraction include conversing with or looking at another passenger. An example of passenger interference is when a passenger interferes with the motorcycle/vehicle controls.

OTHER VEHICLE DRIVER FORM

9. Was Your Line of Sight to the Motorcycle/Other Vehicle Clear?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 10)
- (01) yes, clear
- (02) MC/other vehicle in mirror blind spot
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview, police crash report, and scene inspection

Remarks: This variable is assigned by the investigator from the sources.

The variable can refer to the motorcycle or to other vehicles involved in the crash.

OTHER VEHICLE DRIVER FORM

10. What Obstructed Your View?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no obstruction
- (01) view obstructed by road curvature
- (02) view obstructed by roadway grade
- (03) view obstructed by roadside objects (shrubs, vehicles, buildings)
- (04) obstructed by traffic
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview, police crash report, and scene inspection

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

11. Was Your View of the Motorcycle/Vehicle Obscured?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no, not obscured
- (01) yes, obscured by sun glare
- (02) yes, obscured by headlight glare
- (03) yes, obscured by other glare (specify)
- (04) yes, obscured by darkness
- (05) yes, obscured by nighttime and color of vehicle
- (06) obscured by dust, smoke, smog, or fog
- (07) obscured by windshield/windscreen or eyewear condition (dirt, condensation, etc.)
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The variable can refer to the motorcycle or to other vehicles involved in the crash.

OTHER VEHICLE DRIVER FORM

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12. Were You Distracted by Any of the Following?

OECD Reference: A.5.1.3.44

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) attentive and not distracted
- (01) looked but did not see

DISTRACTIONS

- (02) other occupants (specify)
- (03) moving object in vehicle (specify)
- (04) while talking or listening to cellular phone/intercom/shortwave radio (specify location and type of device)
- (05) while dialing cellular phone/intercom/shortwave radio (specify location and type of device)
- (06) while adjusting climate controls
- (07) while adjusting radio/cassette/CD (specify)
- (08) while using other device/controls integral to vehicle (specify)
- (09) while using/reaching for device/object brought into vehicle (specify)
- (10) sleepy or fell asleep
- (11) distracted by outside person/object/event (specify)
- (12) eating or drinking
- (13) smoking related
- (14) while listening to or adjusting GPS device
- (96) distracted, details unknown
- (98) other (specify)
- (99) unknown

Range: 00–14, 96, 98, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

attentive and not distracted: This is selected when the rider/driver is known to have been completely attentive to driving prior to the realization of impending danger.

OTHER VEHICLE DRIVER FORM

Page 2 of 3

12. Were You Distracted by Any of the Following? (Continued)

looked but did not see: This is selected when the rider/driver was paying attention to driving, but did not see the relevant motorcycle/vehicle, object, etc. This attribute should be used when a rider had an opportunity to take some action prior to impact, but the driver took no action and no other distractions apply. This situation frequently occurs when an overtaking motorcycle/vehicle is in the rider's/driver's blind spot or at intersections when looking both ways and a crossing motorcycle/vehicle is not noticed. If the rider/driver saw the motorcycle/vehicle, object, etc., but did not consider it a danger, and no other distractions apply, then code "attentive or not distracted."

other occupant(s) (specify): This is selected when the rider/driver was distracted by another passenger/occupant on the motorcycle or in the vehicle prior to the realization of impending danger. Examples of other rider/driver distraction include conversing with or looking at another passenger/occupant. Specify the passenger/occupant distraction.

moving object in vehicle (specify): This is selected when the rider/driver was distracted by a moving object on the motorcycle or in the vehicle prior to realization of impending danger. Examples include a dropped object, an insect, or cargo. Specify the object.

while talking or listening to cellular phone/intercom/shortwave radio (specify location and type of device): This is used when the rider/driver is talking or listening on a cellular phone/intercom or shortwave radio. Specify the type of phone or device (e.g., hands free, handheld phone, radio integral to helmet) and the location of the phone (e.g., installed on motorcycle or in the vehicle, held in the hand).

while dialing cellular phone/intercom/shortwave radio (specify location and type of device): This is used when the rider/driver is dialing a number on a cellular phone. Specify the type of device used (e.g., hands free, handheld phone, intercom) and indicate where it is located (e.g., installed on the motorcycle or in the vehicle, held in the hand, installed in helmet).

while adjusting climate controls: This is selected when someone is distracted from the driving task while adjusting the air conditioner, heater, etc.

while adjusting radio/cassette/CD (specify): This is selected when someone is distracted from the driving task while adjusting or using the mounted radio, cassette deck, or CD player.

while using other device/controls integral to vehicle (specify): This is selected when the rider/driver is distracted while using a device on the motorcycle or in the vehicle, including adjusting sideview mirrors, using the vehicle's cigarette lighter, and using all OEM equipment.

12. Were You Distracted by Any of the Following? (Continued)

while using or reaching for device/object brought onto the motorcycle/into the vehicle (specify): This is selected when the rider/driver is distracted while using or reaching for a device brought onto the motorcycle or into the vehicle, including radar detectors, CB radios, portable CD players, and headphones. Specify the device. The use of another device to light a cigarette other than the vehicle's cigarette lighter should be coded as "smoking related."

sleepy or fell asleep: This is selected when the rider/driver was sleeping or dozing prior to the realization of impending danger or just prior to the impact if a realization did not occur.

distracted by outside person/object/event (specify): This is selected when the rider/driver was distracted by an outside person, object, or event prior to the realization of impending danger. Examples include animals on the roadside or a previous crash. Specify the outside person, object, or event. Do not use this attribute for a person, object, or event that the driver has recognized and for which the driver has taken some action (e.g., avoiding a pedestrian on the roadway).

eating or drinking: This is used when the rider/driver is eating or drinking or involved in an activity related to these actions (e.g., picking food from a carton placed on the passenger's seat, reaching to throw out a used food wrapper).

smoking related: This is selected when the rider/driver is smoking or involved in an activity related to smoking, such as lighting a cigarette or putting ashes in the ashtray. The act of using the cigarette lighter of the vehicle is coded as "while using other device/controls integral to vehicle."

while listening to or adjusting GPS device: This is used when the rider/driver is listening to a GPS or is distracted from the driving task while adjusting the GPS unit.

distracted, details unknown: This is selected when it is known that the rider/driver was inattentive prior to the realization of impending danger, but details of the distraction are unknown.

other distraction (specify): This is selected when details regarding the rider's/driver's inattention are known, but none of the specified attributes are applicable. This attribute includes incapacitating illness. Specify the other distraction.

unknown: This is selected when it is unknown if the rider/driver was fully attentive to driving prior to the realization of impending danger. Use this attribute if no interview is obtained and there is no other source of information regarding this rider's/driver's attention to driving prior to the realization of impending danger.

OTHER VEHICLE DRIVER FORM

13. Where Did Your Trip Begin Today?

OECD Reference: A.5.1.3.27

Convention/Coding Source: DSI, OECD

Element Attributes:

- (01) home
- (02) work, business
- (03) recreation/social
- (04) school
- (05) errand, shopping
- (06) family, friends, relatives
- (07) meals, restaurant, café, etc.
- (08) transport someone
- (09) medical/dental
- (10) bar/pub
- (11) religious activity
- (12) personal business/obligations
- (98) other (specify)
- (99) unknown

Range: 01–12, 98, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

14. What Was Your Trip Destination?

OECD Reference: A.5.1.3.28

Convention/Coding Source: DSI, OECD

Element Attributes:

- (01) home
- (02) work, business
- (03) recreation/social
- (04) school
- (05) errand, shopping
- (06) family, friends, relatives
- (07) meals, restaurant, café, etc.
- (08) transport someone
- (09) medical/dental
- (10) bar/pub
- (11) religious activity
- (12) personal business/obligations
- (13) no destination, joy riding
- (98) other (specify)
- (99) unknown

Range: 01–13, 98, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

15. About How Many Miles Would the Trip Be One Way?

OECD Reference: A.5.1.3.29

Convention/Coding Source: OECD

Element Attributes:

(001)	1 mile or less
(002–995)	actual number of miles
(996)	996 miles or greater
(997)	not applicable
(999)	unknown

Range: 001–997, 999

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The trip involved in this variable refers to the trip identified in variable 14.

The trip length is the length of the trip as measured in miles. A trip is defined as any time in which the motorcycle rider operates the vehicle and comes to a complete stop and dismounts from the vehicle, or when a driver exits the vehicle.

An example is when a rider/driver is travelling from the rider's/driver's home to the store and back to the home. This would constitute two trips.

OTHER VEHICLE DRIVER FORM

16. How Frequently Do You Travel This Road on/in Any Vehicle?

OECD Reference: A.5.1.3.30

Convention/Coding Source: DSI, OECD

Element Attributes:

- (01) first time
- (02) daily use (i.e., once per day)
- (03) weekly use (i.e., once per week)
- (04) monthly use (i.e., once per month)
- (05) quarterly (i.e., once per quarter)
- (06) annually (i.e., once per year)
- (07) less than annually
- (99) unknown

Range: 01–07, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

17. How Long Have You Been Driving Today Since Your Trip Departure? (Use Zeros to Fill in Blanks)

_____ hours _____ minutes

OECD Reference: A.5.1.3.31

Convention/Coding Source: DSI

Element Attributes:

(00–60)	minutes
(00–24)	hours
(97-97)	not applicable
(98-98)	other (specify)
(99-99)	unknown

Range: 00–60, 97-97–99-99

Source:

Primary—rider/driver interview
Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

This variable refers to the trip identified in variable 14.

OTHER VEHICLE DRIVER FORM

18. How Many Miles Have You Gone Since Your Trip Departure?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(001)	1 mile or less
(002–995)	actual number of miles
(996)	996 miles or greater
(997)	not applicable, had not yet begun trip
(998)	other (specify)
(999)	unknown

Range: 001–999

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

This variable refers to the trip identified in variable 14.

The trip length is the length of the trip as measured in miles.

OTHER VEHICLE DRIVER FORM

Page 1 of 3

19. Do You Have Any of the Following Permanent Physical Conditions? (Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.5.1.3.39.1, A.5.1.3.39.2, A.5.1.3.39.3

Convention/Coding Source: DSI, OECD

Element Attributes:

- (00) no
- (01) vision reduction or loss
- (02) hearing reduction or loss
- (03) respiratory, cardiovascular condition
- (04) paraplegia
- (05) amputee
- (06) neurological, epilepsy, stroke
- (07) endocrine system, diabetes, digestive system
- (08) infirmity, arthritis, senility
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

vision reduction or loss: This refers to the need to wear corrective lenses or to legal blindness in one or both eyes.

hearing reduction or loss: This refers to the need to wear a hearing aid or to partial or complete deafness.

respiratory system: The respiratory system consists of airways, lungs, and respiratory muscles that mediate the movement of air in and out of the body. Within the alveolar system of the lungs, molecules of oxygen and carbon dioxide are passively exchanged by diffusion between the gaseous environment and the blood. Thus, the respiratory system facilitates oxygenation of the blood with a concomitant removal of carbon dioxide and other gaseous metabolic wastes from the circulation. The system also helps to maintain the acid–base balance of the body through the efficient removal of carbon dioxide from the blood.

OTHER VEHICLE DRIVER FORM

Page 2 of 3

19. Do You Have Any of the Following Permanent Physical Conditions? (Continued)

cardiovascular condition: The cardiovascular system is made up of blood vessels, also known as the circulatory system, that work in conjunction with the beating heart.

paraplegia: This is an impairment in motor and/or sensory function of the lower extremities. It is usually the result of a spinal cord injury or a congenital condition, such as spina bifida, that affects the neural elements of the spinal canal. If the arms are also affected by paralysis, tetraplegia is the proper terminology.

amputee: Amputation is the removal of a body extremity by trauma or surgery.

neurological: The nervous system is a highly specialized network in which principal components are cells called neurons. Neurons are interconnected in complex arrangements and use electrochemical signals to conduct a great variety of stimuli within the nervous tissue as well as from and toward most other tissues. Thus, neurons coordinate multiple functions in organisms. Neurological impairment includes a loss of sensation caused by disease or injury.

epilepsy: This is a brain disorder that causes recurring seizures. Seizures happen when clusters of nerve cells, or neurons, in the brain send out the wrong signals. People may have strange sensations and emotions, behave strangely, have violent muscle spasms, or lose consciousness.

strokes: Strokes happen when blood flow to the brain stops. Within minutes, brain cells begin to die. There are two kinds of strokes. The more common stroke, ischemic, is caused by a blood clot that blocks or plugs a blood vessel in the brain. The other stroke, hemorrhagic, is caused by a blood vessel that breaks and bleeds into the brain. Ministrokes, or transient ischemic attacks (TIAs), occur when the blood supply to the brain is briefly interrupted.

endocrine system: This system includes the glands and parts of glands that produce endocrine secretions; helps to integrate and control bodily metabolic activity. This includes the pituitary, thyroid, parathyroid, adrenals, islets of Langerhans, ovaries, and testes.

diabetes: This is a disease in which blood glucose, or sugar, levels are too high. Glucose comes from food. Insulin is a hormone that helps the glucose get into cells to give them energy. With type 1 diabetes, the body does not make insulin. With type 2 diabetes, the more common type, the body does not make or use insulin well. Without enough insulin, glucose stays in the blood.

digestive system: This refers to the bodily system concerned with eating and drinking and the digestion and absorption of food.

OTHER VEHICLE DRIVER FORM

Page 3 of 3

19. Do You Have Any of the Following Permanent Physical Conditions? (Continued)

infirmary: This is a bodily ailment or weakness, especially one brought on by old age.

arthritis: This is a disease in which a person feels pain and stiffness in the body or has trouble moving around. Most kinds of arthritis cause pain and swelling in the joints, which are the places where two bones meet (e.g., elbows or knees). Over time, a swollen joint can become severely damaged. Some kinds of arthritis might also cause problems in organs, such as eyes or skin.

senility: More commonly referred to as dementia, senility is characterized by a decrease in cognitive abilities, including a person's ability to concentrate, recall information, and properly judge a situation. In addition, the personality of someone with senility may change. A person in the advanced stages of senility may be unsure of who he or she is.

OTHER VEHICLE DRIVER FORM

Page 1 of 2

20. At the Time of the Crash, Were You Experiencing Any of the Following? (Code up to Three; Input 00 for Remaining Responses)

OECD Reference: A.5.1.3.40.1, A.5.1.3.40.2, A.5.1.3.40.3

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) fatigue
- (02) hunger
- (03) thirst
- (04) elimination urgency
- (05) muscle spasm, cramp, itch
- (06) headache, minor malaise, fever
- (07) siesta syndrome (tired in the afternoon)
- (98) other (specify)
- (99) unknown

Range: 00–07, 98, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

fatigue: This is a feeling of weariness, tiredness, or lack of energy.

hunger: This is a craving or urgent need for food or a specific nutrient. Hunger is an uneasy sensation and/or a weakened condition brought about by prolonged lack of food.

thirst: This is a sensation of dryness in the mouth and throat associated with a desire for liquids. The bodily condition known as dehydration induces this sensation. Thirst is also a basic desire or need to drink.

elimination urgency: This is the state in which the individual experiences a disturbance in urine elimination.

muscle spasm, cramp, itch: This is an involuntary contraction of a muscle. Muscle cramps are involuntary and often painful contractions (movements) of the muscles.

OTHER VEHICLE DRIVER FORM

Page 2 of 2

20. At the Time of the Crash, Were You Experiencing Any of the Following? (Continued)

headache: The most common type of headache is a tension headache. Tension headaches are due to tight muscles in the shoulders, neck, scalp, and jaw. They are often related to stress, depression, or anxiety. Tension headaches are more likely for those who work too much, miss meals, use alcohol, or do not get enough sleep.

minor malaise: This is a generalized feeling of discomfort, illness, or lack of well-being. It can be associated with a disease. Malaise can be accompanied by a feeling of exhaustion or not having enough energy to accomplish usual activities.

fever: This is a body temperature that is higher than normal. It is not an illness. It is part of the body's defense against infection. Most bacteria and viruses that cause infections do well at the body's normal temperature (98.6 °F), and a slight fever can make it harder for them to survive because a fever also activates the body's immune system.

siesta syndrome (tired in the afternoon): This can be best described as the tired, groggy feeling experienced in the afternoon. Some people call it a "food coma" or "afternoon lull."

OTHER VEHICLE DRIVER FORM

**21. At the Time of the Crash, Were You Concerned About Any of the Following Issues?
(Code up to Three; Input 00 for Remaining Responses)**

OECD Reference: A.5.1.3.41.1, A.5.1.3.41.2, A.5.1.3.41.3

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no problems
- (01) conflict with friends or relatives, divorce, separation
- (02) work-related problems
- (03) financial distress
- (04) school problems
- (05) legal, police problems
- (06) reward stress
- (07) traffic conflict, road rage
- (08) death of family or friend
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

22. How Many Hours of Sleep Did You Have in the 24 Hours Prior to the Crash?

OECD Reference: None

Convention/Coding Source:

Element Attributes:

(00)	no sleep
(01–24)	number of hours slept
(98)	other (specify)
(99)	unknown

Range: 00–24, 98, 99

Source:

Primary—rider/driver interview
Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

23. Did You Drink Any Alcohol or Take Any Drugs or Medications Within the 24 Hours Prior to the Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no (skip to # 26)
- (01) alcohol use only (skip to # 26)
- (02) drug/medication use only
- (03) combined alcohol and drug/medication use
- (98) other (specify)
- (99) unknown

Range: 00–03, 98, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

24. What Type of Drugs Other Than Alcohol?

OECD Reference: A.5.1.3.37

Convention/Coding Source: NASS,⁽⁴⁾ DSI, OECD

Element Attributes:

- (00) no drugs other than alcohol
- (01) stimulant
- (02) depressant
- (03) drugs taken, type unknown
- (04) multiple drugs taken
- (05) blood pressure/blood thinner
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

stimulant: This is a drug that temporarily quickens some vital processes.

depressant: This includes any drug that reduces or tends to reduce the function of a system or organ of the body.

OTHER VEHICLE DRIVER FORM

25. What Is the Source of Drugs Other Than Alcohol? (Code up to Three; Input 97 for Remaining Responses)

OECD Reference: A.5.1.3.38

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no drugs other than alcohol
- (01) prescription
- (02) nonprescription, over the counter
- (03) illegal
- (97) not applicable
- (99) unknown

Range: 00–03, 97, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

A prescription drug is a licensed medicine that is regulated by legislation to require a prescription before it can be obtained.

OTHER VEHICLE DRIVER FORM

26. How Long Have You Been Driving Any Kind of Motor Vehicle? (Use Zeros to Fill in Blanks)

____ years ____ months

OECD Reference: A.5.1.3.15

Convention/Coding Source: DSI

Element Attributes:

(00-00)	this is the first time
(00-11)	months
(00-96)	years
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 98-98, 99-99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

27. How Long Have You Been Driving the Crash-Involved Motor Vehicle/Motorcycle? (Use Zeros to Fill in Blanks)

____ years ____ months

OECD Reference: A.5.1.3.17

Convention/Coding Source: DSI

Element Attributes:

(00-00)	this is the first time
(00-11)	months
(00-96)	years
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 98-98, 99-99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

28. About How Many Miles per Year Do You Drive a Car or Truck?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

(00000)	none
(00001–99995)	actual number of miles
(99996)	99,996 miles or greater
(99998)	other (specify)
(99999)	unknown

Range: 00000–99996, 99998, 99999

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

29. What Kind of Driver Training Have You Had?

OECD Reference: A.5.1.3.20

Convention/Coding Source: DSI

Element Attributes:

- (00) none
- (01) State-recognized, entry-level motorcycle course
- (02) experienced-rider course
- (03) high-performance/competitive-track course
- (04) self-taught
- (05) taught by family and/or friends
- (06) State-recognized entry-level passenger vehicle course
- (07) professional training for a commercial license
- (08) compulsory motor-vehicle training ordered by judge, police, etc.
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

entry-level course: Examples of entry-level courses include sponsored courses from the Motorcycle Safety Foundation such as BRC, MRC, or RSS. State-sponsored courses, such as those offered through TEAM Oregon, would also qualify.

experienced-rider course: Examples of experienced-rider courses include instruction such as the MSF Rider's Edge course or North Carolina's BikeSafe program.

high-performance/competitive-track courses: Examples of high-performance or competitive-track courses include classes such as the Pridgemore California Super Bike School.

OTHER VEHICLE DRIVER FORM

30. How Many Moving Traffic Convictions Have You Had in the Previous 5 Years? (Code the Total Number of Moving Traffic Convictions—Any Vehicle)

OECD Reference: A.5.1.3.24

Convention/Coding Source: DSI, OECD

Element Attributes:

(00)	none
(01–96)	actual number of convictions
(99)	unknown

Range: 00–96, 99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview, driver records, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

31. How Many Motorcycle Moving Traffic Crashes Have You Had in the Past 5 Years? (Code the Total Number of Previous Motorcycle Crashes)

OECD Reference: A.5.1.3.25

Convention/Coding Source: DSI, OECD

Element Attributes:

(00)	none
(01–96)	actual number of crashes
(99)	unknown

Range: 00–96, 99

Source:

Primary—rider/driver interview

Secondary—driver records, passenger(s) interview, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

32. How Many Car or Truck Traffic Crashes Have You Had in the Past 5 Years? (Code the Total Number of Previous Car or Truck Crashes)

OECD Reference: A.5.1.3.26

Convention/Coding Source: DSI, OECD

Element Attributes:

(00)	none
(01–96)	actual number of crashes
(99)	unknown

Range: 00–96, 99

Source:

Primary—rider/driver interview

Secondary—driver records, passenger(s) interview, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

33. Do You Currently Ride a Street Motorcycle?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (02) refused to answer
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

34. How Long Have You Operated a Street Motorcycle?

_____ years _____ months

OECD Reference: A.5.1.3.16

Convention/Coding Source: DSI

Element Attributes:

(00-00)	just started
(00-11)	months
(00-96)	years
(97-97)	not applicable, not currently riding
(98-98)	other (specify)
(99-99)	unknown

Range: 00-96, 00-00, 97-97-99-99

Source:

Primary—rider/driver interview
Secondary—passenger(s) interview

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

35. What Is the Average Number of Days per Year You Ride Motorcycles?

OECD Reference: A.5.1.3.18

Convention/Coding Source: DSI, OECD

Element Attributes:

(001–365)	actual number of days per year
(997)	not applicable, just started
(998)	other (specify)
(999)	unknown

Range: 001–365, 997–999

Source:

Primary—rider/driver interview
Secondary—passenger(s) interview

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

36. About How Many Miles per Year Do You Ride Motorcycles?

OECD Reference: A.5.1.3.19

Convention/Coding Source: DSI, OECD

Element Attributes:

(00000)	none
(00001–99995)	actual number of miles
(99996)	99,996 miles or greater
(99997)	not applicable; not currently riding or just started
(99998)	other (specify)
(99999)	unknown

Range: 00000–99999

Source:

Primary—rider/driver interview
Secondary—passenger(s) interview

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

37. When You Ride or Drive, What Is the Percentage of Time You Ride a Motorcycle Versus Drive Another Type of Vehicle? (Indicate Percentage of Total Riding/Driving Time for Each Category)

Motorcycle _____
Other-Vehicle Type _____
100%

OECD Reference: A.5.1.3.21.1

Convention/Coding Source: OECD

Element Attributes:

(000)	first-time use
(001–100)	actual percentage of time
(997)	not applicable
(999)	unknown

Range: 000–100, 997, 999

Source:

Primary—rider/driver interview
Secondary—passenger(s) interview

Remarks: This variable is assigned by the investigator from the sources.

Record the percentage of time or use that the motorcycle is used for transportation and the percentage of time or use that other types of vehicles are used. The percent-use estimate should total 100 percent. Do not include walking, mass transit, or other forms of transportation.

OTHER VEHICLE DRIVER FORM

38. When You Ride a Motorcycle, What Is the Percentage of Time It Is for Each of These Categories? (Indicate Percentage of Total Riding/Driving Time for Each Category)

Recreation _____ %
Basic Transportation _____ %

OECD Reference: A.5.1.3.21.2, A.5.1.3.21.3

Convention/Coding Source: OECD

Element Attributes:

(000)	first-time use
(001–100)	actual percentage of time
(997)	not applicable, not a rider
(999)	unknown

Range: 000–100, 997, 999

Source:

Primary—rider/driver interview
Secondary—passenger(s) interview

Remarks: This variable is assigned by the investigator from the sources.

Record the percentage of time or use that a motorcycle is used for recreational purposes (i.e., riding for pleasure) and the percentage of time or use that the motorcycle is used for basic transportation purposes (e.g., work, school, shopping). If the person does not use a motorcycle for recreation or basic transportation, code 000 in the appropriate category. The total percent usage for any one person must total 100 percent.

The following is an example of coding this variable: the motorcycle operator utilizes a motorcycle to run errands and commute to and from work approximately 40 percent of the time. The motorcycle is used for recreational purposes for the remaining 60 percent of the time.

OTHER VEHICLE DRIVER FORM

39. How Old Were You at the Time of the Crash?

OECD Reference: A.5.1.3.3

Convention/Coding Source: DSI, OECD

Element Attributes:

(01–96)	actual age in years
(99)	unknown

Range: 01–96, 99

Source:

Primary—rider/driver interview
Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

40. Were You Injured in This Crash?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no injuries (skip to # 42)
- (01) yes
- (99) unknown

Range: 00, 01, 99

Source:

Primary—rider interview

Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

41. What Kind of Medical Treatment Did You Receive?

OECD Reference:

Convention/Coding Source: DSI

Element Attributes:

- (00) no treatment
- (01) on-scene emergency care only
- (02) treated and released at hospital/trauma center
- (03) admitted to hospital/trauma center
- (04) walk-in clinic
- (05) private physician
- (97) not applicable, no injury
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source:

- Primary—rider interview
- Secondary—passenger interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

42. What State/Country Issued Your Current Driver's License?

OECD Reference: A.5.1.3.4

Convention/Coding Source: DSI

Element Attributes:

- (00) no license
- (01) Canada
- (02) California
- (03) other State (specify)
- (04) military
- (97) no license required (49 cc scooter)
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

43. What Kind of Operator's License Is It? (Code up to Four; Input 97 for Remaining Responses)

OECD Reference: A.5.1.3.5.1, A.5.1.3.5.2, A.5.1.3.5.3, A.5.1.3.5.4

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no license
- (01) learner's permit only
- (02) motorcycle license
- (03) automobile license
- (04) commercial license
- (05) motorcycle driver and competition license
- (06) license to transport people
- (07) heavy-truck license
- (08) no license required (49 cc scooter)
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–08, 97–99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

44. What Year Was/Were the License(s) Issued? (Listed in the Same Order as Licenses in # 43)

OECD Reference: A.5.1.3.6.1, A.5.1.3.6.2, A.5.1.3.6.3, A.5.1.3.6.4

Convention/Coding Source: DSI

Element Attributes:

(1900–2100)	actual year of issuance
(9997)	not applicable
(9999)	unknown

Range: 1900–2100, 9997, 9999

Source:

Primary—rider/driver interview
Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

45. Does Your License Qualify You to Operate This Motor Vehicle?

OECD Reference: A.5.1.3.7

Convention/Coding Source: DSI, OECD

Element Attributes:

- (00) no
- (01) yes
- (97) not applicable
- (99) unknown

Range: 00, 01, 97, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

46. Are You of Hispanic or Latino Origin?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (02) refused to answer
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Primary—rider/driver interview

Remarks: This variable is assigned by the investigator from the source.

This variable is self-identified by the rider/driver.

OTHER VEHICLE DRIVER FORM

Page 1 of 2

47. What Is Your Race? (Code up to Three; Input 97 for Remaining Responses)

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) White
- (02) Black or African American
- (03) Asian
- (04) Native Hawaiian or other Pacific Islander
- (05) American Indian or Alaskan Native
- (06) refused to answer
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source: Primary—rider/driver interview

Remarks: This variable is assigned by the investigator from the source.

This variable is self-identified by the rider/driver. This information can be obtained only from the interview.

white: This is selected for riders who consider themselves a person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

black or African American: This is for riders who consider themselves a person having origins in any of the black racial groups of Africa. Terms such as “Haitian” or “Negro” can be used in addition to “black or African American.”

Asian: This is selected for riders who consider themselves a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Native Hawaiian or other Pacific Islander: This is selected for riders who consider themselves a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

OTHER VEHICLE DRIVER FORM

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46. What Is Your Race? (Continued)

American Indian or Alaska Native: This is selected for riders who consider themselves a person having origins in any of the original peoples of North and South America, including Central America, and who maintain tribal affiliation or community attachment.

other: This is selected for riders who consider themselves to be of a race not described in other attributes. Use this attribute for descriptions such as Eurasian, Cosmopolitan, interracial, etc.

unknown: This is selected when the source available does not provide sufficient information to classify the rider's race.

OTHER VEHICLE DRIVER FORM

48. What Is Your Height?

___ feet _____ inches

OECD Reference: A.5.1.3.9

Convention/Coding Source: DSI

Element Attributes:

(01-12) actual number of feet and inches
(09-99) unknown

Range: 0-12, 09-99

Source:

Primary—rider/driver interview
Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

49. What Is Your Weight?

OECD Reference: A.5.1.3.10

Convention/Coding Source: DSI

Element Attributes:

(001–996)	actual weight in pounds
(999)	unknown

Range: 001–996, 999

Source:

Primary—rider/driver interview
Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

50. What Is Your Gender?

OECD Reference: A.5.1.3.11

Convention/Coding Source: DSI

Element Attributes:

- (01) male
- (02) female
- (99) unknown

Range: 01, 02, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Code “unknown” when the sex of the rider/driver cannot be determined.

OTHER VEHICLE DRIVER FORM

51. How Much Formal Education Have You Had?

OECD Reference: A.5.1.3.12

Convention/Coding Source: OECD

Element Attributes:

- (00) no formal schooling
- (01) less than high school diploma
- (02) high school diploma or GED
- (03) partial college/university
- (04) college/university graduate
- (05) graduate school, advanced degree, professional degree
- (06) specialty/technical school
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

If permissible, compute the number of years of formal education that the rider/driver has received. Include all schooling during the early years of life (i.e., up to age 18) as well as any schooling at a college, university, or technical school.

OTHER VEHICLE DRIVER FORM

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52. What Is Your Current Occupation?

OECD Reference: A.5.1.3.13

Convention/Coding Source: U.S. Department of Labor

Element Attributes:

- (01) management
- (02) business and financial
- (03) computer and mathematical
- (04) architecture and engineering
- (05) life, physical, and social sciences
- (06) community and social services
- (07) legal
- (08) education, training, or library
- (09) arts, design, entertainment, sports, or media
- (10) healthcare practitioners and technical jobs
- (11) healthcare support
- (12) protective services
- (13) food preparation, serving, and related
- (14) building and grounds maintenance
- (15) personal care and services
- (16) sales and related
- (17) office and administrative support
- (18) farming, fishing, or forestry
- (19) construction or extraction
- (20) installation, maintenance, or repair
- (21) transportation and material moving
- (22) military
- (23) full-time student
- (97) not applicable, not in workforce at present
- (98) other (specify)
- (99) unknown

Range: 01–23, 97–99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The following descriptions may be used as a guideline to code this variable.

52. What Is Your Current Occupation? (Continued)

management occupations: This group comprises the following occupations: chief executives; general and operations managers; legislators; advertising and promotions managers; marketing managers; sales managers; public relations managers; administrative services managers; computer and information systems managers; financial managers; compensation and benefits managers; training and development managers; human resources managers, all other; industrial production managers; purchasing managers; transportation, storage, and distribution managers; farm, ranch, and other agricultural managers; farmers and ranchers construction managers; education administrators, preschool and childcare center/program; education administrators, elementary and secondary school; education administrators, postsecondary; education administrators, all other; engineering managers; food service managers; funeral directors; gaming managers; lodging managers; medical and health services managers; natural sciences managers; postmasters and mail superintendents; property, real estate, and community association managers; social and community service managers; and managers, all other.

business and financial: This group comprises the following occupations: accountants and auditors; appraisers and assessors of real estate; budget analysts; claims adjusters, appraisers, examiners, and investigators; cost estimators; financial analysts and personal financial advisors; insurance underwriters; loan officers; management analysts; meeting and convention planners; and tax examiners, collectors, and revenue agents.

architecture and engineering: This group comprises the following occupations: architects, except landscape and naval; landscape architects; cartographers and photogrammetrists; surveyors; aerospace engineers; agricultural engineers; biomedical engineers; chemical engineers; civil engineers; computer hardware engineers; electrical engineers; electronics engineers, except computer; environmental engineers; health and safety engineers, except mining safety engineers and inspectors; industrial engineers; marine engineers and naval architects; materials engineers; mechanical engineers; mining and geological engineers, including mining safety engineers; nuclear engineers; petroleum engineers; engineers, all other; architectural and civil drafters; electrical and electronics drafters; mechanical drafters; drafters; all other; aerospace engineering and operations technicians; civil engineering technicians; electrical and electronic engineering technicians; electro-mechanical technicians; environmental engineering technicians; industrial engineering technicians; mechanical engineering technicians; engineering technicians, except drafters, all other; and surveying and mapping technicians.

life, physical, and social sciences: This group comprises the following occupations: animal scientists; food scientists and technologists; soil and plant scientists; biochemists and biophysicists; microbiologists; zoologists and wildlife biologists; biological scientists, all other; conservation scientists; foresters; epidemiologists; medical scientists, except epidemiologists;

52. What Is Your Current Occupation? (Continued)

life scientists, all other; astronomers; physicists; atmospheric and space scientists; chemists; materials scientists; environmental scientists and specialists, including health; geoscientists, except hydrologists and geographers; hydrologists; physical scientists, all other; economists; market research analysts; survey researchers; clinical, counseling, and school psychologists; industrial-organizational psychologists; psychologists, all other; sociologists; urban and regional planners; anthropologists and archeologists; geographers; historians; political scientists; social scientists and related workers, all other; agricultural and food science technicians; biological technicians chemical technicians; geological and petroleum technicians; nuclear technicians; social sciences research assistants; environmental science and protection technicians, including health; forensic science technicians; forest and conservation technicians; and life, physical.

community and social services: This group comprises the following occupations: substance abuse and behavioral disorder counselors; educational, vocational, and school counselors; marriage and family therapists; mental health counselors; rehabilitation counselors; counselors, all other; child, family, and school social workers; medical and public health social workers; mental health and substance abuse social workers; social workers, all other; health educators; probation officers and correctional treatment specialists; social and human service assistants; community and social service specialists, all other; clergy; and directors, religious activities and education.

legal: This group comprises the following occupations: lawyers; administrative law judges, adjudicators, and hearing officers; arbitrators, mediators, and conciliators; judges, magistrate judges, and magistrates; paralegals and legal assistants; court reporters; law clerks; title examiners, abstractors, and searchers; and legal support workers, all other.

education, training, or library: This group comprises the following occupations: business teachers, postsecondary; computer science teachers, postsecondary; mathematical science teachers, postsecondary; architecture teachers, postsecondary; engineering teachers, postsecondary; agricultural sciences teachers, postsecondary; biological science teachers, postsecondary; forestry and conservation science teachers, postsecondary; atmospheric, earth, marine, and space sciences teachers, postsecondary; chemistry teachers, postsecondary; environmental science teachers, postsecondary; physics teachers, postsecondary; anthropology and archeology teachers, postsecondary; area, ethnic, and cultural studies teachers, postsecondary; economics teachers, postsecondary; geography teachers, postsecondary; political science teachers, postsecondary; psychology teachers, postsecondary; sociology teachers, postsecondary; social sciences teachers, postsecondary, all other; health specialties teachers, postsecondary; nursing instructors and teachers, postsecondary; education teachers,

52. What Is Your Current Occupation? (Continued)

postsecondary; library science teachers, postsecondary; criminal justice and law enforcement teachers, postsecondary; law teachers, postsecondary; social work teachers, postsecondary; art, drama, and music teachers, postsecondary; communications teachers, postsecondary; English language and literature teachers, postsecondary; foreign language and literature teachers, postsecondary; history teachers, postsecondary; philosophy and religion teachers, postsecondary; graduate teaching assistants; home economics teachers, postsecondary; recreation and fitness studies teachers, postsecondary; vocational education teachers, postsecondary; postsecondary teachers, all other; preschool teachers, except special education; kindergarten teachers, except special education; elementary school teachers, except special education; middle school teachers, except special and vocational education; vocational education teachers, middle school; secondary school teachers, except special and vocational education; vocational education teachers, secondary school; special education teachers, preschool, kindergarten, and elementary school; special education teachers, middle school; special education teachers, secondary school; adult literacy, remedial education, and GED teachers and instructors; self-enrichment education teachers; teachers and instructors, all other; archivists; curators; museum technicians and conservators; librarians; library technicians; audio-visual collections specialists; farm and home management advisors; instructional coordinators; teacher assistants; and education, training, and library workers, all other.

arts, design, entertainment, sports, or media: This group comprises the following occupations: art directors; craft artists; fine artists, including painters, sculptors, and illustrators; multimedia artists and animators; artists and related workers, all other; commercial and industrial designers; fashion designers; floral designers; graphic designers; interior designers; merchandise displayers and window trimmers; set and exhibit designers; designers, all other; actors producers and directors; athletes and sports competitors; coaches and scouts; umpires, referees, and other sports officials; dancers; choreographers; music directors and composers; musicians and singers; entertainers and performers, sports and related workers, all other; radio and television announcers; public address system and other announcers; broadcast news analysts; reporters and correspondents; public relations specialists; editors; technical writers; writers and authors; interpreters and translators; media and communication workers, all other; audio and video equipment technicians; broadcast technicians; radio operators; sound engineering technicians; photographers; camera operators, television, video, and motion picture; film and video editors; and media and communication equipment workers.

healthcare support: This group comprises the following occupations: home health aides; nursing aides, orderlies, and attendants; psychiatric aides; occupational therapist assistants; occupational therapist aides; physical therapist assistants; physical therapist aides; massage therapists; dental assistants; medical assistants; medical equipment preparers; medical transcriptionists; pharmacy aides; veterinary assistants and laboratory animal caretakers; and healthcare support workers.

52. What Is Your Current Occupation? (Continued)

protective services: This group comprises the following occupations: first-line supervisors/managers of correctional officers; first-line supervisors/managers of police and detectives; first-line supervisors/managers of firefighting and prevention workers; first-line supervisors/managers, protective service workers, all other; firefighters; fire inspectors and investigators; forest fire inspectors and prevention specialists; bailiffs; correctional officers and jailers; detectives and criminal investigators; fish and game wardens; parking enforcement workers; police and sheriff's patrol officers; transit and railroad police; animal control workers; private detectives and investigators; gaming surveillance officers and gaming investigators; security guards; crossing guards; lifeguards, ski patrol, and other recreational protective service workers; and protective service workers, all other.

food preparation and serving related: This group comprises the following occupations: chefs and head cooks; first-line supervisors/managers of food preparation and serving workers; cooks, fast food; cooks, institution and cafeteria; cooks, private household; cooks, restaurant; cooks, short order; cooks, all other; food preparation workers; bartenders; combined food preparation and serving workers, including fast food; counter attendants, cafeteria, food concession, and coffee shop; waiters and waitresses; food servers, nonrestaurant; dining room and cafeteria attendants and bartender helpers; dishwashers; hosts and hostesses, restaurant, lounge, and coffee shop; and food preparation and serving-related workers.

building and grounds maintenance: This major group comprises the following occupations: first-line supervisors/managers of housekeeping and janitorial workers; first-line supervisors/managers of landscaping, lawn service, and groundskeeping workers; janitors and cleaners, except maids and housekeeping cleaners; maids and housekeeping cleaners; building cleaning workers, all other; pest control workers; landscaping and groundskeeping workers; pesticide handlers, sprayers, and applicators, vegetation; tree trimmers and pruners; and grounds maintenance workers, all other.

personal care and services: This group comprises the following occupations: gaming supervisors; slot key persons; first-line supervisors/managers of personal service workers; animal trainers; nonfarm animal caretakers; gaming dealers; gaming and sports book writers and runners; gaming service workers, all other; motion picture projectionists; ushers, lobby attendants, and ticket takers; amusement and recreation attendants; costume attendants; locker room, coatroom, and dressing room attendants; entertainment attendants and related workers, all other; embalmers; funeral attendants; barbers; hairdressers, hairstylists, and cosmetologists; makeup artists, theatrical and performance; manicurists and pedicurists; shampooers; skin care specialists; baggage porters and bellhops; concierges; tour guides and escorts; travel guides; flight attendants; transportation attendants, except flight attendants and baggage porters; child care workers; personal and home care aides; fitness trainers and aerobics instructors; recreation workers; residential advisors; and personal care and service workers, all other.

52. What Is Your Current Occupation? (Continued)

sales and related occupations: This group comprises the following occupations: advertising sales agents; cashiers; counter and rental clerks; demonstrators, product promoters, and models; insurance sales agents; real estate brokers and sales agents; retail salespersons; sales engineers; sales representatives, wholesale and manufacturing; sales worker supervisors; securities, commodities, and financial services sales agents; and travel agents.

office and administrative support: This group comprises the following occupations: financial clerks, bill and account collectors; billing and posting clerks and machine operators; bookkeeping, accounting, and auditing clerks; gaming cage workers; payroll and timekeeping clerks; procurement clerks; tellers; information and record clerks, brokerage clerks; credit authorizers, checkers, and clerks; customer service representatives; file clerks; hotel, motel, and resort desk clerks; human resources assistants, except payroll and timekeeping; interviewers; library assistants, clerical; order clerks; receptionists and information clerks; reservation and transportation ticket agents and travel clerks; material recording, scheduling, dispatching, and distributing occupations, cargo and freight agents; couriers and messengers; dispatchers; meter readers, utilities; postal service workers; production, planning, and expediting clerks; shipping, receiving, and traffic clerks; stock clerks and order fillers; weighers, measurers, checkers, and samplers, recordkeeping; other office and administrative support occupations, communications equipment operators; computer operators; data entry and information processing workers; desktop publishers; office and administrative support worker supervisors and managers; office clerks, general; and secretaries and administrative assistants.

farming, fishing, or forestry: This group comprises the following occupations: agricultural workers; fishers and fishing vessel operators; forest, conservation, and logging workers.

construction or extraction: This group comprises the following occupations: first-line supervisors/managers of construction trades and extraction workers; boilermakers; brickmasons and blockmasons; stonemasons; carpenters; carpet installers; floor layers, except carpet, wood, and hard tiles; floor sanders and finishers; tile and marble setters; cement masons and concrete finishers; terrazzo workers and finishers; construction laborers; paving, surfacing, and tamping equipment operators; pile-driver operators; operating engineers and other construction equipment operators; drywall and ceiling tile installers; tapers; electricians glaziers; insulation workers, floor, ceiling, and wall; insulation workers, mechanical; painters, construction and maintenance; paperhangers; pipelayers; plumbers, pipefitters, and steamfitters; plasterers and stucco masons; reinforcing iron and rebar workers; roofers; sheet metal workers; structural iron and steel workers; helpers—brickmasons, blockmasons, stonemasons, and tile and marble setters; helpers—carpenters; helpers—electricians; helpers—painters, paperhangers, plasterers, and stucco masons; helpers—pipelayers, plumbers, pipefitters, and steamfitters; helpers—roofers; helpers, construction trades, all other; construction and building inspectors;

52. What Is Your Current Occupation? (Continued)

elevator installers and repairers; fence erectors; hazardous materials removal workers; highway maintenance workers; rail-track laying and maintenance equipment operators; septic tank servicers and sewer pipe cleaners; segmental pavers; construction and related workers, all other; derrick operators, oil and gas; rotary drill operators, oil and gas; service unit operators, oil, gas, and mining; earth drillers, except oil and gas; explosives workers, ordnance handling experts, and blasters; continuous mining machine operators; mine cutting and channeling machine operators; mining machine operators, all other; rock splitters, quarry; roof bolters, mining; roustabouts, oil and gas; helpers—extraction workers; and extraction workers, all other.

installation, maintenance, or repair: This group comprises the following occupations: electrical and electronic equipment mechanics, installers, and repairers—computer, automated teller, and office machine repairers; electrical and electronics installers and repairers; electronic home entertainment equipment installers and repairers; radio and telecommunications equipment installers and repairers; vehicle and mobile equipment mechanics, installers, and repairers; aircraft and avionics equipment mechanics and service technicians; automotive body and related repairers; automotive service technicians and mechanics; diesel service technicians and mechanics; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; other installation, maintenance, and repair occupations—coin, vending, and amusement machine servicers and repairers; heating, air-conditioning, and refrigeration mechanics and installers; home appliance repairers; industrial machinery mechanics and maintenance workers; line installers and repairers; maintenance and repair workers, general; millwrights; and precision instrument and equipment repairers.

transportation and material moving: This group comprises the following occupations: air transportation occupations—air traffic controllers; aircraft pilots and flight engineers; material moving occupations; and motor vehicle operators.

OTHER VEHICLE DRIVER FORM

53. Are You Required to Wear Corrective Lenses When Riding/Driving?

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (00) no (skip to # 55)
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Do not consider whether corrective lenses were worn at the time of the crash.

no: No corrective lenses are required by the licensing agency for this rider/driver.

yes: Corrective lenses are required for this rider/driver by the licensing agency.

unknown: It is not known if the rider/driver was required to wear corrective lenses to operate this vehicle.

OTHER VEHICLE DRIVER FORM

54. Were You Wearing Corrective Lenses at the Time of the Crash?

OECD Reference: A.5.1.3.14

Convention/Coding Source: DSI

Element Attributes:

- (00) no
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

The rider/driver must be wearing the glasses/lenses at the time of the crash.

no: No corrective eyeglasses/sunglasses or contact lenses were worn by this rider/driver.

yes: This rider/driver was wearing corrective eyeglasses or sunglasses at the time of crash. This includes contact lenses and contact lenses with sunglasses if the rider/driver was wearing either at the time of crash.

unknown: It is not known if the rider/driver was wearing eyewear at the time of crash.

OTHER VEHICLE DRIVER FORM

55. Are You Married?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (01) single
- (02) married
- (03) separated
- (04) divorced
- (05) widowed
- (06) cohabitating
- (98) other (specify)
- (99) unknown

Range: 01–06, 98, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

56. How Many Children Do You Have?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) none
- (01) one
- (02) two
- (03) three
- (04) four
- (05) five
- (06) six or more
- (98) other (specify)
- (99) unknown

Range: 00–06, 98, 99

Source:

- Primary—rider/driver interview
- Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE DRIVER FORM

57. Blood Alcohol Concentration (BAC)? (Code Results mg/100 ml)

OECD Reference: A.5.1.3.34

Convention/Coding Source: NASS,⁽⁴⁾ OECD

Element Attributes:

(000)	negative BAC
(001–900)	test results (mg/100 ml)
(995)	BAC tested, results not known
(996)	BAC not tested
(998)	other (specify)
(999)	unknown

Range: 000–900, 995, 996, 998, 999

Source:

Primary—rider/driver interview

Secondary—passenger(s) interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Blood alcohol concentration (BAC) analytically measures the mass of alcohol per unit volume of blood. The standard measure is expressed as the number of milligrams per deciliter (10th of a liter) expressed as a decimal (e.g., 0.05 = 50 mg/100 ml; 0.15 = 150 mg/100 ml). A blood alcohol concentration (BAC) test could be a blood, breath, or urine test. If the BAC was given on the police report or subsequently added after the case was initiated, enter the reported value. In essence, if any BAC is obtained, enter the reported value. For example, a BAC of 117 mg/dl is coded as 117 (0.117).

OTHER VEHICLE DRIVER FORM

58. Source of BAC Information?

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes:

- (00) not tested
- (01) breath test
- (02) unknown if tested
- (03) tested, results unknown
- (04) tested, results not available
- (05) official records/ER/autopsy/PAR
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source:

- Primary—test administered to rider/driver
- Secondary—police crash report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE FORM

Case Number

OECD Reference: None

Convention/Coding Source: Case number chart

Element Attributes: Case number

Range: 0001–2000

Source: Primary—case number chart

Remarks: This variable is assigned by the investigator from the source.

OTHER VEHICLE FORM

Vehicle Number

OECD Reference: A.4.3.1

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes: Vehicle number

Range: 001–010

Source:

Primary—police crash report and on-scene investigation

Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

If there is only one motorcycle involved, then this is assigned “MC 1.” If more than one motorcycle is involved, then the motorcycle of interest is assigned “MC 1” by the investigator. The other motorcycles are considered other vehicles for the particular case investigation.

Each in-transport motor vehicle is assigned a unique number. After the motorcycles involved in the crash are assigned a number (as either the case vehicle or other vehicles), vehicle numbers are assigned consecutively according to the order in which the vehicles are listed on the police crash report, except in the following circumstances: if there are any in-transport vehicles not listed on the police crash report, then use the next consecutive number; or if there are any not-in-transport vehicles that are struck by an in-transport vehicle, then treat them as fixed objects (i.e., parked car).

An example is when the police crash report stated that Vehicle 3, a Honda motorcycle, struck Vehicle 2, a Chevrolet Impala, and the Impala rebounded into vehicle 1, a legally parked Toyota Corolla. In this case, the Honda motorcycle is MC 1, the Impala is OV 1, and the Toyota Corolla is a fixed object.

OTHER VEHICLE FORM

Page 1 of 2

1. Vehicle Body Type

Vehicle Body Type: _____

OECD Reference: A.4.3.2

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

- (01) automobiles
- (02) automobile derivatives
- (03) utility vehicles
- (04) van-based light trucks
- (05) light conventional trucks
- (06) other light trucks
- (07) buses (excludes van based)
- (08) medium/heavy trucks
- (09) motored cycles
- (10) other vehicles (specify)
- (99) unknown body type

Range: 01–10, 99

Source: Primary—vehicle inspection, police report, interview, and VIN

Remarks: This variable is assigned by the investigator from the sources.

automobiles: Light vehicles referred to as “automobiles” are designed primarily to transport passengers.

automobile derivatives: This describes certain passenger cars that have been modified to perform cargo-related tasks.

utility vehicles: This refers trucks or other vehicles designed for carrying small loads with a weight less than 4,536 kgs gross vehicle weight rating (GVWR).

van-based light trucks: This refers to small trucks with bodies of a van weighing less than 4,536 kgs GVWR.

light conventional trucks: This refers to trucks sized as cars with pickup-style cabs weighing less than 4,536 kgs GVWR.

OTHER VEHICLE FORM

Page 2 of 2

1. Vehicle Body Type (Continued)

other light trucks: This attribute is used to describe vehicles (less than 4,536 kgs GVWR) that are based on a conventional light pickup frame, but a commercial or recreational body has been affixed to the frame rather than a pickup box.

buses (excludes van based): Buses are defined as any medium/heavy motor vehicle designed primarily to transport large groups of passengers.

medium/heavy trucks: These are single-unit trucks (greater than 4,536 kgs GVWR) that are specifically designed for carrying cargo on the same chassis as the cab. They pertain to a truck-tractor designed for towing trailers or semitrailers. Although towing is their primary purpose, some truck-tractors are equipped with cargo areas located rearward of the cab.

motored cycles: These do not include all-terrain vehicles/cycles.

other vehicles: This attribute describes all motored vehicles that are designed primarily for off-road use. It is also selected when the body type of the vehicle is unknown.

OTHER VEHICLE FORM

Page 1 of 6

2. Vehicle Manufacturer

Vehicle Manufacturer: _____

OECD Reference: A.4.3.3 and A.4.3.4

Convention/Coding Source: NASS,⁽⁴⁾ OECD

Element Attributes:

Four+ Wheel Vehicle Manufacturers

- (001) AMC/American Motors
- (002) Jeep/Kaiser-Jeep
- (003) AM General
- (004) Chrysler
- (005) Dodge
- (006) Imperial
- (007) Plymouth
- (008) Ford
- (009) Lincoln
- (010) Mercury
- (011) Buick
- (012) Cadillac
- (013) Chevrolet
- (014) Oldsmobile
- (015) Pontiac
- (016) GMC
- (017) Saturn
- (018) Grumman
- (019) Studebaker
- (020) Avanti
- (021) Checker
- (022) Consulier
- (023) Hudson
- (024) Stutz
- (025) Desoto
- (026) Excaliber
- (027) Buell
- (028) Volkswagen
- (029) Alfa Romeo
- (030) Audi
- (031) Austin
- (032) BMW
- (033) Nissan

OTHER VEHICLE FORM

Page 2 of 6

2. Vehicle Manufacturer (Continued)

- (034) Fiat
- (035) Honda
- (036) Isuzu
- (037) Jaguar
- (038) Lancia
- (039) Mazda
- (040) Mercedes-Benz
- (041) MG
- (042) Peugeot
- (043) Porsche
- (044) Renault
- (045) Saab
- (046) Subaru
- (047) Toyota
- (048) Triumph
- (049) Volvo
- (050) Mitsubishi
- (051) Suzuki
- (052) Acura
- (053) Hyundai
- (054) Merkur
- (055) Yugo
- (056) Infiniti
- (057) Lexus
- (058) Daihatsu
- (059) Sterling
- (060) Land Rover
- (061) Kia
- (062) Daewoo
- (063) Mini Cooper
- (064) Aston Martin
- (065) Bricklin
- (066) Citroen
- (067) Delorean
- (068) Ferrari
- (069) Hillman
- (070) Jensen
- (071) Lamborghini
- (072) Lotus
- (073) Maserati
- (074) Morris

OTHER VEHICLE FORM

Page 3 of 6

2. Vehicle Manufacturer (Continued)

- (075) Rolls-Royce
- (076) Simca
- (077) Sunbeam
- (078) TVR
- (079) Desta
- (080) Reliant
- (081) Bertone
- (082) Lada
- (083) Brockway
- (084) Diamond REO/REO
- (085) Freightliner
- (086) FWD
- (087) International Harvester/Navistar
- (088) Kenworth
- (089) Mack
- (090) Peterbilt
- (091) Iveco/Magirus
- (092) Winnebago
- (093) Autocar
- (094) Divco
- (095) Western Star
- (096) Oshkosh
- (097) Scania
- (098) Sterling Trucks
- (099) Marmon
- (100) Ward Lafrance
- (102) Neoplan Bus
- (798) other make (medium/heavy truck/bus or "other")
- (898) other make (automobile/passenger vehicle)
- (899) unknown passenger vehicle/truck/bus

OTHER VEHICLE FORM

Page 4 of 6

2. Vehicle Manufacturer (Continued)

Motorcycle Manufacturers

- (A01) AJS
- (A02) ATK
- (A03) Aprilia
- (A04) Ariel
- (B01) BMW
- (B02) BS
- (B03) Batavus
- (B04) Benelli
- (B05) Beta
- (B06) Bimota
- (B07) Bridgestone
- (B08) Buell
- (B09) Bultaco
- (C01) CZ
- (C02) Cagiva
- (C03) CanAm
- (C04) Carabela
- (C05) Cat-HPE
- (C06) Columbia
- (C07) Cushman
- (D01) DKW
- (D02) Dalesman
- (D03) Ducati
- (E01) Eagle
- (E02) Excelsior
- (E03) Extra
- (F01) Fantic
- (F02) Foxi
- (G01) GasGas
- (G02) Garelli
- (G03) Gemini
- (G04) Gilera
- (G05) Greeves
- (H01) Harley-Davidson
- (H02) Hercules
- (H03) Hodaka
- (H04) Honda
- (H05) Husqvarna

OTHER VEHICLE FORM

Page 5 of 6

2. Vehicle Manufacturer (Continued)

- (I01) Indian
- (I02) Italjet
- (J01) Jawa
- (K01) KTM
- (K02) Kawasaki
- (L01) Laverda
- (L02) Lance
- (M01) MBI
- (M02) MVAgusta
- (M03) MZ
- (M04) Maico
- (M05) Matchless
- (M06) Montesa
- (M07) Motobecane
- (M08) Moto Guzzi
- (M09) Moto Morini
- (M10) Moto Parilla
- (M11) Moto Villa
- (M12) Munch
- (N01) NSU
- (N02) Norton
- (O01) Odyssey
- (O02) Ossa
- (P01) Piaggio
- (P02) Puch (Steyr-Daimler-Puch)
- (R01) Rickman
- (R02) Riverside
- (R03) Rokon
- (R04) Royal Enfield
- (R05) Rupp
- (S01) Sachs
- (S06) Solex
- (S07) Soni
- (S08) Sunbeam
- (S09) Suvega
- (S10) Suzuki
- (T01) Tomos
- (T02) Triumph

OTHER VEHICLE FORM

Page 6 of 6

2. Vehicle Manufacturer (Continued)

- (U01) Ural
- (V01) Vespa
- (V02) Vincent
- (Y01) Yamaha
- (Y02) Yankee
- (Z01) Zundapp
- (998) other motorcycle (specify)
- (999) unknown motorcycle

Range: 001–100, 102, 798, 898, 899, A01–A04, B01–B09, C01–C07, D01–D03, E01–E03, F01, F02, G01–G05, H01–H05, I01, I02, J01, K01, K02, L01, L02, M1–M12, N01, N02, O01, O02, P01, P02, R01–R05, S01, S06–S10, T01, T02, U01, V01, V02, Y01, Y02, Z01, 998, 999

Source:

- Primary—VIN during vehicle inspection
- Secondary—police report and interviews

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE FORM

3. Vehicle Model

Vehicle Model: _____

OECD Reference: A.4.3.5

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

Make	Model	Make/Model Code
AMC/AMERICAN MOTORS	RAMBLER, AMERICAN	01-001
AMC/AMERICAN MOTORS	REBEL, MATADOR	01-002
AMC/AMERICAN MOTORS	AMBASSADOR	01-003
AMC/AMERICAN MOTORS	PACER	01-004
AMC/AMERICAN MOTORS	AMX	01-005
AMC/AMERICAN MOTORS	JAVELIN	01-006
AMC/AMERICAN MOTORS	HORNET, CONCORD	01-007
AMC/AMERICAN MOTORS	SPIRIT, GREMLIN	01-008
AMC/AMERICAN MOTORS	EAGLE	01-009
AMC/AMERICAN MOTORS	EAGLE SX4	01-010
AMC/AMERICAN MOTORS	OTHER AUTOMOBILE	01-398
AMC/AMERICAN MOTORS	UNKNOWN AUTOMOBILE	01-399
AMC/AMERICAN MOTORS	UNKNOWN VEHICLE	01-999
JEEP/KAISER-JEEP	CJ2, CJ3, CJ4	02-401
JEEP/KAISER-JEEP	CJ5, CJ6, CH7, CH8	02-402
JEEP/KAISER-JEEP	YJ-SERIES	02-403
JEEP/KAISER-JEEP	CHEROKEE (1984 ONWARD)	02-404
JEEP/KAISER-JEEP	LIBERTY	02-405
JEEP/KAISER-JEEP	CHEROKEE (1963–1983)	02-421
JEEP/KAISER-JEEP	GRAND WAGONEER	02-431
JEEP/KAISER-JEEP	PICKUP	02-481
JEEP/KAISER-JEEP	COMANCHE	02-482
JEEP/KAISER-JEEP	OTHER LIGHT TRUCK	02-498
JEEP/KAISER-JEEP	UNKNOWN LIGHT TRUCK	02-499
JEEP/KAISER-JEEP	UNKNOWN VEHICLE	02-999
AM GENERAL	DISPATCHER	03-401
AM GENERAL	HUMMER H1, H2	03-421
AM GENERAL	DISPATCHER	03-466
AM GENERAL	OTHER LIGHT TRUCK	03-498
AM GENERAL	UNKNOWN LIGHT TRUCK	03-499
AM GENERAL	MEDIUM, HEAVY TRUCK	03-884

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
AM GENERAL	OTHER MEDIUM, HEAVY TRUCK	03-898
AM GENERAL	UNKNOWN MEDIUM, HEAVY TRUCK	03-899
AM GENERAL	UNKNOWN TYPE TRUCK (LIGHT, MEDIUM, HEAVY)	03-899
AM GENERAL	BUS REAR ENGINE, FLAT FRONT	03-983
AM GENERAL	OTHER BUS	03-988
AM GENERAL	UNKNOWN BUS TYPE	03-989
AM GENERAL	UNKNOWN VEHICLE	03-999
CHRYSLER	CORDOBA	06-009
CHRYSLER	NEW YORKER FIFTH AVENUE ('89)	06-010
CHRYSLER	NEWPORT	06-010
CHRYSLER	RAMPAGE 2.2 (CAR-BASED PICKUP)	06-013
CHRYSLER	RWD ONLY NEW YORKER, NEWPORT, 5TH AVENUE, IMPERIAL	06-014
CHRYSLER	NEW YORKER, E CLASS, IMPERIAL, 5TH AVENUE	06-014
CHRYSLER	NEW YORKER SALON	06-014
CHRYSLER	NEW YORKER ('83-'90)	06-014
CHRYSLER	LASER	06-015
CHRYSLER	LEBARON	06-016
CHRYSLER	LEBARON GTS, GTC	06-017
CHRYSLER	INTREPID (CANADIAN)	06-018
CHRYSLER	NEON (EXPORT)	06-019
CHRYSLER	TC (MASERATI SPORT)	06-031
CHRYSLER	CONQUEST	06-035
CHRYSLER	CONCORDE	06-041
CHRYSLER	LHS	06-042
CHRYSLER	SEBRING	06-043
CHRYSLER	CIRRUS	06-044
CHRYSLER	300M	06-051
CHRYSLER	PT CRUISER	06-052
CHRYSLER	PROWLER	06-053
CHRYSLER	PACIFICA	06-054
CHRYSLER	CROSSFIRE	06-055
CHRYSLER	OTHER AUTOMOBILE	06-398
CHRYSLER	UNKNOWN AUTOMOBILE	06-399
CHRYSLER	TOWN AND COUNTRY	06-441

OTHER VEHICLE FORM

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
CHRYSLER	VOYAGER	06-442
CHRYSLER	OTHER LIGHT TRUCK	06-498
CHRYSLER	UNKNOWN LIGHT TRUCK	06-499
CHRYSLER	UNKNOWN VEHICLE	06-999
DODGE	DART	07-001
DODGE	CORONET, CHARGER, MAGNUM	07-002
DODGE	POLARA, MONACO, ROYAL MONACO	07-003
DODGE	VIPER	07-004
DODGE	CHALLENGER	07-005
DODGE	ASPEN	07-006
DODGE	DIPLOMAT	07-007
DODGE	OMNI, CHARGER	07-008
DODGE	MIRADA	07-009
DODGE	ST REGIS	07-010
DODGE	ARIES (K)	07-011
DODGE	400	07-012
DODGE	RAMPAGE 2.2, GT, SPORT	07-013
DODGE	600	07-014
DODGE	DAYTONA	07-015
DODGE	LANCER	07-016
DODGE	SHADOW	07-017
DODGE	DYNASTY	07-018
DODGE	SPIRIT	07-019
DODGE	NEON	07-020
DODGE	MAGNUM	07-024
DODGE	CHALLENGER (ALL IMPORTED)	07-033
DODGE	COLT (EXCLUDES VISTA)	07-034
DODGE	CONQUEST	07-035
DODGE	STEALTH	07-039
DODGE	MONACO	07-040
DODGE	INTREPID	07-041
DODGE	AVENGER	07-042
DODGE	STRATUS	07-043
DODGE	OTHER AUTOMOBILE	07-398
DODGE	UNKNOWN AUTOMOBILE	07-399
DODGE	RAIDER	07-401

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
DODGE	RAMCHARGER	07-421
DODGE	DURANGO	07-422
DODGE	VISTA	07-441
DODGE	CARAVAN	07-442
DODGE	B-SERIES VANS	07-461
DODGE	SPRINTER	07-462
DODGE	VAN DERIVATIVE	07-470
DODGE	D50, COLT PICKUP, RAM 50, RAM 100	07-471
DODGE	DAKOTA	07-472
DODGE	D, W-SERIES PICKUP, W100-W350	07-481
DODGE	RAM	07-482
DODGE	OTHER LIGHT TRUCK	07-498
DODGE	UNKNOWN LIGHT TRUCK	07-499
DODGE	MEDIUM, HEAVY, CBE	07-881
DODGE	MEDIUM, HEAVY, COE LOW ENTRY	07-882
DODGE	MEDIUM, HEAVY, COE HIGH ENTRY	07-883
DODGE	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	07-884
DODGE	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	07-890
DODGE	OTHER MEDIUM, HEAVY TRUCK	07-898
DODGE	UNKNOWN MEDIUM, HEAVY TRUCK	07-899
DODGE	UNKNOWN TYPE TRUCK (LIGHT, MEDIUM, HEAVY)	07-899
DODGE	MEDIUM BUS	07-981
DODGE	OTHER BUS	07-988
DODGE	UNKNOWN BUS TYPE	07-989
DODGE	OTHER VEHICLE	07-998
DODGE	UNKNOWN VEHICLE	07-999
IMPERIAL	IMPERIAL	08-010
IMPERIAL	OTHER AUTOMOBILE	08-398
IMPERIAL	UNKNOWN AUTOMOBILE	08-399
IMPERIAL	UNKNOWN VEHICLE	08-999
PLYMOUTH	VALIANT, DUSTER, SCAMP	09-001
PLYMOUTH	SATELLITE, BELVEDERE	09-002
PLYMOUTH	FURY	09-003
PLYMOUTH	GRAN FURY	09-004

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
PLYMOUTH	BARRACUDA	09-005
PLYMOUTH	VOLARE	09-006
PLYMOUTH	CARAVELLE	09-007
PLYMOUTH	HORIZON	09-008
PLYMOUTH	RELIANT (K)	09-011
PLYMOUTH	SCAMP (CAR-BASED PICKUP)	09-013
PLYMOUTH	SUNDANCE	09-017
PLYMOUTH	ACCLAIM	09-019
PLYMOUTH	NEON	09-020
PLYMOUTH	CRICKET	09-031
PLYMOUTH	ARROW	09-032
PLYMOUTH	SAPPORO	09-033
PLYMOUTH	CHAMP, COLT (EXCLUDES VISTA)	09-034
PLYMOUTH	CONQUEST	09-035
PLYMOUTH	LASER	09-037
PLYMOUTH	BREEZE	09-038
PLYMOUTH	PROWLER	09-039
PLYMOUTH	OTHER AUTOMOBILE	09-398
PLYMOUTH	UNKNOWN AUTOMOBILE	09-399
PLYMOUTH	TRAILDUSTER	09-421
PLYMOUTH	COLT VISTA	09-441
PLYMOUTH	VOYAGER (MINIVAN)	09-442
PLYMOUTH	VAN, FULL-SIZE (B-SERIES)	09-461
PLYMOUTH	ARROW PICKUP (FOREIGN)	09-471
PLYMOUTH	OTHER LIGHT TRUCK	09-498
PLYMOUTH	UNKNOWN LIGHT TRUCK	09-499
PLYMOUTH	UNKNOWN VEHICLE	09-999
EAGLE	SUMMIT	10-034
EAGLE	TALON	10-037
EAGLE	PREMIER	10-040
EAGLE	VISION	10-041
EAGLE	MEDALLION	10-044
EAGLE	OTHER AUTOMOBILE	10-398
EAGLE	UNKNOWN AUTOMOBILE	10-399
EAGLE	SUMMIT WAGON	10-441
EAGLE	OTHER LIGHT TRUCK	10-498
EAGLE	UNKNOWN LIGHT TRUCK	10-499

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
EAGLE	UNKNOWN VEHICLE	10-999
FORD	FALCON	12-001
FORD	FAIRLANE	12-002
FORD	MUSTANG, MUSTANG II	12-003
FORD	THUNDERBIRD (ALL SIZES)	12-004
FORD	LTD II	12-005
FORD	LTD, CUSTOM/GALAXIE (ALL SIZES)	12-006
FORD	RANCHERO	12-007
FORD	MAVERICK	12-008
FORD	PINTO	12-009
FORD	TORINO, GRAN TORINO, ELITE	12-010
FORD	GRANADA	12-011
FORD	FAIRMONT	12-012
FORD	ESCORT, EXP	12-013
FORD	TEMPO	12-015
FORD	CROWN VICTORIA	12-016
FORD	TAURUS	12-017
FORD	PROBE	12-018
FORD	FIVE HUNDRED	12-021
FORD	FREESTYLE	12-022
FORD	ENGLISH FORD	12-031
FORD	FIESTA	12-032
FORD	FESTIVA	12-033
FORD	LASER	12-034
FORD	CONTOUR	12-035
FORD	ASPIRE	12-036
FORD	FOCUS	12-037
FORD	GT	12-038
FORD	OTHER AUTOMOBILE	12-398
FORD	UNKNOWN AUTOMOBILE	12-399
FORD	EXPLORER, BRONCO II, BRONCO (-77)	12-401
FORD	ESCAPE	12-402
FORD	BRONCO, FULL-SIZE	12-421
FORD	EXPEDITION	12-422
FORD	EXCURSION	12-431
FORD	AEROSTAR	12-441

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
FORD	WINDSTAR	12-442
FORD	FREESTAR	12-443
FORD	E-SERIES VANS	12-461
FORD	VAN DERIVATIVE	12-470
FORD	RANGER	12-471
FORD	COURIER	12-472
FORD	SPORT TRAC	12-473
FORD	F-SERIES PICKUP	12-481
FORD	OTHER LIGHT TRUCK	12-498
FORD	UNKNOWN LIGHT TRUCK	12-499
FORD	F450, 550 PICKUP GREATER THAN 4536 GVWR	12-880
FORD	MEDIUM, HEAVY, CBE	12-881
FORD	MEDIUM, HEAVY, COE LOW ENTRY	12-882
FORD	MEDIUM, HEAVY, COE HIGH ENTRY	12-883
FORD	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	12-884
FORD	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	12-890
FORD	OTHER MEDIUM, HEAVY TRUCK	12-898
FORD	UNKNOWN MEDIUM, HEAVY TRUCK	12-899
FORD	UNKNOWN TYPE TRUCK (LIGHT, MEDIUM, HEAVY)	12-899
FORD	MEDIUM BUS	12-981
FORD	OTHER BUS	12-988
FORD	UNKNOWN BUS TYPE	12-989
FORD	OTHER VEHICLE	12-998
FORD	UNKNOWN VEHICLE	12-999
LINCOLN	CONTINENTAL, TOWN CAR	13-001
LINCOLN	MARK	13-002
LINCOLN	CONTINENTAL ('82 ONWARD)	13-005
LINCOLN	VERSAILLES	13-011
LINCOLN	LS	13-012
LINCOLN	OTHER AUTOMOBILE	13-398
LINCOLN	UNKNOWN AUTOMOBILE	13-399
LINCOLN	AVIATOR	13-401
LINCOLN	NAVIGATOR	13-421

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
LINCOLN	BLACKWOOD	13-481
LINCOLN	MARK LT	13-482
LINCOLN	OTHER LIGHT TRUCK	13-498
LINCOLN	UNKNOWN VEHICLE	13-999
MERCURY	CYCLONE	14-002
MERCURY	CAPRI-DOMESTIC	14-003
MERCURY	COUGAR, XR7	14-004
MERCURY	MARQUIS, MONTEREY	14-006
MERCURY	COMET	14-008
MERCURY	BOBCAT	14-009
MERCURY	MONTEGO	14-010
MERCURY	MONARCH	14-011
MERCURY	ZEPHYR	14-012
MERCURY	LYN, LN-7 ('82-'83)	14-013
MERCURY	TOPAZ	14-015
MERCURY	SABLE	14-017
MERCURY	MONTEGO (2005 ONWARD)	14-020
MERCURY	CAPRI-FOREIGN	14-031
MERCURY	PANTERA	14-033
MERCURY	TRACER	14-036
MERCURY	MYSTIQUE	14-037
MERCURY	COUGAR	14-038
MERCURY	MARAUDER	14-039
MERCURY	OTHER AUTOMOBILE	14-398
MERCURY	UNKNOWN AUTOMOBILE	14-399
MERCURY	MOUNTAINEER	14-401
MERCURY	MARINER	14-402
MERCURY	VILLAGER	14-443
MERCURY	MONTEREY (2004 ONWARD)	14-444
MERCURY	OTHER LIGHT TRUCK	14-498
MERCURY	UNKNOWN LIGHT TRUCK	14-499
MERCURY	UNKNOWN VEHICLE	14-999
BUICK	SPECIAL, SKYLARK (THROUGH 1972)	18-001
BUICK	LESABRE, CENTURION, WILDCAT	18-002
BUICK	ELECTRA, ELECTRA 225, PARK AVENUE ('91 ONWARD)	18-003
BUICK	ROADMASTER	18-004

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
BUICK	RIVIERA	18-005
BUICK	CENTURY	18-007
BUICK	APOLLO, SKYLARK ('73-'76)	18-008
BUICK	REGAL	18-010
BUICK	SKYHAWK	18-012
BUICK	SKYLARK ('76-'85)	18-015
BUICK	SOMERSET ('85-'87)/SKYLARK ('86 ONWARD)	18-018
BUICK	REGAL (FWD)	18-020
BUICK	REATA	18-021
BUICK	LACROSSE	18-022
BUICK	OPEL KADETT	18-031
BUICK	OPEL MANTA	18-032
BUICK	OPEL GT	18-033
BUICK	OPEL ISUZU	18-034
BUICK	OTHER AUTOMOBILE	18-398
BUICK	UNKNOWN AUTOMOBILE	18-399
BUICK	RENDEZVOUS	18-401
BUICK	RAINIER	18-402
BUICK	TERRAZA	18-441
BUICK	OTHER LIGHT TRUCK	18-498
BUICK	UNKNOWN LIGHT TRUCK	18-499
BUICK	UNKNOWN VEHICLE	18-999
CADILLAC	DEVILLE, FLEETWOOD	19-003
CADILLAC	LIMOUSINE	19-004
CADILLAC	ELDORADO	19-005
CADILLAC	COMMERCIAL SERIES	19-006
CADILLAC	ALLANTE	19-009
CADILLAC	SEVILLE	19-014
CADILLAC	CIMARRON	19-016
CADILLAC	CATERA	19-017
CADILLAC	CTS	19-018
CADILLAC	XLR	19-019
CADILLAC	SRX	19-020
CADILLAC	STS	19-021
CADILLAC	OTHER AUTOMOBILE	19-398
CADILLAC	UNKNOWN AUTOMOBILE	19-399

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
CADILLAC	ESCALADE	19-421
CADILLAC	ESCALADE ESV	19-431
CADILLAC	ESCALADE EXT	19-480
CADILLAC	OTHER LIGHT TRUCK	19-498
CADILLAC	UNKNOWN LIGHT TRUCK	19-498
CADILLAC	UNKNOWN VEHICLE	19-999
CHEVROLET	CHEVELLE, MALIBU ('83 ONWARD)	20-001
CHEVROLET	IMPALA, CAPRICE	20-002
CHEVROLET	CORVETTE	20-004
CHEVROLET	CORVAIR	20-006
CHEVROLET	EL CAMINO	20-007
CHEVROLET	NOVA ('79)	20-008
CHEVROLET	CAMARO	20-009
CHEVROLET	MONTE CARLO ('70-'88) (RWD ONLY)	20-010
CHEVROLET	VEGA	20-011
CHEVROLET	MONZA	20-012
CHEVROLET	CHEVETTE	20-013
CHEVROLET	CITATION	20-015
CHEVROLET	CAVALIER	20-016
CHEVROLET	CELEBRITY	20-017
CHEVROLET	BERETTA, CORSICA	20-019
CHEVROLET	LUMINA	20-020
CHEVROLET	COBALT	20-022
CHEVROLET	SPECTRUM	20-031
CHEVROLET	NOVA, GEO PRIZM	20-032
CHEVROLET	SPRINT, GEO SPRINT	20-033
CHEVROLET	GEO METRO	20-034
CHEVROLET	GEO STORM	20-035
CHEVROLET	MONTE CARLO (1995 ONWARD) (FWD ONLY)	20-036
CHEVROLET	MALIBU (1997 ONWARD)	20-037
CHEVROLET	SSR	20-038
CHEVROLET	AVEO	20-039
CHEVROLET	OTHER AUTOMOBILE	20-398
CHEVROLET	UNKNOWN AUTOMOBILE	20-399

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
CHEVROLET	S10 BLAZER, BLAZER	20-401
CHEVROLET	GEO TRACKER	20-402
CHEVROLET	TRAILBLAZER (2002 AND LATER)	20-403
CHEVROLET	EQUINOX	20-404
CHEVROLET	FULL-SIZE BLAZER (K, TAHOE)	20-431
CHEVROLET	ASTRO VAN	20-441
CHEVROLET	LUMINA APV, VENTURE	20-442
CHEVROLET	UPLANDER	20-444
CHEVROLET	G-SERIES VAN	20-461
CHEVROLET	P-SERIES VAN	20-466
CHEVROLET	VAN DERIVATIVE	20-470
CHEVROLET	S10, T10	20-471
CHEVROLET	LUV	20-472
CHEVROLET	COLORADO	20-473
CHEVROLET	C-, K-, R-, V-SERIES PICKUP	20-481
CHEVROLET	AVALANCHE	20-482
CHEVROLET	OTHER LIGHT TRUCK	20-498
CHEVROLET	UNKNOWN LIGHT TRUCK	20-499
CHEVROLET	MEDIUM, HEAVY, CBE	20-881
CHEVROLET	MEDIUM, HEAVY, COE LOW ENTRY	20-882
CHEVROLET	MEDIUM, HEAVY, COE HIGH ENTRY	20-883
CHEVROLET	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	20-890
CHEVROLET	OTHER MEDIUM, HEAVY TRUCK	20-898
CHEVROLET	UNKNOWN MEDIUM, HEAVY TRUCK	20-899
CHEVROLET	BUS	20-981
CHEVROLET	OTHER BUS	20-988
CHEVROLET	UNKNOWN BUS TYPE	20-989
CHEVROLET	OTHER VEHICLE	20-998
CHEVROLET	UNKNOWN VEHICLE	20-999
OLDSMOBILE	CUTLASS (RWD ONLY)	21-001
OLDSMOBILE	DELTA 88	21-002
OLDSMOBILE	NINETY-EIGHT	21-003
OLDSMOBILE	TORONADO-TROFEO	21-005
OLDSMOBILE	COMMERCIAL SERIES	21-006
OLDSMOBILE	STARFIRE	21-012
OLDSMOBILE	OMEGA	21-015

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
OLDSMOBILE	FIRENZA	21-016
OLDSMOBILE	CIERA	21-017
OLDSMOBILE	CALAIS	21-018
OLDSMOBILE	CUTLASS (FWD)	21-020
OLDSMOBILE	ACHIEVA	21-021
OLDSMOBILE	AURORA	21-022
OLDSMOBILE	INTRIGUE	21-023
OLDSMOBILE	ALERO	21-024
OLDSMOBILE	OTHER AUTOMOBILE	21-398
OLDSMOBILE	UNKNOWN AUTOMOBILE	21-399
OLDSMOBILE	BRAVADA	21-401
OLDSMOBILE	SILHOUETTE	21-441
OLDSMOBILE	OTHER LIGHT TRUCK	21-498
OLDSMOBILE	UNKNOWN LIGHT TRUCK	21-499
OLDSMOBILE	OTHER VEHICLE	21-998
OLDSMOBILE	UNKNOWN VEHICLE	21-999
PONTIAC	LEMANS, TEMPEST (THROUGH '79)	22-001
PONTIAC	BONNEVILLE, CATALINA, PARISIENNE	22-002
PONTIAC	FIERO	22-005
PONTIAC	VENTURA	22-008
PONTIAC	FIREBIRD, TRANS AM	22-009
PONTIAC	GRAND PRIX (RWD)	22-010
PONTIAC	ASTRE	22-011
PONTIAC	SUNBIRD (THROUGH '80)	22-012
PONTIAC	T1000, 1000	22-013
PONTIAC	PHOENIX	22-015
PONTIAC	J2000, SUNBIRD, SUNFIRE	22-016
PONTIAC	6000	22-017
PONTIAC	GRAND AM	22-018
PONTIAC	GRAND PRIX (FWD)	22-020
PONTIAC	G6	22-022
PONTIAC	LEMANS ('88 ONWARD)	22-031
PONTIAC	OTHER AUTOMOBILE	22-398
PONTIAC	UNKNOWN AUTOMOBILE	22-399
PONTIAC	AZTEK	22-401
PONTIAC	VIBE	22-402

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
PONTIAC	TRANS SPORT, MONTANA	22-441
PONTIAC	OTHER LIGHT TRUCK	22-498
PONTIAC	UNKNOWN LIGHT TRUCK	22-499
PONTIAC	UNKNOWN VEHICLE	22-999
GMC	CABALLERO, SPRINT	23-007
GMC	OTHER AUTOMOBILE	23-398
GMC	UNKNOWN AUTOMOBILE	23-399
GMC	JIMMY, TYPHOON, ENVOY	23-401
GMC	FULL-SIZE JIMMY, YUKON	23-421
GMC	SUBURBAN	23-431
GMC	SAFARI (MINIVAN)	23-441
GMC	RALLY VAN, VANDURA, G15-G-35	23-461
GMC	P-SERIES VAN	23-466
GMC	VAN DERIVATIVE	23-470
GMC	S15, T15, SONOMA	23-471
GMC	CANYON	23-472
GMC	C-, K-, R-, V-SERIES PICKUP	23-481
GMC	OTHER LIGHT TRUCK	23-498
GMC	UNKNOWN LIGHT TRUCK	23-499
GMC	MEDIUM, HEAVY, CBE	23-881
GMC	MEDIUM, HEAVY, COE LOW ENTRY	23-882
GMC	MEDIUM, HEAVY, COE HIGH ENTRY	23-883
GMC	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	23-884
GMC	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	23-890
GMC	OTHER MEDIUM, HEAVY TRUCK	23-898
GMC	UNKNOWN MEDIUM, HEAVY TRUCK	23-899
GMC	UNKNOWN TYPE TRUCK (LIGHT, MEDIUM, HEAVY)	23-899
GMC	MEDIUM BUS	23-981
GMC	OTHER BUS	23-998
GMC	UNKNOWN BUS TYPE	23-989
GMC	UNKNOWN VEHICLE	23-999
SATURN	SL	24-001
SATURN	SC	24-002
SATURN	SW	24-003

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
SATURN	EV	24-004
SATURN	LS, LS1, LS2, L100, L200, L300	24-005
SATURN	LW, LW1, LW2, LW200, LW300	24-006
SATURN	ION	24-007
SATURN	OTHER AUTOMOBILE	24-398
SATURN	UNKNOWN AUTOMOBILE	24-399
SATURN	VUE	24-401
SATURN	RELAY	24-441
SATURN	OTHER LIGHT TRUCK	24-498
SATURN	UNKNOWN LIGHT TRUCK	24-499
SATURN	UNKNOWN VEHICLE	24-999
GRUMMAN	LLV	25-441
GRUMMAN	STEP-IN VAN	25-442
GRUMMAN	OTHER LIGHT TRUCK	25-498
GRUMMAN	UNKNOWN LIGHT TRUCK	25-499
GRUMMAN	MEDIUM, HEAVY TRUCK, CBE	25-881
GRUMMAN	MEDIUM, HEAVY TRUCK, COE LOW ENTRY	25-882
GRUMMAN	MEDIUM, HEAVY TRUCK, COE HIGH ENTRY	25-883
GRUMMAN	MEDIUM, HEAVY TRUCK UNKNOWN ENGINE LOCATION	25-884
GRUMMAN	MEDIUM, HEAVY TRUCK ENTRY POSITION UNKNOWN	25-890
GRUMMAN	OTHER MEDIUM, HEAVY TRUCK	25-898
GRUMMAN	UNKNOWN MEDIUM, HEAVY TRUCK	25-899
GRUMMAN	BUS, FLAT FRONT, REAR ENGINE	25-983
GRUMMAN	UNKNOWN BUS TYPE	25-989
GRUMMAN	OTHER BUS	25-998
GRUMMAN	UNKNOWN VEHICLE	25-999
STUDEBAKER	LARK, GRAN TURISMO, CRUISER, HAWK	29-001
CHECKER	MARATHON, AEROBUS, SUPERBA, TAXI	29-002
OTHER DOMESTIC MANUFACTURER (LIGHT VEHICLES)	OTHER MAKE	29-398

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
OTHER DOMESTIC MANUFACTURER (LIGHT VEHICLES)	UNKNOWN MAKE	29-399
OTHER DOMESTIC MANUFACTURER (LIGHT VEHICLES)	OTHER LIGHT TRUCK	29-498
INDIAN	MOTORCYCLE (000-050cc)	29-701
BUELL	MOTORCYCLE (000-051cc)	29-701
INDIAN	MOTORCYCLE (051-124cc)	29-702
BUELL	MOTORCYCLE (051-124cc)	29-702
INDIAN	MOTORCYCLE (125-349cc)	29-703
BUELL	MOTORCYCLE (125-349cc)	29-703
INDIAN	MOTORCYCLE (350-449cc)	29-704
BUELL	MOTORCYCLE (350-449cc)	29-704
INDIAN	MOTORCYCLE (450-749cc)	29-705
BUELL	MOTORCYCLE (450-749cc)	29-705
INDIAN	MOTORCYCLE (750cc OR GREATER)	29-706
BUELL	MOTORCYCLE (750cc OR GREATER)	29-706
INDIAN	MOTORCYCLE (UNKNOWN cc)	29-709
BUELL	MOTORCYCLE (UNKNOWN cc)	29-709
INDIAN	OTHER MOTORED CYCLE	29-798
BUELL	OTHER MOTORED CYCLE	29-798
INDIAN	UNKNOWN MOTORED CYCLE	29-799
BUELL	UNKNOWN MOTORED CYCLE	29-799
OTHER DOMESTIC MANUFACTURER (LIGHT VEHICLES)	OTHER MEDIUM, HEAVY TRUCK	29-898
OTHER DOMESTIC MANUFACTURER (LIGHT VEHICLES)	OTHER BUS	29-988
OTHER DOMESTIC MANUFACTURER (LIGHT VEHICLES)	OTHER VEHICLE	29-998
VOLKSWAGEN	KARMANN GHIA	30-031
VOLKSWAGEN	BEETLE 1300, 1500	30-032
VOLKSWAGEN	SUPER BEETLE	30-033
VOLKSWAGEN	411, 412	30-034
VOLKSWAGEN	SQUAREBACK, FASTBACK	30-035

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
VOLKSWAGEN	RABBIT	30-036
VOLKSWAGEN	DASHER	30-037
VOLKSWAGEN	SCIROCCO	30-038
VOLKSWAGEN	JETTA	30-040
VOLKSWAGEN	QUANTUM	30-041
VOLKSWAGEN	GOLF, CABRIOLET, GTI	30-042
VOLKSWAGEN	RABBIT PICKUP	30-043
VOLKSWAGEN	FOX	30-044
VOLKSWAGEN	CORRADO	30-045
VOLKSWAGEN	PASSAT	30-046
VOLKSWAGEN	JETTA III	30-047
VOLKSWAGEN	GOLF III	30-048
VOLKSWAGEN	NEW BEETLE	30-049
VOLKSWAGEN	PHAETON	30-050
VOLKSWAGEN	OTHER AUTOMOBILE	30-398
VOLKSWAGEN	UNKNOWN AUTOMOBILE	30-399
VOLKSWAGEN	THE THING (181)	30-401
VOLKSWAGEN	TOUAREG	30-421
VOLKSWAGEN	VANAGON, CAMPER	30-441
VOLKSWAGEN	EUROVAN	30-442
VOLKSWAGEN	OTHER LIGHT TRUCK	30-498
VOLKSWAGEN	UNKNOWN LIGHT TRUCK	30-499
VOLKSWAGEN	OTHER VEHICLE	30-998
VOLKSWAGEN	UNKNOWN VEHICLE	30-999
ALFA ROMEO	SPIDER	31-031
ALFA ROMEO	SPORTS SEDAN	31-032
ALFA ROMEO	SPRINT SPECIAL	31-033
ALFA ROMEO	GTV-6	31-034
ALFA ROMEO	164	31-035
ALFA ROMEO	OTHER AUTOMOBILE	31-398
ALFA ROMEO	UNKNOWN AUTOMOBILE	31-399
ALFA ROMEO	UNKNOWN VEHICLE	31-999
AUDI SUPER	90	32-031
AUDI	100, A6	32-032
AUDI	FOX	32-033
AUDI	4000	32-034
AUDI	5000	32-035

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
AUDI	80, 90	32-036
AUDI	200	32-037
AUDI	V8 QUATTRO	32-038
AUDI	COUPE QUATTRO	32-039
AUDI	S4, S6	32-040
AUDI	CABRIOLET	32-041
AUDI	A4	32-042
AUDI	A3	32-043
AUDI	A8	32-044
AUDI	TT	32-045
AUDI	S8	32-046
AUDI	ALLROAD	32-047
AUDI	OTHER AUTOMOBILE	32-398
AUDI	UNKNOWN AUTOMOBILE	32-399
AUDI	UNKNOWN VEHICLE	32-999
AUSTIN-HEALEY	MARINA	33-031
AUSTIN-HEALEY	AMERICA	33-032
AUSTIN-HEALEY	SPRITE	33-033
AUSTIN-HEALEY	3000	33-034
AUSTIN-HEALEY	MINI	33-035
AUSTIN-HEALEY	OTHER AUTOMOBILE	33-398
AUSTIN-HEALEY	UNKNOWN AUTOMOBILE	33-399
AUSTIN-HEALEY	UNKNOWN VEHICLE	33-999
BMW	1600, 2002	34-031
BMW	COUPE	34-032
BMW	BAVARIA SEDAN	34-033
BMW	3 SERIES	34-034
BMW	5 SERIES	34-035
BMW	6 SERIES	34-036
BMW	7 SERIES	34-037
BMW	8 SERIES	34-038
BMW	Z3	34-039
BMW	Z8	34-040
BMW	Z4	34-042
BMW	OTHER AUTOMOBILE	34-398
BMW	UNKNOWN AUTOMOBILE	34-399
BMW	X5	34-401

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
BMW	X3	34-402
BMW	OTHER LIGHT TRUCK	34-498
BMW	UNKNOWN LIGHT TRUCK	34-499
BMW	MOTORCYCLE (000–050cc)	34-701
BMW	MOTORCYCLE (051–124cc)	34-702
BMW	MOTORCYCLE (125–349cc)	34-703
BMW	MOTORCYCLE (350–449cc)	34-704
BMW	MOTORCYCLE (450–749cc)	34-705
BMW	MOTORCYCLE (750cc OR GREATER)	34-706
BMW	MOTORCYCLE (UNKNOWN cc)	34-709
BMW	UNKNOWN MOTORED CYCLE	34-799
BMW	UNKNOWN VEHICLE	34-999
NISSAN/DATSUN	F10	35-031
NISSAN/DATSUN	200, 240SX	35-032
NISSAN/DATSUN	1200, 210, B210	35-033
NISSAN/DATSUN	ZCAR, ZX	35-034
NISSAN/DATSUN	310	35-035
NISSAN/DATSUN	510	35-036
NISSAN/DATSUN	610	35-037
NISSAN/DATSUN	710	35-038
NISSAN/DATSUN	810, MAXIMA	35-039
NISSAN/DATSUN	ROADSTER	35-040
NISSAN/DATSUN	PL411, RL411	35-041
NISSAN/DATSUN	STANZA	35-042
NISSAN/DATSUN	SENTRA	35-043
NISSAN/DATSUN	PULSAR	35-044
NISSAN/DATSUN	MICRA	35-045
NISSAN/DATSUN	NX 1600, 2000	35-046
NISSAN/DATSUN	ALTIMA	35-047
NISSAN/DATSUN	350Z	35-048
NISSAN/DATSUN	MURANO	35-049
NISSAN/DATSUN	OTHER AUTOMOBILE	35-398
NISSAN/DATSUN	UNKNOWN AUTOMOBILE	35-399
NISSAN/DATSUN	PATHFINDER	35-401
NISSAN/DATSUN	XTERRA	35-402
NISSAN/DATSUN	PATHFINDER ARMADA	35-421
NISSAN/DATSUN	VAN	35-441

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
NISSAN/DATSUN	AXXESS	35-442
NISSAN/DATSUN	QUEST	35-443
NISSAN/DATSUN	PICKUP FRONTIER	35-471
NISSAN/DATSUN	TITAN	35-473
NISSAN/DATSUN	OTHER LIGHT TRUCK	35-498
NISSAN/DATSUN	UNKNOWN LIGHT TRUCK	35-499
NISSAN/DATSUN	MEDIUM, HEAVY, COE HIGH ENTRY	35-883
NISSAN/DATSUN	OTHER MEDIUM, HEAVY TRUCK	35-898
NISSAN/DATSUN	UNKNOWN MEDIUM, HEAVY TRUCK	35-899
NISSAN/DATSUN	UNKNOWN TYPE TRUCK (LIGHT, MEDIUM, HEAVY)	35-899
NISSAN/DATSUN	UNKNOWN VEHICLE	35-999
FIAT	124 (COUPE, SEDAN)	36-031
FIAT	124 SPIDER, RACER	36-032
FIAT	BRAVA-131	36-033
FIAT	850 (COUPE, SPYDER)	36-034
FIAT	128	36-035
FIAT	X-1, 9	36-036
FIAT	STRADA	36-037
FIAT	OTHER AUTOMOBILE	36-398
FIAT	UNKNOWN AUTOMOBILE	36-399
FIAT	MEDIUM, HEAVY, COE LOW ENTRY	36-882
FIAT	MEDIUM, HEAVY, COE HIGH ENTRY	36-883
FIAT	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	36-890
FIAT	OTHER MEDIUM, HEAVY TRUCK	36-898
FIAT	UNKNOWN MEDIUM, HEAVY TRUCK	36-899
FIAT	UNKNOWN VEHICLE	36-999
HONDA	CIVIC, CRX, DEL SOL	37-031
HONDA	ACCORD	37-032
HONDA	PRELUDE	37-033
HONDA	600	37-034
HONDA	S2000	37-035
HONDA	INSIGHT	37-037
HONDA	FCX	37-038
HONDA	OTHER AUTOMOBILE	37-398
HONDA	UNKNOWN AUTOMOBILE	37-399

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
HONDA	PASSPORT	37-401
HONDA	CRV	37-402
HONDA	ELEMENT	37-403
HONDA	PILOT	37-421
HONDA	ODYSSEY	37-441
HONDA	RIDGELINE	37-471
HONDA	OTHER LIGHT TRUCK	37-498
HONDA	UNKNOWN LIGHT TRUCK	37-499
HONDA	MOTORCYCLE (000–050cc)	37-701
HONDA	MOTORCYCLE (051–124cc)	37-702
HONDA	MOTORCYCLE (125–349cc)	37-703
HONDA	MOTORCYCLE (350–449cc)	37-704
HONDA	MOTORCYCLE (450–749c)	37-705
HONDA	MOTORCYCLE (750cc OR GREATER)	37-706
HONDA	MOTORCYCLE (UNKNOWN cc)	37-709
HONDA	ATC, ATV (000–050cc)	37-731
HONDA	ATC, ATV (051–124cc)	37-732
HONDA	ATC, ATV (125–349cc)	37-733
HONDA	ATC, ATV (350cc OR GREATER)	37-734
HONDA	ATC, ATV (UNKNOWN cc)	37-739
HONDA	OTHER MOTORED CYCLE	37-798
HONDA	UNKNOWN VEHICLE	37-999
ISUZU	I-MARK	38-031
ISUZU	IMPULSE	38-032
ISUZU	STYLUS	38-033
ISUZU	OTHER AUTOMOBILE	38-398
ISUZU	UNKNOWN AUTOMOBILE	38-399
ISUZU	TROOPER, TROOPER II	38-401
ISUZU	RODEO	38-402
ISUZU	AMIGO	38-403
ISUZU	VEHICROSS	38-404
ISUZU	AXIOM	38-405
ISUZU	ASCENDER	38-421
ISUZU	OASIS	38-441
ISUZU	P'UP (PICKUP) HOMBRE	38-471
ISUZU	OTHER LIGHT TRUCK	38-498
ISUZU	UNKNOWN LIGHT TRUCK	38-499

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
ISUZU	MEDIUM, HEAVY, CBE	38-881
ISUZU	MEDIUM, HEAVY, COE LOW ENTRY	38-882
ISUZU	MEDIUM, HEAVY, COE HIGH ENTRY	38-883
ISUZU	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	38-884
ISUZU	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	38-890
ISUZU	OTHER MEDIUM, HEAVY TRUCK	38-898
ISUZU	UNKNOWN MEDIUM, HEAVY TRUCK	38-899
ISUZU	UNKNOWN TYPE TRUCK (LIGHT, MEDIUM, HEAVY)	38-899
ISUZU	CONVENTIONAL FRONT ENGINE	38-981
ISUZU	FRONT ENGINE, FLAT FRONT	38-982
ISUZU	REAR ENGINE, FLAT FRONT	38-983
ISUZU	OTHER BUS	38-988
ISUZU	UNKNOWN BUS TYPE	38-989
ISUZU	UNKNOWN VEHICLE	38-999
JAGUAR	XJS COUPE	39-031
JAGUAR	XJ6, 12 SEDAN, COUPE, XJ8	39-032
JAGUAR	VANDEN PLAS	39-032
JAGUAR	XKE	39-033
JAGUAR	X100	39-034
JAGUAR	S-TYPE	39-034
JAGUAR	X-TYPE	39-035
JAGUAR	OTHER AUTOMOBILE	39-398
JAGUAR	UNKNOWN AUTOMOBILE	39-399
JAGUAR	UNKNOWN VEHICLE	39-999
LANCIA	BETA SEDAN-HPE	40-031
LANCIA	BETA COUPE-ZAGATO	40-032
LANCIA	SCORPION	40-033
LANCIA	OTHER AUTOMOBILE	40-398
LANCIA	UNKNOWN AUTOMOBILE	40-399
LANCIA	UNKNOWN VEHICLE	40-999
MAZDA	RX2	41-031
MAZDA	RX3	41-032
MAZDA	RX4	41-033
MAZDA	RX7	41-034

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
MAZDA	GLC, PROTÉGÉ, 323	41-035
MAZDA	COSMO	41-036
MAZDA	626	41-037
MAZDA	808	41-038
MAZDA	MIZER	41-039
MAZDA	R100	41-040
MAZDA	616, 618	41-041
MAZDA	1800	41-042
MAZDA	929	41-043
MAZDA	MX6	41-044
MAZDA	MIATA	41-045
MAZDA	MX3	41-046
MAZDA	MILLENIA	41-047
MAZDA	MP3	41-048
MAZDA	RX8	41-049
MAZDA	MAZDA6	41-050
MAZDA	MAZDA3	41-051
MAZDA	OTHER AUTOMOBILE	41-398
MAZDA	UNKNOWN AUTOMOBILE	41-399
MAZDA	NAVAJO	41-401
MAZDA	TRIBUTE	41-402
MAZDA	MPV	41-441
MAZDA	MAZDA PICKUP	41-471
MAZDA	OTHER LIGHT TRUCK	41-498
MAZDA	UNKNOWN LIGHT TRUCK	41-499
MAZDA	UNKNOWN VEHICLE	41-999
MERCEDES-BENZ	200, 220, 230, 240, 250, 260, 280, 300, 320SE, CD, D, SD, ETC.	42-031
MERCEDES-BENZ	230, 280SL	42-032
MERCEDES-BENZ	300, 350, 380, 450, 500SL, 560SL	42-033
MERCEDES-BENZ	350, 380, 420, 450, 560SLC	42-034
MERCEDES-BENZ	280, 300SEL	42-035
MERCEDES-BENZ	380, 420, 450, 500, 560SEL, 500SEC, 560SEC, 350SDL, 300SDL	42-036
MERCEDES-BENZ	300SE, 380, 450SE	42-037
MERCEDES-BENZ	600, 6.9 SEDAN	42-038
MERCEDES-BENZ	190	42-039

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
MERCEDES-BENZ	300	42-040
MERCEDES-BENZ	400, 500E	42-041
MERCEDES-BENZ	220, 280C	42-042
MERCEDES-BENZ	S-CLASS	42-043
MERCEDES-BENZ	SL-CLASS	42-044
MERCEDES-BENZ	SLK	42-045
MERCEDES-BENZ	CL	42-046
MERCEDES-BENZ	CLK	42-047
MERCEDES-BENZ	E	42-048
MERCEDES-BENZ	SLR MCLAREN	42-049
MERCEDES-BENZ	OTHER AUTOMOBILE	42-398
MERCEDES-BENZ	UNKNOWN AUTOMOBILE	42-399
MERCEDES-BENZ	M	42-401
MERCEDES-BENZ	G-CLASS	42-402
MERCEDES-BENZ	VAN DERIVATIVE	42-470
MERCEDES-BENZ	OTHER LIGHT TRUCK	42-498
MERCEDES-BENZ	UNKNOWN LIGHT TRUCK	42-499
MERCEDES-BENZ	MEDIUM, HEAVY, CBE	42-881
MERCEDES-BENZ	MEDIUM, HEAVY, COE LOW ENTRY	42-882
MERCEDES-BENZ	MEDIUM, HEAVY, COE HIGH ENTRY	42-883
MERCEDES-BENZ	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	42-884
MERCEDES-BENZ	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	42-890
MERCEDES-BENZ	OTHER MEDIUM, HEAVY TRUCK	42-898
MERCEDES-BENZ	UNKNOWN MEDIUM, HEAVY TRUCK	42-899
MERCEDES-BENZ	UNKNOWN TYPE TRUCK (LIGHT, MEDIUM, HEAVY)	42-899
MERCEDES-BENZ	MEDIUM BUS	42-981
MERCEDES-BENZ	OTHER BUS	42-988
MERCEDES-BENZ	UNKNOWN BUS TYPE	42-989
MERCEDES-BENZ	UNKNOWN VEHICLE	42-999
MG	MIDGET	43-031
MG	MGB ('76-'79)	43-032
MG	MGB ('67-'75)	43-033
MG	MGA	43-034
MG	TA, TC, TD, TF	43-035

OTHER VEHICLE FORM**3. Vehicle Model (Continued)**

Make	Model	Make/Model Code
MG	MGC	43-036
MG	OTHER AUTOMOBILE	43-398
MG	UNKNOWN AUTOMOBILE	43-399
MG	UNKNOWN VEHICLE	43-999
PEUGEOT	304	44-031
PEUGEOT	403	44-032
PEUGEOT	404	44-033
PEUGEOT	504, 505	44-034
PEUGEOT	604	44-035
PEUGEOT	405	44-036
PEUGEOT	OTHER AUTOMOBILE	44-398
PEUGEOT	UNKNOWN AUTOMOBILE	44-399
PEUGEOT	MOTORCYCLE (000-050cc)	44-701
PEUGEOT	MOTORCYCLE (051-124cc)	44-702
PEUGEOT	MOTORCYCLE (UNKNOWN cc)	44-709
PEUGEOT	UNKNOWN MOTORED CYCLE	44-799
PEUGEOT	UNKNOWN VEHICLE	44-999
PORSCHE	911	45-031
PORSCHE	912	45-032
PORSCHE	914	45-033
PORSCHE	924	45-034
PORSCHE	928	45-035
PORSCHE	930	45-036
PORSCHE	944	45-037
PORSCHE	959	45-038
PORSCHE	968	45-039
PORSCHE	986 BOXSTER	45-040
PORSCHE	OTHER AUTOMOBILE	45-398
PORSCHE	UNKNOWN AUTOMOBILE	45-399
PORSCHE	CAYENNE	45-421
PORSCHE	UNKNOWN VEHICLE	45-999
RENAULT, AMC	LECAR	46-031
RENAULT, AMC	DAUPHINE, 10, R8, CARAVELLE	46-032
RENAULT, AMC	12	46-033
RENAULT, AMC	15	46-034
RENAULT, AMC	16	46-035
RENAULT, AMC	17	46-036

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
RENAULT, AMC	R18I	46-037
RENAULT, AMC	FUEGO	46-038
RENAULT, AMC	ALLIANCE, ENCORE, GTA CONVERTIBLE	46-039
RENAULT, AMC	ALPINE	46-041
RENAULT, AMC	MEDALLION	46-044
RENAULT, AMC	PREMIER	46-045
RENAULT, AMC	OTHER AUTOMOBILE	46-398
RENAULT, AMC	UNKNOWN AUTOMOBILE	46-399
RENAULT, AMC	UNKNOWN VEHICLE	46-999
SAAB	99, 99E, 900	47-031
SAAB	SONNETT	47-032
SAAB	95, 96, 97	47-033
SAAB	9000, CS	47-034
SAAB	9-3	47-035
SAAB	9-5	47-036
SAAB	9-2X	47-037
SAAB	OTHER AUTOMOBILE	47-398
SAAB	UNKNOWN AUTOMOBILE	47-399
SAAB	9-7X	47-401
SAAB	OTHER LIGHT TRUCK	47-498
SAAB	UNKNOWN LIGHT TRUCK	47-499
SAAB	UNKNOWN VEHICLE	47-999
SUBARU	DL, FE, G, GF, GL, GLF, STD, LOYALE	48-031
SUBARU	STAR	48-032
SUBARU	360	48-033
SUBARU	LEGACY	48-034
SUBARU	XT, XT6	48-035
SUBARU	JUSTY	48-036
SUBARU	SVX	48-037
SUBARU	IMPREZA	48-038
SUBARU	BRAT DL, GL	48-043
SUBARU	BAJA	48-044
SUBARU	OUTBACK	48-045
SUBARU	OTHER AUTOMOBILE	48-398
SUBARU	UNKNOWN AUTOMOBILE	48-399
SUBARU	FORESTER	48-401

OTHER VEHICLE FORM

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
SUBARU	OTHER LIGHT TRUCK	48-498
SUBARU	UNKNOWN LIGHT TRUCK	48-499
SUBARU	UNKNOWN VEHICLE	48-999
TOYOTA	CORONA	49-031
TOYOTA	COROLLA	49-032
TOYOTA	CELICA	49-033
TOYOTA	SUPRA	49-034
TOYOTA	CRESSIDA	49-035
TOYOTA	CROWN	49-036
TOYOTA	CARINA	49-037
TOYOTA	TERCEL	49-038
TOYOTA	STARLET	49-039
TOYOTA	CAMRY	49-040
TOYOTA	MR2	49-041
TOYOTA	PASEO	49-042
TOYOTA	AVALON	49-043
TOYOTA	SOLARA	49-044
TOYOTA	ECHO	49-045
TOYOTA	PRIUS	49-046
TOYOTA	SCION XA	49-048
TOYOTA	SCION XB	49-049
TOYOTA	SCION TC	49-050
TOYOTA	OTHER AUTOMOBILE	49-398
TOYOTA	UNKNOWN AUTOMOBILE	49-399
TOYOTA	4RUNNER	49-401
TOYOTA	RAV4	49-402
TOYOTA	HIGHLANDER	49-403
TOYOTA	MATRIX	49-404
TOYOTA	LANDCRUISER	49-421
TOYOTA	SEQUOIA	49-422
TOYOTA	MINIVAN, PREVIA	49-441
TOYOTA	SIENNA	49-442
TOYOTA	PICKUP	49-471
TOYOTA	TACOMA	49-472
TOYOTA	T100	49-481
TOYOTA	TUNDRA	49-482
TOYOTA	OTHER LIGHT TRUCK	49-498

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
TOYOTA	UNKNOWN LIGHT TRUCK	49-499
TOYOTA	UNKNOWN VEHICLE	49-999
TRIUMPH	SPITFIRE	50-031
TRIUMPH	GT6	50-032
TRIUMPH	TR4	50-033
TRIUMPH	TR6	50-034
TRIUMPH	TR7, 8	50-035
TRIUMPH	HERALD	50-036
TRIUMPH	STAG	50-037
TRIUMPH	OTHER AUTOMOBILE	50-398
TRIUMPH	UNKNOWN AUTOMOBILE	50-399
TRIUMPH	MOTORCYCLE (000–050cc)	50-701
TRIUMPH	MOTORCYCLE (051–124cc)	50-702
TRIUMPH	MOTORCYCLE (125–349cc)	50-703
TRIUMPH	MOTORCYCLE (350–449cc)	50-704
TRIUMPH	MOTORCYCLE (450–749cc)	50-705
TRIUMPH	MOTORCYCLE (750cc OR GREATER)	50-706
TRIUMPH	MOTORCYCLE (UNKNOWN cc)	50-709
TRIUMPH	UNKNOWN MOTORED CYCLE	50-799
TRIUMPH	UNKNOWN VEHICLE	50-999
VOLVO	122	51-031
VOLVO	142, 144, 145	51-032
VOLVO	164	51-033
VOLVO	240, 242, 244, 245	51-034
VOLVO	262, 264, 265	51-035
VOLVO	1800	51-036
VOLVO	760, 780	51-038
VOLVO	740	51-039
VOLVO	940	51-040
VOLVO	960	51-041
VOLVO	850	51-042
VOLVO	70 SERIES	51-043
VOLVO	90 SERIES	51-044
VOLVO	80 SERIES	51-045
VOLVO	40 SERIES	51-046
VOLVO	60 SERIES	51-047
VOLVO	V50	51-048

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
VOLVO	OTHER AUTOMOBILE	51-398
VOLVO	UNKNOWN AUTOMOBILE	51-399
VOLVO	XC90	51-401
VOLVO	MEDIUM, HEAVY, CBE	51-881
VOLVO	MEDIUM, HEAVY, COE LOW ENTRY	51-882
VOLVO	MEDIUM, HEAVY, COE HIGH ENTRY	51-883
VOLVO	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	51-884
VOLVO	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	51-890
VOLVO	OTHER MEDIUM, HEAVY TRUCK	51-898
VOLVO	UNKNOWN MEDIUM, HEAVY TRUCK	51-899
VOLVO	MEDIUM BUS	51-981
VOLVO	UNKNOWN TYPE BUS	51-989
VOLVO	OTHER BUS	51-998
VOLVO	UNKNOWN VEHICLE	51-999
MITSUBISHI	STARION	52-031
MITSUBISHI	TREDIA	52-032
MITSUBISHI	CORDIA	52-033
MITSUBISHI	GALANT	52-034
MITSUBISHI	MIRAGE	52-035
MITSUBISHI	PRECIS	52-036
MITSUBISHI	ECLIPSE	52-037
MITSUBISHI	SIGMA	52-038
MITSUBISHI	3000GT	52-039
MITSUBISHI	DIAMANTE	52-040
MITSUBISHI	LANCER	52-046
MITSUBISHI	OTHER AUTOMOBILE	52-398
MITSUBISHI	UNKNOWN AUTOMOBILE	52-399
MITSUBISHI	MONTERO	52-401
MITSUBISHI	OUTLANDER	52-402
MITSUBISHI	ENDEAVOR	52-403
MITSUBISHI	MINIVAN	52-441
MITSUBISHI	EXPO WAGON	52-442
MITSUBISHI	PICKUP	52-471
MITSUBISHI	OTHER LIGHT TRUCK	52-498
MITSUBISHI	UNKNOWN LIGHT TRUCK	52-499

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
MITSUBISHI	MEDIUM, HEAVY, COE LOW ENTRY	52-882
MITSUBISHI	OTHER MEDIUM, HEAVY TRUCK	52-898
MITSUBISHI	UNKNOWN MEDIUM, HEAVY TRUCK	52-899
MITSUBISHI	UNKNOWN TYPE TRUCK (LIGHT, MEDIUM, HEAVY)	52-899
MITSUBISHI	CONVENTIONAL FRONT ENGINE	52-981
MITSUBISHI	FRONT ENGINE, FLAT FRONT	52-982
MITSUBISHI	REAR ENGINE, FLAT FRONT	52-983
MITSUBISHI	OTHER BUS	52-998
MITSUBISHI	UNKNOWN TYPE BUS	52-989
MITSUBISHI	UNKNOWN VEHICLE	52-999
SUZUKI	SA310	53-031
SUZUKI	SWIFT	53-034
SUZUKI	ESTEEM	53-035
SUZUKI	AERIO	53-036
SUZUKI	FORENZA	53-037
SUZUKI	VERONA	53-038
SUZUKI	RENO	53-039
SUZUKI	OTHER AUTOMOBILE	53-398
SUZUKI	UNKNOWN AUTOMOBILE	53-399
SUZUKI	SAMURAI	53-401
SUZUKI	SIDEKICK, GRAND VITARA	53-402
SUZUKI	X90, VITARA	53-403
SUZUKI	GRAND VITARA	53-404
SUZUKI	XL7	53-405
SUZUKI	OTHER LIGHT TRUCK	53-498
SUZUKI	UNKNOWN LIGHT TRUCK	53-499
SUZUKI	MOTORCYCLE (000–050cc)	53-701
SUZUKI	MOTORCYCLE (051–124cc)	53-702
SUZUKI	MOTORCYCLE (125–349cc)	53-703
SUZUKI	MOTORCYCLE (350–449cc)	53-704
SUZUKI	MOTORCYCLE (450–749cc)	53-705
SUZUKI	MOTORCYCLE (750cc OR GREATER)	53-706
SUZUKI	MOTORCYCLE (UNKNOWN cc)	53-709
SUZUKI	ATC, ATV (000–050cc)	53-731
SUZUKI	ATC, ATV (051–124cc)	53-732
SUZUKI	ATC, ATV (125–349cc)	53-733

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
SUZUKI	ATC, ATV (350cc OR GREATER)	53-734
SUZUKI	ATC, ATV (UNKNOWN cc)	53-739
SUZUKI	OTHER MOTORED CYCLE	53-798
SUZUKI	UNKNOWN MOTORED CYCLE	53-799
SUZUKI	UNKNOWN VEHICLE	53-999
ACURA	INTEGRA	54-031
ACURA	RL	54-032
ACURA	LEGEND	54-032
ACURA	NSX	54-033
ACURA	VIGOR	54-034
ACURA	CL	54-035
ACURA	TL	54-035
ACURA	RSX	54-038
ACURA	TSX	54-039
ACURA	OTHER AUTOMOBILE	54-398
ACURA	UNKNOWN AUTOMOBILE	54-399
ACURA	SLX	54-401
ACURA	MDX	54-421
ACURA	OTHER LIGHT TRUCK	54-498
ACURA	UNKNOWN TYPE LIGHT TRUCK	54-499
ACURA	UNKNOWN VEHICLE	54-999
HYUNDAI	PONY	55-031
HYUNDAI	EXCEL	55-032
HYUNDAI	SONATA	55-033
HYUNDAI	SCOUPE	55-034
HYUNDAI	ELANTRA	55-035
HYUNDAI	ACCENT	55-036
HYUNDAI	TIBURON	55-037
HYUNDAI	XG300, 350	55-038
HYUNDAI	OTHER AUTOMOBILE	55-398
HYUNDAI	UNKNOWN AUTOMOBILE	55-399
HYUNDAI	SANTA FE	55-401
HYUNDAI	TUCSON	55-402
HYUNDAI	OTHER LIGHT TRUCK	55-498
HYUNDAI	UNKNOWN LIGHT TRUCK	55-499
HYUNDAI	UNKNOWN VEHICLE	55-999
MERKUR	XR4Ti	56-031

OTHER VEHICLE FORM

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
MERKUR	SCORPIO	56-032
MERKUR	OTHER AUTOMOBILE	56-398
MERKUR	UNKNOWN AUTOMOBILE	56-399
MERKUR	UNKNOWN VEHICLE	56-999
YUGO	GV	57-031
YUGO	OTHER AUTOMOBILE	57-398
YUGO	UNKNOWN AUTOMOBILE	57-399
YUGO	UNKNOWN VEHICLE	57-999
INFINITI	M30	58-031
INFINITI	Q45	58-032
INFINITI	G20	58-033
INFINITI	J30	58-034
INFINITI	I30	58-035
INFINITI	I35	58-036
INFINITI	G35	58-037
INFINITI	M45	58-038
INFINITI	FX35, 45	58-039
INFINITI	OTHER AUTOMOBILE	58-398
INFINITI	UNKNOWN AUTOMOBILE	58-399
INFINITI	QX4	58-401
INFINITI	QX56	58-421
INFINITI	OTHER LIGHT TRUCK	58-498
INFINITI	UNKNOWN LIGHT TRUCK	58-499
INFINITI	UNKNOWN VEHICLE	58-999
LEXUS	ES250, ES300	59-031
LEXUS	LS400	59-032
LEXUS	SC300, SC400	59-033
LEXUS	GS300, GS400	59-034
LEXUS	IS300	59-035
LEXUS	SC430	59-036
LEXUS	OTHER AUTOMOBILE	59-398
LEXUS	UNKNOWN AUTOMOBILE	59-399
LEXUS	RX300	59-401
LEXUS	GX470	59-402
LEXUS	LX450, 470	59-421
LEXUS	OTHER LIGHT TRUCK	59-498
LEXUS	UNKNOWN LIGHT TRUCK	59-499

OTHER VEHICLE FORM

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
LEXUS	UNKNOWN VEHICLE	59-999
DAIHATSU	CHARADE	60-031
DAIHATSU	OTHER AUTOMOBILE	60-398
DAIHATSU	UNKNOWN AUTOMOBILE	60-399
DAIHATSU	ROCKY	60-401
DAIHATSU	OTHER LIGHT TRUCK	60-498
DAIHATSU	UNKNOWN LIGHT TRUCK	60-499
DAIHATSU	UNKNOWN VEHICLE	60-999
STERLING	827S	61-031
STERLING	OTHER AUTOMOBILE	61-398
STERLING	UNKNOWN AUTOMOBILE	61-399
STERLING	UNKNOWN VEHICLE	61-999
LAND ROVER	DISCOVERY (LR)	62-401
LAND ROVER	COUNTY LWB (RR), COUNTY CLASSIC (RR)	62-421
LAND ROVER	DEFENDER 90 (LR), FREELANDER, 4.0SE (RR)	62-422
LAND ROVER	LR3	62-423
LAND ROVER	OTHER LIGHT TRUCK	62-498
LAND ROVER	UNKNOWN LIGHT TRUCK	62-499
LAND ROVER	UNKNOWN VEHICLE	62-999
KIA	SEPHIA	63-031
KIA	SPECTRA	63-032
KIA	RIO	63-033
KIA	OPTIMA	63-034
KIA	AMANTI	63-035
KIA	OTHER AUTOMOBILE	63-398
KIA	UNKNOWN AUTOMOBILE	63-399
KIA	SPORTAGE	63-401
KIA	SORRENTO	63-402
KIA	SEDONA	63-441
KIA	OTHER LIGHT TRUCK	63-498
KIA	UNKNOWN LIGHT TRUCK	63-499
KIA	UNKNOWN VEHICLE	63-999
DAEWOO	LANOS	64-031
DAEWOO	NUBIRA	64-032
DAEWOO	LEGANZA	64-033

OTHER VEHICLE FORM

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3. Vehicle Model (Continued)

Make	Model	Make/Model Code
DAEWOO	OTHER AUTOMOBILE	64-398
DAEWOO	UNKNOWN AUTOMOBILE	64-399
ASTON MARTIN	MINI COOPER, COOPER S, VANTAGE, SALOON, VOLANTE, LAGONDA, OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	65-031
BRICKLIN	OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-032
CITROEN	OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-033
DELOREAN	OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-034
FERRARI	OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-035
HILLMAN	OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-036
JENSEN	HEALY, OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-037
LAMBORGHINI	JALPA, COUNTACH 5000S, OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-038
LOTUS	ELISE, ESPRIT, EUROPE, OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-039
MASERATI	BITURBO, OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-040
MORRIS	MINOR, OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-041
ROLLS ROYCE/BENTLEY	CLOUD/SHADOW SERIES, OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-042
SIMCA	OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-044
SUNBEAM	OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-045
TVR	OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-046

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
DESTA	OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-048
RELIANT	OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-049
BERTONE	OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-052
LADA	OTHER AUTOMOBILE, UNKNOWN AUTOMOBILE	69-053
OTHER FOREIGN MANUFACTURER (LIGHT VEHICLES)	OTHER MAKE	69-398
OTHER FOREIGN MANUFACTURER (LIGHT VEHICLES)	UNKNOWN MAKE	69-399
OTHER FOREIGN MANUFACTURER (LIGHT VEHICLES)	OTHER LIGHT TRUCK	69-498
OTHER FOREIGN MANUFACTURER (LIGHT VEHICLES)	OTHER MEDIUM, HEAVY TRUCK	69-898
OTHER FOREIGN MANUFACTURER (LIGHT VEHICLES)	OTHER BUS	69-798
OTHER FOREIGN MANUFACTURER (LIGHT VEHICLES)	OTHER VEHICLE	69-998
BSA MOTORCYCLE	(000–050cc)	70-701
BSA MOTORCYCLE	(051–124cc)	70-702
BSA MOTORCYCLE	(125–349cc)	70-703
BSA MOTORCYCLE	(350–449cc)	70-704
BSA MOTORCYCLE	(450–749cc)	70-705
BSA MOTORCYCLE	(750cc OR GREATER)	70-706
BSA MOTORCYCLE	(UNKNOWN cc)	70-709
BSA	OTHER MOTORED CYCLE	70-798
BSA	UNKNOWN MOTORED CYCLE	70-799
DUCATI	MOTORCYCLE (000–050cc)	71-701
DUCATI	MOTORCYCLE (051–124cc)	71-702
DUCATI	MOTORCYCLE (125–349cc)	71-703

OTHER VEHICLE FORM**3. Vehicle Model (Continued)**

Make	Model	Make/Model Code
DUCATI	MOTORCYCLE (350–449cc)	71-704
DUCATI	MOTORCYCLE (450–749cc)	71-705
DUCATI	MOTORCYCLE (750cc OR GREATER)	71-706
DUCATI	MOTORCYCLE (UNKNOWN cc)	71-709
DUCATI	OTHER MOTORED CYCLE	71-798
DUCATI	UNKNOWN MOTORED CYCLE	71-799
HARLEY-DAVIDSON	MOTORCYCLE (000–050cc)	72-701
HARLEY-DAVIDSON	MOTORCYCLE (051–124cc)	72-702
HARLEY-DAVIDSON	MOTORCYCLE (125–349cc)	72-703
HARLEY-DAVIDSON	MOTORCYCLE (350–449cc)	72-704
HARLEY-DAVIDSON	MOTORCYCLE (450–749cc)	72-705
HARLEY-DAVIDSON	MOTORCYCLE (750cc OR GREATER)	72-706
HARLEY-DAVIDSON	MOTORCYCLE (UNKNOWN cc)	72-709
HARLEY-DAVIDSON	OTHER MOTORED CYCLE	72-798
HARLEY-DAVIDSON	UNKNOWN MOTORED CYCLE	72-799
KAWASAKI	MOTORCYCLE (000–050cc)	73-701
KAWASAKI	MOTORCYCLE (051–124cc)	73-702
KAWASAKI	MOTORCYCLE (125–349cc)	73-703
KAWASAKI	MOTORCYCLE (350–449cc)	73-704
KAWASAKI	MOTORCYCLE (450–749cc)	73-705
KAWASAKI	MOTORCYCLE (750cc OR GREATER)	73-706
KAWASAKI	MOTORCYCLE (UNKNOWN cc)	73-709
KAWASAKI	ATC, ATV (000–050cc)	73-731
KAWASAKI	ATC, ATV (051–124cc)	73-732
KAWASAKI	ATC, ATV (125–349cc)	73-733
KAWASAKI	ATC, ATV (350cc OR GREATER)	73-734
KAWASAKI	ATC, ATV (UNKNOWN cc)	73-739
KAWASAKI	OTHER MOTORED CYCLE	73-798
KAWASAKI	UNKNOWN MOTORED CYCLE	73-799
MOTO-GUZZI	MOTORCYCLE (000–050cc)	74-701
MOTO-GUZZI	MOTORCYCLE (051–124cc)	74-702
MOTO-GUZZI	MOTORCYCLE (125–349cc)	74-703
MOTO-GUZZI	MOTORCYCLE (350–449cc)	74-704
MOTO-GUZZI	MOTORCYCLE (450–749cc)	74-705
MOTO-GUZZI	MOTORCYCLE (750cc OR GREATER)	74-706
MOTO-GUZZI	MOTORCYCLE (UNKNOWN cc)	74-709
MOTO-GUZZI	ATC, ATV (000–050cc)	74-731

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
MOTO-GUZZI	ATC, ATV (051–124cc)	74-732
MOTO-GUZZI	ATC, ATV (125–349cc)	74-733
MOTO-GUZZI	ATC, ATV (350cc OR GREATER)	74-734
MOTO-GUZZI	ATC, ATV (UNKNOWN cc)	74-739
MOTO-GUZZI	OTHER MOTORED CYCLE	74-798
MOTO-GUZZI	UNKNOWN MOTORED CYCLE	74-799
NORTON	MOTORCYCLE (000–050cc)	75-701
NORTON	MOTORCYCLE (051–124cc)	75-702
NORTON	MOTORCYCLE (125–349cc)	75-703
NORTON	MOTORCYCLE (350–449cc)	75-704
NORTON	MOTORCYCLE (450–749cc)	75-705
NORTON	MOTORCYCLE (750cc OR GREATER)	75-706
NORTON	MOTORCYCLE (UNKNOWN cc)	75-709
NORTON	OTHER MOTORED CYCLE	75-798
NORTON	UNKNOWN MOTORED CYCLE	75-799
YAMAHA	MOTORCYCLE (000–050cc)	76-701
YAMAHA	MOTORCYCLE (051–124cc)	76-702
YAMAHA	MOTORCYCLE (125–349cc)	76-703
YAMAHA	MOTORCYCLE (350–449cc)	76-704
YAMAHA	MOTORCYCLE (450–749cc)	76-705
YAMAHA	MOTORCYCLE (750cc OR GREATER)	76-706
YAMAHA	MOTORCYCLE (UNKNOWN cc)	76-709
YAMAHA	ATC, ATV (000–050cc)	76-731
YAMAHA	ATC, ATV (051–124cc)	76-732
YAMAHA	ATC, ATV (125–349cc)	76-733
YAMAHA	ATC, ATV (350cc OR GREATER)	76-734
YAMAHA	ATC, ATV (UNKNOWN cc)	76-739
YAMAHA	OTHER MOTORED CYCLE	76-798
YAMAHA	UNKNOWN MOTORED CYCLE	76-799
YAMAHA	OTHER VEHICLE	76-998
OTHER MAKE	MOPED (0–50cc)	78-701
OTHER MAKE	MOPED (51–124cc)	78-702
OTHER MAKE	MOPED (UNKNOWN cc)	78-709
OTHER MAKE	MOPED OTHER MOTORED CYCLE	78-798
OTHER MAKE	MOPED UNKNOWN MOTORED CYCLE	78-799
OTHER MAKE	MOTORED CYCLE (0–50cc)	79-701
OTHER MAKE	MOTORED CYCLE (51–124cc)	79-702

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
OTHER MAKE	MOTORED CYCLE (125–349cc)	79-703
OTHER MAKE	MOTORED CYCLE (350–449cc)	79-704
OTHER MAKE	MOTORED CYCLE (450–749cc)	79-705
OTHER MAKE	MOTORED CYCLE (750cc OR GREATER)	79-706
OTHER MAKE	MOTORED CYCLE (UNKNOWN cc)	79-709
OTHER MAKE	MOTORED CYCLE ATC, ATV (0–50cc)	79-731
OTHER MAKE	MOTORED CYCLE ATC, ATV (51–124cc)	79-732
OTHER MAKE	MOTORED CYCLE ATC, ATV (125–349cc)	79-733
OTHER MAKE	MOTORED CYCLE ATC, ATV (350cc OR GREATER)	79-734
OTHER MAKE	MOTORED CYCLE ATV, ATC (UNKNOWN cc)	79-739
OTHER MAKE	MOTORED CYCLE, OTHER MOTORED CYCLE	79-798
OTHER MAKE	MOTORED CYCLE, UNKNOWN MOTORED CYCLE	79-799
BROCKWAY	MEDIUM, HEAVY TRUCK–BASED MOTORHOME	80-850
BROCKWAY	MEDIUM, HEAVY, CBE	80-881
BROCKWAY	MEDIUM, HEAVY, COE LOW ENTRY	80-882
BROCKWAY	MEDIUM, HEAVY, COE HIGH ENTRY	80-883
BROCKWAY	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	80-884
BROCKWAY	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	80-890
BROCKWAY	MEDIUM, HEAVY, OTHER	80-898
BROCKWAY	UNKNOWN MEDIUM, HEAVY TRUCK	80-899
DIAMOND REO/REO	MEDIUM, HEAVY TRUCK-BASED MOTORHOME	81-850
DIAMOND REO/REO	MEDIUM, HEAVY, CBE	81-881
DIAMOND REO/REO	MEDIUM, HEAVY, COE LOW ENTRY	81-882
DIAMOND REO/REO	MEDIUM, HEAVY, COE HIGH ENTRY	81-883
DIAMOND REO/REO	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	81-884
DIAMOND REO/REO	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	81-890
DIAMOND REO/REO	MEDIUM, HEAVY, OTHER	81-898
DIAMOND REO/REO	UNKNOWN MEDIUM, HEAVY TRUCK	81-899

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
FREIGHTLINER/WHITE	SPRINTER, ADVANTAGE	82-461
FREIGHTLINER/WHITE	M-LINE WALK IN VAN	82-470
FREIGHTLINER/WHITE	OTHER LIGHT TRUCK	82-498
FREIGHTLINER/WHITE	UNKNOWN LIGHT TRUCK	82-499
FREIGHTLINER/WHITE	MEDIUM, HEAVY TRUCK-BASED MOTORHOME	82-850
FREIGHTLINER, WHITE	MEDIUM, HEAVY, CBE	82-881
FREIGHTLINER, WHITE	MEDIUM, HEAVY, COE LOW ENTRY	82-882
FREIGHTLINER, WHITE	MEDIUM, HEAVY, COE HIGH ENTRY	82-883
FREIGHTLINER, WHITE	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	82-884
FREIGHTLINER, WHITE	MEDIUM, HEAVY, COE/ENTRY POSITION UNKNOWN	82-890
FREIGHTLINER, WHITE	MEDIUM, HEAVY, OTHER	82-898
FREIGHTLINER, WHITE	UNKNOWN LIGHT, MEDIUM, HEAVY TRUCK	82-899
FREIGHTLINER, WHITE	BUS CONVENTIONAL ENGINE OUT FRONT	82-981
FREIGHTLINER, WHITE	BUS FRONT ENGINE, FLAT FRONT	82-982
FREIGHTLINER, WHITE	BUS REAR ENGINE, FLAT FRONT	82-983
FREIGHTLINER, WHITE	OTHER BUS	82-988
FREIGHTLINER, WHITE	UNKNOWN BUS TYPE	82-989
FREIGHTLINER, WHITE	UNKNOWN VEHICLE	82-999
FWD MEDIUM, HEAVY	TRUCK-BASED MOTORHOME	83-850
FWD MEDIUM, HEAVY	CBE	83-881
FWD MEDIUM, HEAVY	COE LOW ENTRY	83-882
FWD MEDIUM, HEAVY	COE HIGH ENTRY	83-883
FWD MEDIUM, HEAVY	UNKNOWN ENGINE LOCATION	83-884
FWD MEDIUM, HEAVY	COE ENTRY POSITION UNKNOWN	83-898
FWD MEDIUM, HEAVY	OTHER	83-898
INTERNATIONAL HARVESTER, NAVISTAR	SCOUT	84-421
INTERNATIONAL HARVESTER, NAVISTAR	TRAVELALL	84-431
INTERNATIONAL HARVESTER, NAVISTAR	MULTISTOP VAN	84-466
INTERNATIONAL HARVESTER, NAVISTAR	PICKUP	84-481

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
INTERNATIONAL HARVESTER, NAVISTAR	OTHER LIGHT TRUCK	84-498
INTERNATIONAL HARVESTER, NAVISTAR	UNKNOWN LIGHT TRUCK	84-499
INTERNATIONAL HARVESTER, NAVISTAR	TRUCK-BASED MOTORHOME	84-850
INTERNATIONAL HARVESTER, NAVISTAR	MEDIUM, HEAVY, CBE	84-881
INTERNATIONAL HARVESTER, NAVISTAR	MEDIUM, HEAVY, COE LOW ENTRY	84-882
INTERNATIONAL HARVESTER, NAVISTAR	MEDIUM, HEAVY, COE HIGH ENTRY	84-883
INTERNATIONAL HARVESTER, NAVISTAR	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	84-884
INTERNATIONAL HARVESTER, NAVISTAR	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	84-890
INTERNATIONAL HARVESTER, NAVISTAR	OTHER MEDIUM, HEAVY TRUCK	84-898
INTERNATIONAL HARVESTER, NAVISTAR	UNKNOWN MEDIUM, HEAVY TRUCK	84-899
INTERNATIONAL HARVESTER, NAVISTAR	UNKNOWN TYPE TRUCK (LIGHT, MEDIUM, HEAVY)	84-899
INTERNATIONAL HARVESTER, NAVISTAR	BUS BASED MOTOHOME	84-950
INTERNATIONAL HARVESTER, NAVISTAR	CONVENTIONAL BUS	84-981
INTERNATIONAL HARVESTER, NAVISTAR	BUS, FLAT FRONT, FRONT ENGINE	84-982
INTERNATIONAL HARVESTER, NAVISTAR	BUS, FLAT FRONT, REAR ENGINE	84-983
INTERNATIONAL HARVESTER, NAVISTAR	OTHER BUS	84-798
INTERNATIONAL HARVESTER, NAVISTAR	UNKNOWN BUS TYPE	84-989
INTERNATIONAL HARVESTER, NAVISTAR	OTHER VEHICLE	84-998
INTERNATIONAL HARVESTER, NAVISTAR	UNKNOWN VEHICLE	84-999

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
KENWORTH	MEDIUM, HEAVY TRUCK-BASED MOTORHOME	85-850
KENWORTH	MEDIUM, HEAVY, CBE	85-881
KENWORTH	MEDIUM, HEAVY, COE LOW ENTRY	85-882
KENWORTH	MEDIUM, HEAVY, COE HIGH ENTRY	85-883
KENWORTH	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	85-884
KENWORTH	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	85-890
KENWORTH	MEDIUM, HEAVY, OTHER	85-898
KENWORTH	UNKNOWN MEDIUM, HEAVY TRUCK	85-899
MACK	MEDIUM, HEAVY BASED MOTORHOME	86-850
MACK	MEDIUM, HEAVY, CBE	86-881
MACK	MEDIUM, HEAVY, COE LOW ENTRY	86-882
MACK	MEDIUM, HEAVY, COE HIGH ENTRY	86-883
MACK	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	86-884
MACK	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	86-890
MACK	MEDIUM, HEAVY, OTHER	86-898
MACK	UNKNOWN MEDIUM, HEAVY TRUCK	86-899
PETERBILT	MEDIUM, HEAVY BASED MOTORHOME	87-850
PETERBILT	MEDIUM, HEAVY, CBE	87-881
PETERBILT	MEDIUM, HEAVY, COE LOW ENTRY	87-882
PETERBILT	MEDIUM, HEAVY, COE HIGH ENTRY	87-883
PETERBILT	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	87-884
PETERBILT	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	87-890
PETERBILT	MEDIUM, HEAVY, OTHER	87-898
PETERBILT	UNKNOWN MEDIUM, HEAVY TRUCK	87-899
IVECO, MAGIRUS	MEDIUM, HEAVY BASED MOTORHOME	88-850
IVECO, MAGIRUS	MEDIUM, HEAVY, CBE	88-881
IVECO, MAGIRUS	MEDIUM, HEAVY, COE LOW ENTRY	88-882

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
IVECO, MAGIRUS	MEDIUM, HEAVY, COE HIGH ENTRY	88-883
IVECO, MAGIRUS	MEDIUM, HEAVY, UNKOWN ENGINE LOCATION	88-884
IVECO, MAGIRUS	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	88-890
IVECO, MAGIRUS	MEDIUM, HEAVY, OTHER	88-898
IVECO, MAGIRUS	UNKNOWN MEDIUM, HEAVY TRUCK	88-899
OTHER MAKE (MEDIUM, HEAVY TRUCK, BUS OR OTHER)	OTHER AUTOMOBILE	98-398
WINNEBAGO	VAN-BASED MOTORHOME	98-470
OTHER MAKE (MEDIUM, HEAVY TRUCK, BUS OR OTHER)	OTHER LIGHT TRUCK	98-498
WINNEBAGO	LIGHT TRUCK-BASED MOTORHOME	98-498
WINNEBAGO	UNKNOWN-TYPE LIGHT MOTORHOME	98-499
AUTOCAR	MEDIUM, HEAVY BASED MOTORHOME	98-801
AUTOCAR	MEDIUM, HEAVY, COE HIGH ENTRY	98-801
AUTOCAR	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	98-801
AUTOCAR	MEDIUM, HEAVY, OTHER	98-801
AUTOCAR	MEDIUM, HEAVY, UNKOWN ENGINE LOCATION	98-801
AUTOCAR	MEDIUM, HEAVY, COE LOW ENTRY	98-801
AUTOCAR	MEDIUM, HEAVY, CBE	98-801
AUTO-UNION-DKW	MEDIUM, HEAVY BASED MOTORHOME	98-802
AUTO-UNION-DKW	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	98-802
AUTO-UNION-DKW	MEDIUM, HEAVY, OTHER	98-802
AUTO-UNION-DKW	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	98-802
AUTO-UNION-DKW	MEDIUM, HEAVY, COE HIGH ENTRY	98-802
AUTO-UNION-DKW	MEDIUM, HEAVY, CBE	98-802
AUTO-UNION-DKW	MEDIUM, HEAVY, COE LOW ENTRY	98-802

OTHER VEHICLE FORM**3. Vehicle Model (Continued)**

Make	Model	Make/Model Code
DIVCO	MEDIUM, HEAVY BASED MOTORHOME	98-803
DIVCO	MEDIUM, HEAVY, COE LOW ENTRY	98-803
DIVCO	MEDIUM, HEAVY, COE HIGH ENTRY	98-803
DIVCO	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	98-803
DIVCO	MEDIUM, HEAVY, OTHER	98-803
DIVCO	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	98-803
DIVCO	MEDIUM, HEAVY, CBE	98-803
WESTERN STAR	MEDIUM, HEAVY BASED MOTORHOME	98-804
WESTERN STAR	MEDIUM, HEAVY, COE LOW ENTRY	98-904
WESTERN STAR	MEDIUM, HEAVY, COE HIGH ENTRY	98-804
WESTERN STAR	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	98-804
WESTERN STAR	MEDIUM, HEAVY, OTHER	98-804
WESTERN STAR	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	98-804
WESTERN STAR	MEDIUM, HEAVY, CBE	98-804
OSHKOSH	MEDIUM, HEAVY BASED MOTORHOME	98-805
OSHKOSH	MEDIUM, HEAVY, OTHER	98-805
OSHKOSH	MEDIUM, HEAVY, CBE	98-805
OSHKOSH	MEDIUM, HEAVY, COE HIGH ENTRY	98-805
OSHKOSH	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	98-805
OSHKOSH	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	98-805
OSHKOSH	MEDIUM, HEAVY, COE LOW ENTRY	98-805
HINO	MEDIUM, HEAVY BASED MOTORHOME	98-806
HINO	MEDIUM, HEAVY, OTHER	98-806
HINO	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	98-806
HINO	MEDIUM, HEAVY, CBE	98-806
HINO	MEDIUM, HEAVY, COE LOW ENTRY	98-806

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
HINO	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	98-806
HINO	MEDIUM, HEAVY, COE HIGH ENTRY	98-806
SCANIA	MEDIUM, HEAVY BASED MOTORHOME	98-807
SCANIA	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	98-807
SCANIA	MEDIUM, HEAVY, OTHER	98-807
SCANIA	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	98-807
SCANIA	MEDIUM, HEAVY, CBE	98-807
SCANIA	MEDIUM, HEAVY, COE LOW ENTRY	98-807
SCANIA	MEDIUM, HEAVY, COE HIGH ENTRY	98-807
STERLING TRUCKS	MEDIUM, HEAVY, CBE	98-808
STERLING TRUCKS	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	98-808
STERLING TRUCKS	MEDIUM, HEAVY, OTHER	98-808
STERLING TRUCKS	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	98-808
STERLING TRUCKS	MEDIUM, HEAVY, COE LOW ENTRY	98-808
STERLING TRUCKS	MEDIUM, HEAVY, COE HIGH ENTRY	98-808
OTHER MAKE (MEDIUM, HEAVY TRUCK, BUS OR OTHER)	TRUCK-BASED MOTORHOME	98-850
WINNEBAGO	MOTORHOME	98-850
MARMON	MEDIUM, HEAVY, OTHER	98-898
MARMON	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	98-898
WARD LAFRANCE	MEDIUM, HEAVY, COE HIGH ENTRY	98-898
WARD LAFRANCE	MEDIUM, HEAVY, COE LOW ENTRY	98-898
WARD LAFRANCE	MEDIUM, HEAVY, CBE	98-898
WARD LAFRANCE	MEDIUM, HEAVY BASED MOTORHOME	98-898
MARMON	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	98-898
MARMON	MEDIUM, HEAVY, COE HIGH ENTRY	98-898
MARMON	MEDIUM, HEAVY, COE LOW ENTRY	98-898
MARMON	MEDIUM, HEAVY, CBE	98-898

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
MARMON	MEDIUM, HEAVY BASED MOTORHOME	98-898
WINNEBAGO	MEDIUM, HEAVY OTHER	98-898
OTHER MAKE (MEDIUM, HEAVY TRUCK, BUS OR OTHER)	OTHER MEDIUM, HEAVY TRUCK	98-898
WARD LAFRANCE	MEDIUM, HEAVY, OTHER	98-898
WARD LAFRANCE	MEDIUM, HEAVY, COE ENTRY POSITION UNKNOWN	98-898
WARD LAFRANCE	MEDIUM, HEAVY, UNKNOWN ENGINE LOCATION	98-898
WINNEBAGO	MEDIUM, HEAVY, UNKNOWN	98-899
NEOPLAN BUS	CONVENTIONAL FRONT ENGINE	98-902
NEOPLAN BUS	REAR ENGINE, FLAT FRONT	98-902
NEOPLAN BUS	OTHER BUS	98-902
NEOPLAN BUS	FRONT ENGINE, FLAT FRONT	98-902
NEOPLAN BUS	BUS-BASED MOTORHOME	98-902
OTHER MAKE (MEDIUM, HEAVY TRUCK, BUS, OR OTHER)	BUS-BASED MOTORHOME	98-950
OTHER MAKE (MEDIUM, HEAVY TRUCK, BUS, OR OTHER)	OTHER BUS	98-988
OTHER MAKE (MEDIUM, HEAVY TRUCK, BUS, OR OTHER)	OTHER VEHICLE	98-998
WINNEBAGO	UNKNOWN VEHICLE	98-999
UNKNOWN FOREIGN MANUFACTURER	UNKNOWN AUTOMOBILE	99-399
UNKNOWN DOMESTIC MANUFACTURER	UNKNOWN AUTOMOBILE	99-399
UNKNOWN MANUFACTURER	UNKNOWN AUTOMOBILE	99-399
UNKNOWN MANUFACTURER	UNKNOWN LIGHT TRUCK	99-499
UNKNOWN FOREIGN MANUFACTURER	UNKNOWN LIGHT TRUCK	99-499

OTHER VEHICLE FORM

3. Vehicle Model (Continued)

Make	Model	Make/Model Code
UNKNOWN DOMESTIC MANUFACTURER	UNKNOWN LIGHT TRUCK	99-499
UNKNOWN MANUFACTURER	UNKNOWN MOTORED CYCLE	99-799
UNKNOWN FOREIGN MANUFACTURER	UNKNOWN MOTORED CYCLE	99-799
UNKNOWN DOMESTIC MANUFACTURER	UNKNOWN MOTORED CYCLE	99-799
UNKNOWN MANUFACTURER	MEDIUM, HEAVY TRUCKS AND BUSES	99-899
UNKNOWN MANUFACTURER	UNKNOWN TYPE TRUCK (LIGHT, MEDIUM, HEAVY)	99-899
UNKNOWN MANUFACTURER	UNKNOWN MEDIUM, HEAVY TRUCK	99-899
UNKNOWN DOMESTIC MANUFACTURER	UNKNOWN MEDIUM, HEAVY TRUCK	99-899
UNKNOWN FOREIGN MANUFACTURER	UNKNOWN MEDIUM, HEAVY TRUCK	99-899
UNKNOWN MANUFACTURER	MEDIUM, HEAVY TRUCKS AND BUSES	99-988
UNKNOWN MANUFACTURER	UNKNOWN BUS TYPE	99-989
UNKNOWN DOMESTIC MANUFACTURER	UNKNOWN BUS TYPE	99-989
UNKNOWN FOREIGN MANUFACTURER	UNKNOWN BUS TYPE	99-989
UNKNOWN MANUFACTURER	UNKNOWN VEHICLE	99-999
UNKNOWN DOMESTIC MANUFACTURER	UNKNOWN VEHICLE	99-999
UNKNOWN FOREIGN MANUFACTURER	UNKNOWN VEHICLE	99-999

OTHER VEHICLE FORM

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3. Vehicle Model (Continued)

Range: Code the applicable model code from the Make/Model Code list. Code the vehicle model as it relates to the vehicle manufacturer

Source:

Primary—vehicle inspection

Secondary—police report

Remarks: This variable is assigned by the investigator from the sources.

OTHER VEHICLE FORM

4. Model Year

OECD Reference: A.4.3.6

Convention/Coding Source: NASS,⁽⁴⁾ OECD

Element Attributes:

(1900–(current year + 1))	current data-collection year plus one
(9999)	unknown

Range: 1900–(current data-collection year + 1), 9999

Source:

Primary—VIN during vehicle inspection
Secondary—police report and interviews

Remarks: This variable is assigned by the investigator from the sources.

unknown: This is used if the vehicle model year cannot be determined.

OTHER VEHICLE FORM

5. Vehicle Identification Number

VIN: _____ X X X X

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

(000000000000000000)	VIN not required on vehicle
(999999999999999999)	VIN unknown

Range: VIN characters contain 1–9 numerical values and alphabetical values (except I, O, and Q). For privacy protection, do not enter the final four characters

Source:

Primary—vehicle inspection
Secondary—police report

Remarks: This variable is assigned by the investigator from the sources.

If a vehicle is inspected, the VIN must be obtained; however, the PAR may be used to obtain a VIN when a vehicle inspection is not obtained.

Enter the entire VIN; leave blank any column that does not have a VIN character. If part of the VIN is missing or not decipherable, leave the missing or decipherable column blank. Use VIN Assist to check the VIN.

Enter 0 in each position for vehicles not required to have a VIN (e.g., a go-kart).

If the vehicle is a motorhome or school bus, the vehicle chassis VIN is coded, and the secondary manufacturer's number should be annotated if indicated on the PAR.

If the vehicle was manufactured by the Ford Motor Company (prior to 1980), and the VIN begins and/or ends with an F, do not enter the F. Proceed to the next character, as in the following example:

VIN: F 3 U 6 2 S 1 0 0 9 3 2 F
CODE: 3 U 6 2 S 1 0 0 9 3 2

OTHER VEHICLE FORM

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5. Vehicle Identification Number (Continued)

If any hyphens, periods, or blank spaces are contained in the string of alphanumeric characters, ignore them as in the following example:

VIN: S M - E 3 0 7 6 4 2 1

CODE: S M E 3 0 7 6 4 2 1

unknown: Enter 9 in each position if the entire VIN is unknown or missing:
999999999999999999.

OTHER VEHICLE FORM

6. Vehicle Curb Weight in Pounds

OECD Reference: A.4.3.7

Convention/Coding Source: NASS,⁽⁴⁾ OECD

Element Attributes:

(100–99996) curb weight of vehicle in pounds
(99999) unknown

Range: 100–99996; 99999

Source: Primary—investigator determined

Remarks:

Enter this vehicle’s curb weight. Do not confuse the gross vehicle weight rating (GVWR) with the curb weight as it is likely to be significantly greater than the curb weight.

In this variable, “vehicle” means the same vehicle identified under the variable body type.

If the vehicle model is known, but the engine size is unknown (e.g., 6 or 8 cylinders), code the average between the high and low curb weights for the model and annotate that the average was reported.

When the vehicle specifications do not report the vehicle weight with the proper engine size, adjustments must be made. First, try to determine the weight differences from the vehicle specifications. If the weight difference cannot be determined from the specifications, then adjust as follows for automobiles and light trucks: 7 to 8 cylinders, subtract 100 lb; 6 to 4 cylinders, subtract 75 lb.

If a source material reports “shipping weight,” add 100 lb to obtain a curb weight on all automobiles and light trucks.

Towed trailing units are considered cargo weight and are not included in the vehicle curb weight.

unknown: This is entered when the curb weight of the vehicle cannot be determined.

OTHER VEHICLE FORM

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7. Is This Vehicle Equipped With ABS?

OECD Reference: A.4.3.8

Convention/Coding Source: OECD, NHTSA, Wikipedia,⁽⁷⁾ MSF, Bike World,⁽²⁴⁾ BMW, DSI

Element Attributes:

- (00) no
- (01) yes, equipped, rear only
- (02) yes, equipped, front and rear
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–02, 97–99

Source:

Primary—vehicle inspection

Secondary—vehicle owner’s manual or instrument panel display

Remarks: This variable is assigned by the investigator from the sources.

An antilock-braking system (ABS) is a system on motor vehicles that prevents wheels from locking while braking. An antilock-braking system allows the driver to maintain steering control under heavy braking by preventing a skid and allowing the wheel to continue to roll forward and create lateral control, as directed by driver steering inputs. Most commonly, braking distances are shortened (again, by allowing the driver to press the brake fully without skidding or loss of control).

Most newer vehicles offer ABS as either standard or optional equipment. To find out whether a car has an antilock-brake system, and what type, read the owner’s manual or check the instrument panel for a yellow ABS-indicator light after turning on the ignition.

yes, equipped, rear only: Rear-wheel-only systems, found on some pickups, vans, and sport utility vehicles, keep the vehicle from spinning out of control, but the front wheels may lock up, resulting in a loss of steering control. Rear-wheel antilock (RWAL) brakes (break system found exclusively on light trucks, vans, and sports utility vehicles) are designed to maintain directional stability.

yes, equipped, front and rear: Four-wheel systems, including those found on cars and minivans, are designed to keep all four wheels from locking up. Four-wheel antilock brakes, usually found on passenger cars and some light trucks, are designed to maintain steerability in emergency stopping situations.

OTHER VEHICLE FORM

Page 2 of 2

7. Is This Vehicle Equipped With ABS? (Continued)

The major OEM suppliers of antilock brakes are the following:

- Bendix was acquired from Allied Signal by Bosch and is used primarily on Chrysler and Jeep products.
- Bosch is the main supplier for most imports and assorted domestic vehicles.
- Delco is now known as Delphi and is used exclusively on GM applications.
- Continental Teves is found on various Ford, GM, Chrysler, and import applications.
- Kelsey-Hayes is a supplier of rear-wheel ABS and four-wheel ABS systems on Ford, Chevy, and Dodge trucks.
- Nippondenso is used on Infiniti and Lexus.
- Sumitomo is found on certain Mazda and Honda applications, as well as the Ford Escort.
- Toyota uses rear-wheel-only ABS systems on Toyota pickups.

During the vehicle inspection, note indications that the vehicle is ABS equipped. Look for ABS indicators. Inspect the instrument panel for an ABS monitor “ready” light. Inspect the footpeg plates for presence of modulator units.

Motorcycles and scooters can also be equipped with ABS. BMW was first to bring ABS brakes to the market and currently offers the widest range of motorcycles equipped with ABS; however, Honda, Yamaha, and Ducati now offer riders ABS-equipped motorcycles. The following are some models of motorcycles now available with ABS brakes, either standard or as an option:

- Yamaha FJR1300 (no longer produced: FJ 1200A, GTS 1000).
- Honda Gold Wing GL1800, ST1300 ABS, Silver Wing 600 and 400 (scooters).
- Ducati ST4 ABS.
- BMW K1200LT, K1200S, K1200RS, K1200GT (and numerous others no longer in production).
- BMW R1200RT, R1200GS, R1150RT, R1150RT-P, R1150RS, R1150R, R1100S, R1150GS, R1200C, R1200CL.
- BMW F650 (various).

OTHER VEHICLE FORM

8. Did This Vehicle Experience Mechanical Problems?

OECD Reference: A.4.3.9

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) tire or wheel failure
- (02) brake failure
- (03) steering failure
- (04) power-transmission failure
- (05) electrical failure
- (06) suspension failure
- (07) vehicle structural failure other than suspension, tire, or wheel
- (08) maintenance-related mechanical problem
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–08, 97–99

Source:

- Primary—vehicle and scene inspection
- Secondary—rider passenger interviews

Remarks: This variable is assigned by the investigator from the sources.

These variables capture any pre-crash mechanical conditions that may have precipitated the crash events and could be linked to the tires, braking system, steering components, transmission, electrical system, suspension structure/suspension, and any failure that can be associated with the vehicle maintenance.

OTHER VEHICLE FORM

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9. Pre-Crash Motion Prior to Precipitating Event

OECD Reference: A.4.4.1

Convention/Coding Source: OECD, NASS⁽⁴⁾

Element Attributes:

- (00) stopped in traffic, speed is zero
- (01) moving in a straight line, constant speed
- (02) moving in a straight line, foot off accelerator/throttle off
- (03) moving in a straight line, braking
- (04) moving in a straight line, accelerating
- (05) turning right, constant speed
- (06) turning right, foot off accelerator/throttle off
- (07) turning right, braking
- (08) turning right, accelerating
- (09) turning left, constant speed
- (10) turning left, foot off accelerator/throttle off
- (11) turning left, braking
- (12) turning left, accelerating
- (13) stopped at roadside or parked
- (14) backing up in a straight line
- (15) backing up, steering left
- (16) backing up, steering right
- (17) making U-turn, right
- (18) making U-turn, left
- (19) making Y-turn, right
- (20) making Y-turn, left
- (21) changing lanes to left
- (22) changing lanes to right
- (23) merging to left
- (24) merging to right
- (25) entering traffic from right shoulder, median, or parked
- (26) entering traffic from left shoulder, median, or parked
- (27) leaving traffic, turn out to right
- (28) leaving traffic, turn out to left
- (29) passing maneuver, passing on right
- (30) passing maneuver, passing on left
- (31) crossing opposing lanes of traffic
- (32) traveling wrong way, against opposing traffic

OTHER VEHICLE FORM

Page 2 of 2

9. Pre-Crash Motion Prior to Precipitating Event (Continued)

- (36) collision-avoidance maneuver to avoid a different collision
- (37) negotiating a curve, constant speed
- (38) negotiating a curve, foot off accelerator/throttle off
- (39) negotiating a curve, braking
- (40) negotiating a curve, accelerating
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–32, 36–40, 97–99

Source: Primary—scene, interviews, and police report

Remarks: This variable is assigned by the investigator from the sources.

Record the attribute that best describes this vehicle's activity prior to the driver's realization of an impending critical event or just prior to impact if the driver took no action or had no time to attempt any evasive maneuvers. Actions taken by the driver of this vehicle after realization of an impending danger are captured in variable 13, collision-avoidance action.

Y-turn: A Y-turn is described as a maneuver that closely resembles a three-point turn.

OTHER VEHICLE FORM

10. Travel Speed at Time of Precipitating Event (Code in Miles per Hour, Whole Numbers Only)

OECD Reference: A.4.4.2

Convention/Coding Source:

Element Attributes:

(000)	stopped in traffic, speed is zero
(001–250)	miles per hour
(999)	unknown

Range: 000–250, 999

Source: Primary—driver interview and police report

Remarks: This variable is assigned by the investigator from the sources.

Enter the travel speed for this vehicle if indicated by the driver or if reported on the police report by the investigating officer. Enter the nearest mph, or if the travel speed is reported as a range, enter the average.

unknown: This is selected if the estimated travel speed is unknown.

OTHER VEHICLE FORM

11. Line of Sight to Motorcycle (Use Clockface Direction, Relative to Vehicle Centerline)

OECD Reference: A.4.4.3

Convention/Coding Source: OECD, DSI

Element Attributes:

(01–12)	clockface line-of-sight position
(97)	not applicable
(99)	unknown

Range: 01–12, 97, 99

Source:

Primary—scene inspection
Secondary—scene diagram

Remarks: This variable is assigned by the investigator from the sources.

Record the line of sight (using clockface positions) of the other vehicle in relation to the position of the motorcycle. The vehicle's front center point is always designated as the 12 o'clock position. If the vehicle is engaged in a yaw or rotation, the front center point is still designated as the 12 o'clock position. The line of sight to the other vehicle is recorded at a time just prior to the precipitating event (i.e., during the pre-crash phase of the accident). A clockface orientation shall be used relative to the centerline of the motorcycle. Examples of typical clockface orientations are as follows:

- Code 12: The OV is directly in front of the motorcycle.
- Code 9: The OV is to the left of the motorcycle.
- Code 3: The OV is to the right of the motorcycle.
- Code 6: The OV is directly behind the motorcycle.

The response is coded based on the line of sight to the motorcycle. The specific orientation or direction of the other vehicle just prior to the precipitating event does not influence the line-of-sight response.

OTHER VEHICLE FORM

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12. Pre-Crash Motion After Precipitating Event

OECD Reference: A.4.4.4

Convention/Coding Source: OECD, NASS⁽⁴⁾

Element Attributes:

- (00) stopped in traffic, speed is zero
- (01) moving in a straight line, constant speed
- (02) moving in a straight line, foot off accelerator/throttle off
- (03) moving in a straight line, braking
- (04) moving in a straight line, accelerating
- (05) turning right, constant speed
- (06) turning right, foot off accelerator/throttle off
- (07) turning right, braking
- (08) turning right, accelerating
- (09) turning left, constant speed
- (10) turning left, foot off accelerator/throttle off
- (11) turning left, braking
- (12) turning left, accelerating
- (13) stopped at roadside or parked
- (14) backing up in a straight line
- (15) backing up, steering left
- (16) backing up, steering right
- (17) making U-turn, right
- (18) making U-turn, left
- (19) making Y-turn, right
- (20) making Y-turn, left
- (21) changing lanes to left
- (22) changing lanes to right
- (23) merging to left
- (24) merging to right
- (25) entering traffic from right shoulder, median, or parked
- (26) entering traffic from left shoulder, median, or parked
- (27) leaving traffic, turn out to right
- (28) leaving traffic, turn out to left
- (29) passing maneuver, passing on right
- (30) passing maneuver, passing on left
- (31) crossing opposing lanes of traffic
- (32) traveling wrong way, against opposing traffic
- (36) collision-avoidance maneuver to avoid a different collision

OTHER VEHICLE FORM

Page 2 of 2

12. Pre-Crash Motion After Precipitating Event (Continued)

- (37) negotiating a curve, constant speed
- (38) negotiating a curve, foot off accelerator/throttle off
- (39) negotiating a curve, braking
- (40) negotiating a curve, accelerating
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–32, 36–40, 97–99

Source: Primary—scene, interviews, and police crash report

Remarks: This variable is assigned by the investigator from the sources.

Record the attribute that best describes this vehicle's activity immediately following the precipitating event. For instance, if the precipitating event is a mechanical failure, these element attributes are intended to capture the movement or activity of this other vehicle immediately following the mechanical failure or precipitating event.

other (specify): This is used when this vehicle's pre-crash movement after the precipitating event is known, but none of the specified attributes are applicable.

unknown: This is used when the vehicle's pre-crash movement after the precipitating event is unknown.

OTHER VEHICLE FORM

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13. Collision-Avoidance Action (Code up to Four; Input 00 for Remaining Responses)

OECD Reference: A.4.4.5.1, A.4.4.5.2, A.4.4.5.3, A.4.4.5.4

Convention/Coding Source: OECD, NASS,⁽⁴⁾ MSF

Element Attributes:

- (00) none
- (01) braking
- (02) swerving
- (03) accelerating
- (04) countersteering
- (05) cornering
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source: Primary—driver interview, police report, and scene inspection

Remarks: This variable is assigned by the investigator from the sources.

Attempted avoidance maneuvers are actions taken by the other-vehicle operator within a critical crash envelope in response to a critical pre-crash event. Attempted avoidance maneuvers occur after the other-vehicle operator realized an impending danger. This variable assesses the operator's action(s) in response to the realization. Most crashes have only one critical crash envelope and, thus, only one critical pre-crash event; however, multiple critical crash envelopes with their respective critical pre-crash events can exist. This variable may be used independently of (1) any maneuvers associated with this driver's/rider's crash type and (2) this vehicle's first associated crash event.

Select the element value that best describes the actions taken by the driver/rider in response to the critical pre-crash event within the critical crash envelope that occurred just prior to the vehicle's impact. When there was a known action (e.g., braking), but it cannot be determined whether there was more than one action (e.g., braking and steering left), default to the known action (e.g., braking).

none: This is selected whenever the other-vehicle operator did not attempt any evasive (pre-impact) maneuvers.

braking: This is selected when there are indications that the brakes locked up, or the interviewee stated pre-crash braking as an avoidance maneuver.

13. Collision-Avoidance Action (Continued)

swerving: This is selected if there are indications that the other-vehicle operator applied a sudden deviation in the path of his/her vehicle as a result of turning actions.

accelerating: This is selected if there are indications that the other-vehicle operator applied a sudden acceleration as an attempted avoidance maneuver.

The following is an example of a driver using acceleration as a collision-avoidance action: the other-vehicle operator enters a four-leg intersection and detects a vehicle violating the overhead traffic signal and encroaching from the right; the operator/driver applies a quick burst of acceleration in an attempt to place the vehicle ahead of the impending impact.

countersteering: This is used when the motorcycle operator applied a countersteering input in an attempt to avoid the collision. Countersteering is the result of turning the handlebars in one direction while the bike leans in the opposite direction. The handlebar input is immediately translated by gyroscopic precession into a lean in the opposite direction. Since the front wheel is attached to the bike's frame, the body of the bike also attempts to lean. It is the lean of the bike that overwhelms the handlebar effort and drags the front wheel over with it—gyroscopic precession merely facilitates the process and is essentially inconsequential in the outcome.

cornering: This is used when the motorcycle operator utilized a cornering maneuver as an attempt to avoid the crash. A cornering maneuver involves a position on the road to initiate the turn-in point (banking), which then initiates a change in direction. This maneuver involves achieving an apex point, which is best described as the innermost place on the road the vehicle will pass through during the maneuver and usually occurs moments before the midpoint of the corner. Last, this maneuver involves the exit point. This is where the rider is almost upright once more and can accelerate away strongly and safely.

other (specify): This is used when the avoidance action cannot be described by any of the specified attributes.

OTHER VEHICLE FORM

14. Braking Skid Marks on Roadway

OECD Reference: A.4.4.6

Convention/Coding Source: OECD, SAE,⁽⁹⁾ Wikipedia⁽⁷⁾

Element Attributes:

- (00) none
- (01) skid marks from rear tires only
- (02) skid marks from front tires only
- (03) skid marks from both front and rear tires, equivalent and overlaying front and rear marks
- (04) long skid marks from rear tires, short terminal skid marks from front tires
- (05) light skid marks from both front and rear tires, no wheel-lockup evidence
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

skid mark: This is when the entire tire-contact path is sliding relative to the pavement surface as specified in SAE J1451.⁽⁹⁾ A skid mark is the mark a tire makes when a motor-vehicle or motorcycle wheel loses traction and skids on the surface of the road. Skid marks are caused by rubber being deposited on the road. Skid marks can also come about when a vehicle suddenly accelerates on a slippery surface or takes a hard corner. The rubber of the tire heats up with sliding friction, degrades and disintegrates at the road–tire interface, and is deposited on the road surface.

OTHER VEHICLE FORM

15. Length of Skid Marks on Roadway (Code in Feet and Inches)

Left Front Tire: _____ feet _____ inches
Left Rear Tire: _____ feet _____ inches
Right Front Tire: _____ feet _____ inches
Right Rear Tire: _____ feet _____ inches

OECD Reference: A.4.4.7.1, A.4.4.7.2

Convention/Coding Source: DSI

Element Attributes:

(000.00)	none, no skid marks visible
(000.01–999.96)	actual length of skid marks in feet and inches
(999.99)	unknown

Range: 000.00–999.96, 999.99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

Record the actual length of the residual skid mark from each respective tire (front and rear, left side and right side, as applicable). This is a direct measurement recorded from the initiating point of the skid mark to the point where the skid mark is no longer visible.

For motorcycles, record as left-side tires, and code 000 and 00 for right-side tires.

OTHER VEHICLE FORM

16. Braking Skid-Mark Evidence on Roadway

OECD Reference: A.4.4.8

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) dry-roadway braking skid marks confirmed from motor vehicle
- (02) wet-roadway braking skid marks confirmed from motor vehicle
- (03) deep water on roadway, dynamic hydroplaning most likely, no braking skid marks remain
- (04) wet reverted rubber skidding in evidence, white steam-cleaned skid paths shown on roadway confirmed from motor vehicle
- (05) braking skid-marks evidence most likely present but degraded by traffic after accident, no confirmation at scene examination
- (06) snow/ice on roadway, braking skid marks confirmed from other vehicles
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–06, 97–99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

This variable is intended to record the varying degrees of residual skid-mark evidence deposited on the roadway surface. A dry roadway surface at the time of a heavy-braking application will leave the most obvious skid marks. A wet roadway surface will reduce the coefficient of friction and diminish the amount of rubber transferred to the roadway surface.

If deep standing water exists at the time of the heavy-braking application or skidding, then hydroplaning can occur. Although tires may be locked and skidding, they are not actually marking the roadway surface. If this is the situation, no skid-mark evidence will be present. In some instances, there may be just the right amount of water on the roadway surface where the locked tires are “squeegeeing” the roadway surface. This results in the tire not transferring rubber deposits but scrubbing the roadway surface clean, which leaves a residual white mark. If this occurs, code 04.

17. Braking Tire-Striation Evidence

OECD Reference: A.4.4.9

Convention/Coding Source: OECD

Element Attributes:

- (00) none, front or rear tires
- (01) rear tires only
- (02) front tires only
- (03) both front and rear tires
- (04) prolonged skid patch on rear tires only
- (05) prolonged skid patch on rear tires, plus braking striations on front tires
- (06) prolonged skid patch on rear tires, plus slide-out striations on front tires
- (07) prolonged skid patch on rear tires, plus slide-out striations on both front and rear tires
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source: Primary—vehicle and scene inspection

Remarks: This variable is assigned by the investigator from the sources.

Braking tire-striation marks are linear marks, or scoring, on the tire surface that are a result of tire braking.

Braking evidence is determined by close examination of the front and rear tires of the motor vehicle or motorcycle. Flat spots or patches will appear on the tire where the contact with the roadway surface occurred.

rear tires only: This is used when linear marks or scoring is noted on the rear-tire surface only.

front tires only: This is used when linear marks or scoring is noted on the front-tire surface only.

both front and rear tires: This is used when linear marks or scoring is noted on both the rear-tire surface and front-tire surface.

prolonged skid patch on rear tires only: This is used when the rear tire is locked and results in a longitudinal skid pattern. The rear tire will exhibit a prominent patch area.

17. Braking Tire-Striation Evidence (Continued)

prolonged skid patch on rear tires, plus braking striations on front tires: This is used when the rear tire(s) is locked, resulting in a skid and noted patch area on the tire surface. This happens when the operator applies a steering input while applying the front brakes. The result is that the front tire(s) scuffs the roadway surface. These marks should be evident on the front tire(s) in the specific location where the scuffing originated.

prolonged skid patch on rear tire, plus slide-out striations on front tires: This is used when the rear tire(s) is locked, resulting in a skid and noted patch area to tire surface. This happens when the operator applies a steering input with no front-brake application. The front tire(s) scuffs the roadway surface while still rotating and results in centrifugal scuff marks. The striations on the front tire(s) will involve the complete diameter of the tire.

prolonged skid patch on rear tire, plus slide-out striations on front and rear tires: This is used when the rear tire(s) is locked, resulting in a skid and noted patch area to tire surface. This happens when the operator applies a steering input with no front-brake application. The motorcycle initiates a yaw, and both the front and rear tires scuff the roadway surface, resulting in tire striations.

OTHER VEHICLE FORM

18. Acceleration Evidence on Tires

OECD Reference: A.4.4.11

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) moderate slip striations and tread block–edge erosion
- (02) severe slip striations and tread block–edge erosion
- (03) extreme slip striations, tread block–edge erosion, and tread-rubber reversion
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–03, 97–99

Source: Primary—vehicle and scene inspections

Remarks: This variable is assigned by the investigator from the sources.

This variable is designed to gauge the extent of slip striations to a rear tire due to rapid rear tire acceleration or “burn outs.” The tread-block edge should be closely examined to evaluate the extent of the rubber erosion.

OTHER VEHICLE FORM

19. Cornering Skid-Mark Evidence on Roadway

OECD Reference: A.4.4.12

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) dry-roadway cornering skid marks confirmed from motor vehicle/motorcycle
- (02) wet-roadway cornering skid marks confirmed from motor vehicle/motorcycle
- (03) deep water on roadway, hydroplaning most likely, no cornering skid marks remaining
- (04) wet reverted rubber skidding in evidence, white steam-cleaned cornering skid paths shown on roadway confirmed from motor vehicle/motorcycle
- (05) cornering skid-marks evidence most likely present, but degraded by traffic after accident, no confirmation at scene examination
- (06) snow/ice on roadway, cornering skid marks confirmed from motor vehicle/motorcycle
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–06, 97–99

Source: Primary—scene inspection

Remarks: This variable is assigned by the investigator from the source.

During high-speed cornering maneuvers, tires can “slip” while still rotating, resulting in centrifugal scuffing striations. These striation marks should be evident during the scene and vehicle inspections.

This variable is intended to record the varying degrees of residual cornering scuff-mark evidence deposited on the roadway surface. A dry roadway surface at the time of a cornering maneuver will residually leave the most obvious skid marks. A wet roadway surface will reduce the coefficient of friction and diminish the amount of rubber being transferred to the roadway surface.

If deep standing water exists at the time of the cornering maneuver, then hydroplaning can occur. This situation may not produce obvious markings on the roadway surface. In some instances, there may be just the right amount of water on the roadway surface where the locked tires are actually “squeegeeing” the roadway surface. This results in the tire not transferring rubber deposits but scrubbing the roadway surface clean, which leaves a residual white mark. If this occurs, code 04.

OTHER VEHICLE FORM

20. Cornering Tire-Striation Evidence

OECD Reference: A.4.4.13

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none
- (01) right-cornering tire striations, rear tires only
- (02) right-cornering tire striations, front tires only
- (03) right-cornering striations, both front and rear tires
- (04) left-cornering tire striations, rear tires only
- (05) left-cornering tire striations, front tires only
- (06) left-cornering tire striations, both front and rear tires
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–06, 97–99

Source: Primary—scene and vehicle inspections

Remarks: This variable is assigned by the investigator from the sources.

During high-speed cornering maneuvers, tires can “slip” while still rotating, resulting in centrifugal scuffing striations. These striation marks should be evident during the scene and vehicle inspections.

OTHER VEHICLE FORM

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21. Other-Vehicle First-Collision Contact Code

OECD Reference: A.4.4.14

Convention/Coding Source: OECD, DSI, SAE⁽⁹⁾

Element Attributes:

F: Vehicle Front

- (F01) bumper
- (F02) push bar, bull bar
- (F03) grill
- (F04) front corner, headlamp nacelle
- (F05) front edge or side of hood
- (F06) top of hood, front
- (F07) front side of upper A-pillar
- (F08) front cowl
- (F09) windshield lower molding
- (F10) windshield surface
- (F11) windshield header
- (F12) front rooftop
- (F13) external rearview mirror
- (F14) accessory lights, light bar
- (F15) underride bar
- (F16) entire front of vehicle
- (F98) other front (specify)
- (F99) unknown front

T: Vehicle Top Surfaces

- (T01) top of hood, front
- (T02) top of hood, center
- (T03) top of hood, rear
- (T04) front cowl
- (T05) rooftop, front
- (T06) sunroof, moonroof
- (T07) rooftop, center
- (T08) rooftop, rear
- (T09) rollbar
- (T10) trunk lid, front
- (T11) trunk lid, center
- (T12) trunk lid, rear

OTHER VEHICLE FORM

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21. Other-Vehicle First-Collision Contact Code (Continued)

- (T13) custom work/toolbox
- (T14) top rail of tailgate
- (T15) top rail of truck bed
- (T16) floor of truck bed
- (T17) accessory lights, light bar
- (T18) accessory equipment (air horns, etc.)
- (T19) entire top surfaces of vehicle
- (T98) other top (specify)
- (T99) unknown top

R: Vehicle Rear

- (R01) bumper
- (R02) step bumper
- (R03) push bar, bull bar
- (R04) power lift gate
- (R05) trailer hitch
- (R06) rear lamp, subtrunk panel
- (R07) top rail of tailgate
- (R08) tailgate
- (R09) rear door panel, top
- (R10) rear door panel, center
- (R11) rear door panel, bottom
- (R12) rear door handles, hardware
- (R13) rear corner, truck bed
- (R14) lower rear corner, attached truck cab
- (R15) upper rear corner, attached truck cab
- (R16) lower rear corner, van
- (R17) upper rear corner, van
- (R18) B-pillar, rear (truck only)
- (R19) truck upper rear corner of cab
- (R20) back light (window) header
- (R21) back light glass
- (R22) back light lower molding
- (R23) lower C-pillar
- (R24) upper C-pillar
- (R25) rear door frame header
- (R26) rear door or window, frame sill
- (R27) rear door side frame posts, hinges

OTHER VEHICLE FORM

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21. Other-Vehicle First-Collision Contact Code (Continued)

- (R28) spare tire/spare tire housing
- (R29) accessory lights, light bar
- (R30) underride bar
- (R31) entire rear of vehicle
- (R98) other rear (specify)
- (R99) unknown rear

U: Vehicle Undercarriage (Run Over or Snag)

- (U01) front of undercarriage
- (U02) rear of undercarriage
- (U03) side of undercarriage
- (U04) spare tire/spare tire mount
- (U05) entire undercarriage of vehicle
- (U98) other undercarriage (specify)
- (U99) unknown undercarriage

S: Vehicle Side

- (S01) side of front bumper
- (S02) side corner, headlamp nacelle
- (S03) front mudguard (fender)
- (S04) front mudguard (fender) wheelhouse
- (S05) front tires
- (S06) side of bonnet (hood), edge
- (S07) rocker panel, sill beam, steps
- (S08) lower A-pillar
- (S09) upper A-pillar
- (S10) front door, front
- (S11) front door, rear
- (S12) front door belt line
- (S13) front door side glass
- (S14) front door handle
- (S15) front roof rail, including drip channel molding
- (S16) rear roof rail, including drip channel molding
- (S17) lower B-pillar
- (S18) upper B-pillar
- (S19) rear door, front
- (S20) rear door, rear
- (S21) rear door belt line
- (S22) rear door side glass (window)

OTHER VEHICLE FORM

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21. Other-Vehicle First-Collision Contact Code (Continued)

- (S23) rear door handle
- (S24) back light (window) side frame
- (S25) center panel (van, bus)
- (S26) lower C-pillar
- (S27) upper C-pillar
- (S28) rear mudguard (fender) wheelhouse
- (S29) rear tires
- (S30) rear mudguard (fender), rear bed side panel, rear panel
- (S31) side of boot (trunk) lid, edge
- (S32) lower rear corner
- (S33) upper rear corner
- (S34) side of rear bumper
- (S35) side mount fuel tank
- (S36) battery box, toolbox, fire extinguishers
- (S37) frame rail
- (S38) semitrailer spare tire, chain racks
- (S39) trailer landing gear, struts
- (S40) semitrailer tie down hook points, strap anchors, ratchet locks
- (S41) accessory lights, light bar
- (S42) underride bar
- (S43) external rear view mirror
- (S44) front wheel
- (S45) rear wheel
- (S98) other side (specify)
- (S99) unknown side

M: Motorcycle/Moped

- (MCLF) left front
- (MCCF) center front
- (MCRF) right front
- (MCLC) left center
- (MCLR) left rear
- (MCCR) center rear
- (MCRR) right rear
- (MCRC) right center
- (MCTR) top rear
- (MCTC) top center

OTHER VEHICLE FORM

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21. Other-Vehicle First-Collision Contact Code (Continued)

(MCTF)	top front
(MCUR)	undercarriage rear
(MCUC)	undercarriage center
(MCUF)	undercarriage front
(MC98)	other motorcycle/moped location
(MC99)	unknown motorcycle/moped location
(9998)	other (specify)
(9999)	unknown

Range: F01–F16, F98, F99, T01–T19, T98, T99, R01–R31, R98, R99, U01–U05, U98, U99, S01–S45, S98, S99, MCLF, MCCF, MCRF, MCLC, MCLR, MCCR, MCRR, MCRC, MCTR, MCTC, MCTF, MCUR, MCUC, MCUF, MC98, MC99, 9998, 9999

Source:

Primary—vehicle inspection
Secondary—vehicle-damage photographs

Remarks: This variable is assigned by the investigator from the sources.

Code the appropriate vehicle component, and add L, R, or C for left, right, or center of OV longitudinal centerline, respectively (i.e., “front bumper, left of centerline” is coded as F01L.)

These four-variable codes are used to describe first-collision (direct-contact) damage sustained by automobiles, light trucks, heavy trucks, buses, motorhomes, and motorcycles. A four-character, alphanumeric coding system, which describes where on the vehicle the initial direct-contact collision occurred, is used for four-wheeled vehicles. A four-character, alphabetic coding system is used to assess the damage to two-wheeled vehicles (e.g., motorcycles, mopeds, and scooters).

OTHER VEHICLE FORM

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22. Object(s) Contacted (Code up to Three)

OECD Reference: None

Convention/Coding Source: NASS⁽⁴⁾

Element Attributes:

Collision With Other Vehicle

- (01) other vehicle # 1
- (02) other vehicle # 2
- (03) other vehicle # 3

Collision With Fixed Object

- (04) tree (less than or equal to 4 inches in diameter)
- (05) tree (greater than 4 inches in diameter)
- (06) shrubbery or bush
- (07) embankment
- (08) concrete traffic barrier
- (09) other traffic barrier (includes guardrail) (specify)
- (10) impact attenuator
- (11) bridge
- (12) curb
- (13) fire hydrant
- (14) ground
- (15) ditch or culvert
- (16) building
- (17) wall
- (18) fence
- (19) nonbreakaway pole or post (less than or equal to 4 inches in diameter)
- (20) nonbreakaway pole or post (greater than 4 inches but less than or equal to 12 inches in diameter)
- (21) nonbreakaway pole or post (greater than 12 inches in diameter)
- (22) nonbreakaway pole or post (diameter unknown)
- (23) breakaway pole or post (any diameter)
- (28) other fixed object (specify)
- (29) unknown fixed object

OTHER VEHICLE FORM

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22. Object(s) Contacted (Continued)

Collision With Nonfixed Object

- (30) pedestrian
- (31) train
- (32) object fell from vehicle in transport
- (33) trailer, disconnected in transport
- (34) animal
- (35) cyclist or cycle
- (36) vehicle occupant
- (37) other nonmotorist or conveyance (specify)
- (38) other nonfixed object (specify)
- (39) unknown nonfixed object (specify)

Noncollision

- (40) overturn->rollover (excludes end-over-end)
- (41) rollover->end-over-end
- (42) fire or explosion
- (43) jackknife
- (44) other intraunit damage (specify)
- (45) noncollision injury
- (48) other noncollision (specify)
- (49) noncollision details unknown
- (97) not applicable
- (98) other event (specify)
- (99) unknown event or object

Range: 00–23, 28–45, 48, 49, 97–99

Source:

- Primary—scene and vehicle inspections
- Secondary—police report and interviewees

Remarks: This variable is assigned by the investigator from the sources.

For attribute descriptions of objects contacted, refer to the Motorcycle Dynamics Form, variable 17 (object(s) contacted).

OTHER VEHICLE FORM

23. Impact Speed (Code in Miles per Hour, Whole Numbers Only)

OECD Reference: A.4.4.15

Convention/Coding Source: DSI

Element Attributes:

(000)	stopped in traffic, speed is zero
(001–250)	miles per hour
(999)	unknown

Range: 000–250, 999

Source:

Primary—scene skid mark/speed analysis, calculations and electronic data recorder (EDR) downloads
Secondary—driver interview and police crash report

Remarks: This variable is assigned by the investigator from the sources.

If the impact event for determining the impact speed is between a light vehicle versus a light vehicle, then generally the impact speed can be automatically generated by the damage and trajectory portion of the WinSMASH program. However, this will usually not be the case as most impacts involving an other vehicle versus a motorcycle will involve either a light conventional vehicle versus a motorcycle, a medium/heavy truck versus a motorcycle, or a motorcycle versus a motorcycle, none of which are acceptable inputs to the WinSMASH program.

The investigator should utilize scene information and conservation of linear momentum calculations in addition to driver-interview data for determining an impact speed.

unknown: This indicates that the impact speed is unknown and not calculable.

OTHER VEHICLE FORM

24. PDOF Principal Direction of Force in Degrees

OECD Reference: None

Convention/Coding Source: SAE J224 MAR80,⁽⁹⁾ NASS⁽⁴⁾

Element Attributes:

(000)	nonhorizontal force
(010–360)	degrees in 10-degree increments
(998)	other (specify)
(999)	unknown

Range: 000, 010–360, 998, 999

Source:

Primary—vehicle and scene inspections

Secondary—occupant kinematics, vector analysis, and damaged-vehicle photographs

Remarks: This variable is assigned by the investigator from the sources.

The principal direction of force is the force that caused the crush and sheet-metal displacement on the damaged vehicle. The principal direction of force is determined by the resultant of forces acting on the vehicle (that is, vector analysis) at the point of application. The principal direction of force is designated by a reference to hour sectors on a conventional clockface, positioned over the point of application. The clockface is assumed to be on the same horizontal plane as the crashed vehicle. The 12 o'clock position corresponds to the direction of an oncoming force relative to the vehicle's area of deformation. Other examples of clock positions, such as 3, 6, and 9 o'clock, refer to forces directed from the right, rear, and left, respectively.

Once the clock position is determined by the investigator, the actual PDOF can be "fine-tuned" and reflected in degrees. The PDOF can be determined by examining the flow of damage to components on the involved vehicle(s). In addition, the investigator may employ a vector analysis and utilize occupant kinematics information to help fine-tune the determination of the PDOF in degrees.

Write the PDOF in positive 10-degree increments. If the direction was approximately 10 degrees to the right of straight-ahead, code 010. If the direction of force appeared to be 10 degrees left of straight-ahead, code 350.

nonhorizontal force: Select this any time a vehicle becomes inverted and impacts an object or vehicle while inverted. In addition, use this selection in any other circumstance that is consistent with the directions contained in SAE J224 MAR80.⁽⁹⁾

unknown: Select this when the force direction cannot be determined via the vehicle inspection or damaged-vehicle photographs.

OTHER VEHICLE FORM

25. Other-Vehicle Post-Crash Motion Code

OECD Reference: A.4.4.16

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) none, stopped at POI; POR and POI coincide
- (01) stopped within 6 feet of POI
- (02) rolled on wheels from POI to POR
- (03) rolled on wheels from POI, then impacted other object at POR
- (04) vehicle rollover from POI to POR
- (05) skidded, slid from POI to POR
- (06) skidded, slid from POI, then impacted other object at POR
- (07) vehicles did not separate; PORs are essentially the same for motorcycle and other vehicle
- (08) spun or yawed, sliding from POI to POR
- (09) hit and run, driver departed scene of accident with other vehicle immediately after collision
- (10) driver departed scene immediately after collision, but other vehicle still at scene
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–10, 97–99

Source:

- Primary—scene and vehicle inspections
- Secondary—police report

Remarks: This variable is assigned by the investigator from the sources.

This variable is intended to capture the motion of the other vehicle from the POI to the POR or the other vehicle's final rest position. Choose the variable that best describes the motion of the other vehicle during its postimpact (initial impact) trajectory to its final rest position.

OTHER VEHICLE FORM

26. Distance From POI to POR (Code in Feet and Inches)

Distance Along the POI Path: +/- _____ feet ____ inches

Offset: +/- _____ feet ____ inches

OECD Reference: A.4.4.17

Convention/Coding Source: DSI

Element Attributes:

(000–995)	actual number of feet
(00–11)	actual number of inches
(996-96)	996 feet or greater
(997-97)	not applicable
(999-99)	unknown

Range: 000–995 996-96, 997-97, 999-99

Source:

Primary—scene inspection

Secondary—police crash report and scene photographs

Remarks: This variable is assigned by the investigator from the sources.

This variable records the distance (measured in feet and inches) that the other vehicle traveled from the point of impact (POI) to its point of rest (POR) or final rest position. The distance traveled is recorded as a positive (+) or negative (–) value utilizing an x, y coordinate system, with the x coordinate always originating from the other vehicle heading angle. The initial “distance along POI path” measurement is a longitudinal postimpact measurement along the x -axis in relation to the established coordinate system. The “offset” measurement records the lateral postimpact movement along the y -axis in relation to the established coordinate system.

HELMET TESTING/EVALUATION FORM

Case Number

OECD Reference: None

Convention/Coding Source: DSI

Element Attributes: Case number

Range: 0001–2000

Source: Primary—case assignment chart

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

Motorcycle or Other-Vehicle Number

OECD Reference: A.4.3.1

Convention/Coding Source: NASS,⁽⁴⁾ OECD

Element Attributes: Vehicle number

Range: 001–010

Source:

Primary—police crash report and on scene investigation
Secondary—interviews

Remarks: This variable is assigned by the investigator from the sources.

If there is only one motorcycle involved, then this is assigned “MC 1.” If more than one motorcycle is involved, then the motorcycle of interest is assigned “MC 1” by the investigator. The other motorcycles are considered other vehicles for the particular case investigation.

Each in-transport motor vehicle is assigned a unique number. After the motorcycles involved in the crash are assigned a number (as either the case vehicle or other vehicles), vehicle numbers are assigned consecutively according to the order in which the vehicles are listed on the police crash report, except in the following circumstances: if there are any in-transport vehicles not listed on the police crash report, then use the next consecutive number; or if there are any not-in-transport vehicles that are struck by an in-transport vehicle, then treat them as fixed objects (i.e., parked car).

An example is when the police crash report stated that Vehicle 3, a Honda motorcycle, struck Vehicle 2, a Chevrolet Impala, and the Impala rebounded into vehicle 1, a legally parked Toyota Corolla. In this case, the Honda motorcycle is MC 1, the Impala is OV 1, and the Toyota Corolla is a fixed object.

HELMET TESTING/EVALUATION FORM

1. Helmet Belongs to?

OECD Reference: C.5.1.1.1

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) rider
- (02) passenger 1
- (03) passenger 2
- (04) passenger 3
- (98) other (specify)
- (99) unknown

Range: 01–04, 98, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

When the investigator acquires a helmet, the helmet will be labeled with the case number, vehicle number, and rider or passenger number.

HELMET TESTING/EVALUATION FORM

2. Wearing Helmet on Head?

OECD Reference: A.5.3.1.11

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) yes
- (02) helmet available but not used
- (98) other (specify)
- (99) unknown

Range: 00–02, 98, 99

Source: Refer to Motorcycle Rider Form, variable 23: At Time of Crash, Were You Wearing a Helmet?

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

3. Was Helmet Properly Adjusted on Head?

OECD Reference: A.5.3.1.12

Convention/Coding Source: OECD

Element Attributes:

- (00) no
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source: Refer to Motorcycle Rider Form, variable 26: Was Your Helmet Properly Adjusted on Your Head?

Remarks: This variable is assigned by the investigator from the source.

The following definitions may be applied in order to assist in the determination of proper helmet adjustment:

yes: The helmet was properly oriented on the wearer's head to provide maximum field of vision and impact protection.

no: The helmet was on the rider's or passenger's head at the time of the crash; however, it was oriented in such a fashion as to reduce the field of vision or the protective capacity of the helmet.

Examples of improperly adjusted helmets include the following: a full-face helmet that has been partially donned, with the retention system fastened or unfastened, and is resting on top of the head at the time of the accident; and an oversized helmet relative to the wearer's head that is rotated backward and secured with a loose retention strap at the time of the accident.

unknown: The investigator is unable to determine if the helmet was properly adjusted. This response may also be used if the investigator is not sure if a helmet was worn.

HELMET TESTING/EVALUATION FORM

4. Was Your Helmet Securely Fastened to Your Head?

OECD Reference: A.5.3.1.13

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source: Refer to Motorcycle Rider Form, variable 27: Was Your Helmet Securely Fastened to Your Head?

Remarks: This variable is assigned by the investigator from the sources, including the interview.

If examination of the strap shows evidence that contradicts the wearer's verbal report, the conclusions of the examination evidence should be coded here. For example, if a rider says his or her helmet was securely fastened, but physical evidence shows it was fastened loosely or not at all, then this form should reflect code 00 (no) as the correct response.

HELMET TESTING/EVALUATION FORM

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5. Type of Helmet

OECD Reference: A.5.3.1.14

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) not a motorcycle helmet
- (01) half/police motor vehicle/motorcycle helmet
- (02) open-face motor vehicle/motorcycle helmet
- (03) full-face motor vehicle/motorcycle helmet
- (04) novelty or beanie helmet
- (98) other (specify)
- (99) unknown

Range: 00–04, 98, 99

Source: Refer to Motorcycle Rider Form, variable 28: What Type of Helmet Is It?

Remarks: This variable is assigned by the investigator from the source.

half/police motor vehicle/motorcycle helmet: These helmets are built with an energy-absorbing liner (usually expanded polystyrene) and certifiably meet the USDOT standard. These are the least intrusive style of motorcycle helmets, covering only the top half of the cranium. They weigh the least, do not block the ears, and offer the least wind resistance. They also afford the least protection and are the most likely to come off in a crash, even when properly fastened.

open-face motor vehicle/motorcycle helmet: This style is similar to a full-face helmet, but it does not wrap around the face. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A chinstrap secures the helmet, sometimes in the form of a chin cup. This type of helmet may have a flexible chin protector that resembles the chin bar of a full-face helmet and that snaps on and off. These removable chin bars (or gravel guards) are sometimes attached to helmets used in dirt-bike riding. Such a flimsy attachment does not make it a full-face helmet; it is still an open-face helmet with an accessory attachment.

full-face motor vehicle/motorcycle helmet: These helmets cover the entire head and most of the face. The hard shell extends from the brow over the cranium to the base of the skull at the top of the neck. The shell rides forward along the cheekbones to encompass the jaws and chin, leaving a wraparound view port. A transparent visor slides over the view port to block out wind blasts, rain, and dust and to ease eye fatigue. Most full-face motorcycle helmets are vented at the chin and within the shell. Vents normally have sliding doors for use in cold weather. The inner shell is highly padded, and the helmet has a chinstrap for securing. This style includes helmets with a moveable chin bar that can be unlatched to pivot upward, exposing the wearer's entire face.

HELMET TESTING/EVALUATION FORM

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5. Type of Helmet (Continued)

novelty or beanie helmet: This is a helmet that does not comply with USDOT regulations or any other performance requirements. Novelty helmets have only soft, comfort padding (similar to the comfort padding of USDOT-compliant helmets) inside the shell, but no energy-absorbing foam. Riders may add what appears to be a USDOT sticker to the back in order to fool police, but that should not fool an investigator. Energy-absorbing foam is essential to passing the USDOT standard. Also, novelty helmets almost never identify the manufacturer, model, or date of manufacture.

HELMET TESTING/EVALUATION FORM

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6. Type of Coverage

OECD Reference: A.5.3.1.15

Convention/Coding Source: DSI

Element Attributes:

- (01) partial coverage
- (02) full coverage
- (03) full-facial coverage, integral chin bar but no face shield
- (04) full-facial coverage, removable chin bar
- (05) full-facial coverage, retractable chin bar
- (06) full-facial coverage, integral chin bar and face shield
- (07) open-face helmet with flat wraparound face shield
- (08) open-face helmet with bubble-type face shield
- (09) open-face helmet with visor/face shield combo
- (10) open-face helmet with removable gravel guard
- (98) other (specify)
- (99) unknown

Range: 01–10, 98, 99

Source: Refer to Motorcycle Rider Form, variable 29: What Is the Type of Helmet Coverage?

Remarks: This variable is assigned by the investigator from the source.

full-facial coverage, integral chin bar but no face shield: This style is similar to a full-face helmet, but it does wrap around the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears. A full chin bar is incorporated into the design.

full-facial coverage, removable chin bar: This style is similar to a full-face helmet, but it has a removable chin bar that extends across the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears.

full-facial coverage, retractable chin bar: This style is similar to a full-face helmet, but it has a retractable chin bar that wraps across the face at the chin level. The shell extends from the brow over the cranium to the base of the neck and forward over the ears.

full-facial coverage, integral chin bar and face shield: This helmet shell extends from the brow over the cranium to the base of the neck and across the front of the face at the chin level. In addition, a transparent face shield covers the eye, nose, and mouth areas.

HELMET TESTING/EVALUATION FORM

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6. Type of Coverage (Continued)

open-face helmet with wraparound face shield: This is a removable transparent covering that may extend over some portion of the eye, nose, and mouth areas. It can be attached to helmets at the sides of the head.

open-face helmet with bubble-type face shield: This is a large transparent covering in a curved, bubble shape that attaches to the front of an open-face helmet. It generally provides full facial protection.

open-face helmet with visor/face shield combo: This can be attached to helmets to provide transparent facial protection with a visor overhang at the top of the unit.

HELMET TESTING/EVALUATION FORM

7. Predominating Color

OECD Reference: A.5.3.1.16

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) no dominating color, multicolored
- (02) white
- (03) yellow
- (04) black
- (05) red
- (06) blue
- (07) green
- (08) silver, grey
- (09) orange
- (10) brown, tan
- (11) purple
- (12) gold
- (13) chrome, metallic
- (98) other (specify)
- (99) unknown

Range: 01–13, 98, 99

Source: Refer to Motorcycle Rider Form, variable 30: What Is the Predominant Color of Your Helmet?

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

8. Color of Face Shield, if Present

OECD Reference: A.5.3.1.17

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) clear
- (02) green
- (03) grey, smoke
- (04) amber, yellow
- (05) blue
- (06) reflective (any color)
- (97) not applicable, no face shield
- (98) other (specify)
- (99) unknown

Range: 01–06, 97–99

Source: Refer to Motorcycle Rider Form, variable 31: What Is the Color of the Face Shield?

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

9. Helmet Owned by Wearer?

OECD Reference: A.5.3.1.18

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no
- (01) yes
- (98) other (specify)
- (99) unknown

Range: 00, 01, 98, 99

Source: Refer to Motorcycle Rider Form, variable 32: Do You Own This Helmet?

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

10. Helmet Fit

OECD Reference: A.5.3.1.19

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) acceptable fit
- (02) too large, too loose
- (03) too small, too tight
- (04) contour mismatch
- (98) other (specify)
- (99) unknown

Range: 01–04, 98, 99

Source: Refer to Motorcycle Rider Form, variable 33: How Well Does This Helmet Fit?

Remarks: This variable is assigned by the investigator from the source.

The following definitions may be applied in order to assist in the determination of proper helmet fit.

acceptable fit: This refers to a helmet that is the correct size for the wearer. An acceptable fitting helmet will not move excessively when properly adjusted and retained on the wearer's head.

too large, too loose: This refers to a helmet that is too large given the size of the wearer's head. A helmet that is too large and too loose will move excessively on the wearer's head during normal use. The investigator should look for helmet-induced injuries as a result of excessive helmet movement in order to assist in the identification of a helmet that is too large. Typical helmet-induced injuries due to excessive helmet motion may include lacerations to the bridge of the nose or to the maxillary region. Helmet ejection in the presence of a fastened retention system is also evidence that suggests that the helmet was too large for the wearer.

too small, too tight: This refers to a helmet that is too small given the size of the wearer's head. A helmet that is too small and too tight may remain on the wearer's head even if the retention system is not properly fastened. It may also rest higher on the wearer's head given the fact that it cannot be fully donned due to its small size.

contour mismatch: The helmet size is correct for rider's head circumference, but the rider's head is long and narrow or short and wide or otherwise unusual.

HELMET TESTING/EVALUATION FORM

11. Claimed Frequency of Helmet Use on Head (Code 000–100 Percent)

OECD Reference: A.5.3.1.20

Convention/Coding Source: OECD, DSI

Element Attributes:

(000–100)	percent helmet worn
(999)	unknown

Range: 000–100, 999

Source: Refer to Motorcycle Rider Form, variable 35: What Percentage of Time Do You Wear Your Helmet When Riding?

Remarks: This variable is assigned by the investigator from the source.

Record the percentage of time that the rider claims to wear a helmet when riding. If the rider does not wear a helmet, 000 is the correct response for the variable. If the rider does wear a helmet all the time while riding a motorcycle, then the percent use should be 100. If the rider's response was that he or she does not wear a helmet 25 percent of the time, then code 75 as the percentage of time the rider does wear the helmet.

HELMET TESTING/EVALUATION FORM

12. Conditions Under Which Helmet Used on Head (Code up to Four; Input 97 for Remaining Responses)

OECD Reference: A.5.3.1.21.1, A.5.3.1.21.2, A.5.3.1.21.3, A.5.3.1.21.4

Convention/Coding Source: OECD

Element Attributes:

- (00) never uses helmet
- (01) mostly on long trips
- (02) mostly in high-speed highway or freeway traffic
- (03) in adverse weather
- (04) usually, but not in hot weather
- (05) always
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source: Refer to Motorcycle Rider Form, variable 36: Under What Conditions Do You Usually Wear Your Helmet?

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

13. Helmet Manufacturer (Write in Response, Then Code)

OECD Reference: A.5.3.1.22

Convention/Coding Source: OECD

Element Attributes:

000	not applicable, no helmet worn	C08	Crown (Safety Engineering)	I02	Integral
		C09	Cyber	I03	Index
A01	AEON	D01	Dart	I04	Icon
A02	AGV	D02	Daytona	I05	IV2
A03	Air	D03	Delta	I06	Iron Horse
A04	American Safety, Buco	D04	Difi	J01	Jeb's
A05	American Sports	D05	Domino	J02	Jefferson
A06	Answer	D06	Driver	J03	JTech
A07	ARAI	D07	Davidamoto	K01	KBC
A08	Astro	E01	Electro, Electrofilm	K02	KBI
A09	AXO	E02	Elf	K03	KIWI
A10	AFX	E03	EET	K04	KRW
A11	Akuma	E04	EXO	K05	Krauter
B01	Bell Helmets	F01	Falcon	L01	Lance
B02	BIEFFE	F02	Fulmer	L02	Land
B03	BMW	F03	Florida Safety	L03	Land Tool
B04	Boeri	F04	Fly	L04	Land Tool
B05	Busch	F05	Fuel	L05	Lazeer
B06	Bilt	F06	Fox	L06	Lear-Siegler
B07	Biltwell	G01	GPA	L07	LEM
B08	Boss	G02	Grant, Royal	L08	Levior
C01	CKX	G03	Griffin	M01	Licks
C02	CTS	G04	Gmay	M02	Marushin
C03	CTX	H01	HJC	M03	Max
C04	Carrera	H02	Helmtec	M04	Maxon
C05	Cosmo	H03	Harley Davidson	M05	MDS
C06	Cougar	H04	HCI	M06	Mercury MSR
C07	Crown (HJC)	I01	Impact	M07	Monarch MZR
				M08	MPA
				M09	MSR
				M10	M2R
					MHR-Syko

HELMET TESTING/EVALUATION FORM

13. Helmet Manufacturer (Continued)

M11	MHR-Bilt	S02	Safetech	T06	Tanked
N01	NAVA	S03	Schuberth	V01	Vanson
N02	National	S04	Shingai	V02	Vector Sports
N03	NJL	S05	SHOEI	V03	Vega
N04	Nolan	S06	Simpson	V04	Vetter
O01	Outlaw	S07	Soaring	V05	Victory
O02	O'Neal	S08	Sterling	V06	VCan
P01	Pacer	S09	SafetyMed	W01	Wonder
P02	Pacific	S10	Scorpion	X01	Xtra
P03	Porsche	S11	SevenZero	Y01	Yoder
	Design (Kiwi)	S12	Seven Shark	Y02	Yo
P04	Porsche	S13	Speed &	Y03	Yes
	Design		Strength	Z01	Zero
	(Romer)	S14	Street & Steel	Z02	Zox
P05	Premier	T01	THH	Z03	Zri-2IR
R01	Racer	T02	Top Tek	Z04	ZI2
R02	Rohmer	T03	Traveler	998	other (specify)
R03	Ridex	T04	Turbo	999	unknown
S01	Sabra	T05	Tuang Kuang		

Range: 000, A01–A11, B01–B08, C01–C09, D01–D07, E01–E04, F01–F06, G01–G04, H01–H04, I01–I06, J01–J03, K01–K05, L01–L08, M01–M11, N01–N04, O01, O02, P01–P05, R01–R03, S01–S14, T01–T06, V01–V06, W01, Y01–Y03, Z01–Z04, 998, 999

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

14. Date of Manufacture

Month/Day/Year ____/____/____

OECD Reference: A.5.3.1.23

Convention/Coding Source: OECD

Element Attributes:

(01–12) month
(01–31) day
(1900–2100) year
(99/99/9999) unknown

Range: 01–31, 1990–2100, 99/99/9999

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

15. Helmet Model (Write in Response)

OECD Reference: A.5.3.1.24

Convention/Coding Source: OECD

Element Attributes: List or code model

Range: Helmet specific

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

16. Conformity to Which Qualification? (Code All That Apply; Input 97 for Remaining Responses)

OECD Reference: A.5.3.1.25.1, A.5.3.1.25.2, A.5.3.1.25.3, A.5.3.1.25.4

Convention/Coding Source: OECD

Element Attributes:

- (00) no standards labeled
- (01) FMVSS 218 (USDOT)
- (02) Snell M85 (USA)
- (03) Snell M90 (USA)
- (04) Snell M95 (USA)
- (05) Snell M2000 (USA)
- (06) Snell M2005 (USA)
- (07) Snell M2010 (USA)
- (08) Snell SA95 (USA)
- (09) Snell SA2000 (USA)
- (10) Snell SA/K2005 (USA)
- (11) Snell SA/K2010 (USA)
- (12) ANSI Z90.1 (USA)
- (13) UN/ECE-22-02 (Europe)
- (14) UN/ECE-22-03 (Europe)
- (15) UN/ECE-22-04 (Europe)
- (16) UN/ECE-22-05 (Europe)
- (17) BS 6658A (UK)
- (18) BS 6658B (UK)
- (19) JIS T8133-A (Japan)
- (20) JIS T8133-B (Japan)
- (21) JIS T8133-C (Japan)
- (22) CSA D230 (Canada)
- (23) AS 1698 (Australia)
- (24) MS 1 (Malaysia)
- (25) NZS 5430 (New Zealand)
- (27) SS-9 (Singapore)
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–25, 27, 97–99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

17. Labeled Size (Convert to Code if Exact Size Is Shown)

OECD Reference: A.5.3.1.26

Convention/Coding Source: OECD

Element Attributes:

- (01) youth small/medium
- (02) youth large/extra large
- (03) adult extra small
- (04) adult small
- (05) adult medium
- (06) adult large
- (07) adult extra large
- (08) adult extra, extra large
- (98) other (specify)
- (99) unknown

Range: 01–08, 98, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

18. Helmet Mass (Code in Ounces)

OECD Reference: A.5.3.1.27

Convention/Coding Source: OECD, DSI

Element Attributes:

(001–996)	helmet mass in ounces
(999)	unknown

Range: 001–996, 999

Source: Primary—helmet inspection

Remarks: This variable is assigned by a helmet tester or investigator from the source.

This variable includes all appliances attached and worn at the time of the crash. An approved scale device shall be used.

HELMET TESTING/EVALUATION FORM

19. Condition Prior to Crash

OECD Reference: A.5.3.1.28

Convention/Coding Source: OECD

Element Attributes:

- (01) no significant prior damage
- (02) minor damage, possibly from handling and use, but no prior structural damage
- (03) moderate damage to exterior finish and comfort pads, possibly from handling and use, but no prior structural damage
- (04) significant prior damage to shell or liner but not in area of accident impact
- (05) significant prior damage to shell or liner located in area of most severe accident impact
- (06) significant prior damage to shell or liner located in area of second most severe accident impact
- (98) other (specify)
- (99) unknown

Range: 01–06, 98, 99

Source:

- Primary—helmet inspection
- Secondary—rider/passenger interview information

Remarks: This variable is assigned by the investigator from the sources.

HELMET TESTING/EVALUATION FORM

20. Type of Helmet Retention System

OECD Reference: A.5.3.1.29

Convention/Coding Source: OECD

Element Attributes:

- (00) no retention system
- (01) double D-rings
- (02) slide bar
- (03) quick fasten/release or barb sides fitting
- (04) quick fasten/release, D blade-type fitting (like auto seatbelt)
- (05) lever clamp latch
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

21. Was Helmet Retained in Place on Head During Crash?

OECD Reference: A.5.3.1.30

Convention/Coding Source: OECD

Element Attributes:

- (01) yes, helmet retained in place to completion of accident events
- (02) yes, helmet moved on head but was retained
- (03) no, helmet ejected from head during pre-crash time period
- (04) no, helmet ejected from head during crash
- (05) no, helmet ejected from head after collision
- (98) other (specify)
- (99) unknown

Range: 01–05, 98, 99

Source:

Primary—rider, EMT, police, or eyewitness interview and on-scene inspection
Secondary—medical records

Remarks: This variable is assigned by the investigator from the sources.

HELMET TESTING/EVALUATION FORM

22. Was There a Retention-System Failure?

OECD Reference: A.5.3.1.31

Convention/Coding Source: OECD

Element Attributes:

- (01) no
- (02) yes
- (97) not applicable, no retention system
- (99) unknown

Range: 01, 02, 97, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

This variable refers to a component failure (breakage) within the retention system. The failed component does not necessarily mean that the helmet departed the rider's head during the crash.

HELMET TESTING/EVALUATION FORM

23. Type of Retention-System Failure?

OECD Reference: A.5.3.1.32

Convention/Coding Source: OECD

Element Attributes:

- (00) no retention-system failure
- (01) chinstrap pulled through D-rings, slide bar, or clamp latch
- (02) quick release let go
- (03) hanger fitting failed
- (04) shell rivets failed
- (05) webbing tensile failure
- (06) stitching failure in webbing
- (07) webbing laceration
- (97) not applicable, no retention system
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

24. Helmet External Damage Marks (Code up to Five in Order of Severity, Including Location Codes; Input 00 for Remaining Responses)

OECD Reference: A.5.3.1.33, A.5.3.1.34, A.5.3.1.35.1, A.5.3.1.35.2, A.5.3.1.35.3

Convention/Coding Source: OECD

Element Attributes:

- (00) no significant damage
- (01) freckles, small indentations, pockmarks
- (02) abrasion
- (03) fracture through full thickness of shell
- (04) crack, split, not a through-and-through fracture
- (05) delamination, gross
- (06) microdelamination, audible but not visible
- (07) puncture
- (08) rubber transfer
- (09) paint transfer
- (98) other (specify)
- (99) unknown

Range: 00–09, 98, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

List damage marks in descending order of severity, and assign a number for each mark. Identify the damage type from the list of element attributes and record it. Indicate as many, but only up to three, locations as applicable for each mark. Input 00 in all remaining spaces.

HELMET TESTING/EVALUATION FORM

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GENERAL HELMET EXAMINATION

25. Type of Helmet

OECD Reference: C.5.1.1.2

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) motor vehicle, motorcycle
- (02) sports, football
- (03) bicycle
- (04) industrial safety
- (05) equestrian
- (06) riot, police
- (07) aviation, aircraft
- (08) military, ballistic
- (09) novelty
- (98) other (specify)
- (99) unknown

Range: 01–09, 98, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

motor vehicle, motorcycle: A motorcycle helmet is a type of protective headgear used by motorcycle riders. The primary goal of a motorcycle helmet is to protect the rider's head during impact, thus preventing or reducing head injury or saving the rider's life. There are five basic types of helmets intended for motorcycling, which are as follows:

1. Full-face helmet.
2. Off-road/motocross helmet.
3. Modular/flip-up helmet.
4. Open-face or three-quarter helmet.
5. Half helmet or shorty.

In addition, there are novelty or beanie-style helmets available that are generally not intended for safe use. These helmets are not certified and are generally used only to provide the illusion of compliance with mandatory helmet laws.

HELMET TESTING/EVALUATION FORM

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GENERAL HELMET EXAMINATION

25. Type of Helmet (Continued)

sports, football: A football helmet is a protective device used primarily in American and Canadian football. The modern, hard-plastic version consists of a hard-plastic top with thick padding on the inside, a facemask made of one or more metal bars, and a chinstrap used to secure the helmet.

bicycle: A bicycle helmet is a helmet intended to be worn while riding a bicycle. They are designed to attenuate impacts to the cranium of a cyclist who falls, while minimizing side effects such as interference with peripheral vision.

industrial safety: This type of helmet is used predominantly in workplace environments, such as construction sites, to protect the head from injury by falling objects, impact with other objects, debris, bad weather, and electric shock. Inside the helmet is a suspension that spreads the helmet's weight over the top of the head.

equestrian: Equestrian helmets are worn by equestrians (those who ride horses). This type of helmet is specially designed to protect riders' heads if they fall, especially if they should strike their heads on a hard object while falling or accidentally be struck in the head by a horse's hoof.

riot, police: A riot-protection helmet is a type of helmet designed for law enforcement and military use to protect its wearer's head, face, and eyes from handheld melee weapons and thrown projectiles such as bricks, as may be met in riot control.

aviation, aircraft: Aviation helmets incorporate a plush liner. They are equipped with a unique chinstrap with two elastic bands over the ear cups and create a positive seal when tightening the chinstrap. Aviation helmets use an extremely efficient ear muff, reducing ambient noise to a more comfortable level. Most helmets are compatible with ULTRA-COM II INTERCOMS, DUAL-COM II INTERCOMS, and all radio interface cables. Helmet chinstraps come with either D-rings or quick-disconnect snaps.

military, ballistic: Today's militaries often use high-quality helmets made of ballistic materials such as Kevlar, which has excellent bullet and fragmentation stopping power. Some helmets also have good nonballistic protective qualities to protect the wearer from nonballistic injuries, such as concussive shockwaves from explosions, motor vehicle accidents, or falls.

novelty: There are other types of headwear that are often called "beanies," "brain buckets," or "novelty helmets." These types cannot legally be called motorcycle helmets because they are not certified.

HELMET TESTING/EVALUATION FORM

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GENERAL HELMET EXAMINATION

26. Lens or Shield Material, if Used

OECD Reference: C.5.1.1.3

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no lens or shield
- (01) plastic, cellulose acetate or butyrate
- (02) acrylic, Perspex™
- (03) polycarbonate
- (04) glass, unmodified
- (05) glass, shatterproof
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

plastic, cellulose acetate or butyrate: Plastic motorcycle face shields/accessories/helmets/apparel protect riders from wind, dust, rain, insects, and road debris thrown up from cars. Cellulose acetate/butyrate is an ester of cellulose formed by the action of a mixture of acetic acid and butyric acid and their anhydrides on purified cellulose; has high-impact resistance, clarity, and weatherability; and is used in making plastic film, lacquer, lenses, and outdoor signs.

acrylic, Perspex™: Polymethyl methacrylate (PMMA) polymethyl 2-methylpropenoate is a thermoplastic and transparent plastic. Chemically, it is the synthetic polymer of methyl methacrylate. It is sold under many trade names, including Policril, Plexiglas®, Gavrieli, Vitroflex®, Limacryl, R-Cast, Perclax®, Perspex™, Plazcryn, Acrylex, Acrylite®, Acrylplast, Altuglas®, PolyCast™, Oroglas®, Optix®, and Lucite and is commonly called acrylic glass, simply acrylic, Perspex™, or plexiglass.

GENERAL HELMET EXAMINATION

26. Lens or Shield Material, if Used (Continued)

polycarbonate: Polycarbonates are a particular group of thermoplastic polymers. They are easily worked, molded, and thermoformed; as such, these plastics are very widely used in the modern chemical industry. Their interesting features (temperature resistance, impact resistance, and optical properties) position them between commodity plastics and engineering plastics. Their plastic identification code is type 7. Polycarbonates received their name because they are polymers having functional groups linked together by carbonate groups (-O-(C=O)-O-) in a long molecular chain. Also carbon monoxide was used as a C1-synthon on an industrial scale to produce diphenyl carbonate, later being transesterified with a diphenolic derivative affording poly (aromatic carbonate).

glass, unmodified: Glass generally refers to hard, brittle, transparent material, such as that used for windows, bottles, or eyewear. Examples of such solid materials include, but are not limited to, soda-lime glass, borosilicate glass, acrylic glass, sugar glass, Muscovy-glass, or aluminium oxynitride.

glass, shatterproof: This is glass made with plates of plastic or resin or other material between two sheets of glass to prevent shattering. It is a unitary structure formed of two or more sheets of glass between each of which is a sheet of plastic, usually polyvinyl butyral. In usual manufacturing, two clean and dry sheets of plate glass and a sheet of plastic are preliminarily assembled as a sandwich under slight pressure to produce a void-free bond. The laminate is then pressed under heat long enough to unite the sheets. For use in automobiles and motorcycles, the finished laminated glass is approximately 0.25-inch (6-mm) thick; for aircrafts, it is thicker.

HELMET TESTING/EVALUATION FORM

GENERAL HELMET EXAMINATION

27. Eye-Coverage Damage Locations (Code up to Four Damage Locations in Order of Damage Severity; Input All That Apply; Input 00 for Remaining Responses)

OECD Reference: C.5.1.1.4.1, C.5.1.1.4.2, C.5.1.1.4.3, C.5.1.1.4.4

Convention/Coding Source: OECD

Element Attributes:

- (00) no damage
- (01) left lens
- (02) right lens
- (03) frame
- (97) not applicable, no eye coverage
- (99) unknown

Range: 00–03, 97, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

GENERAL HELMET EXAMINATION

28. Type of Damage to Eye Coverage (Code up to Four Types of Damage in the Same Order as Damage Locations Listed in # 27; Input 00 for Remaining Responses)

OECD Reference: C.5.1.1.5.1, C.5.1.1.5.2, C.5.1.1.5.3, C.5.1.1.5.4

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no damage
- (01) crack, break, chip
- (02) abrasion
- (03) deformation
- (04) item lost during crash
- (97) not applicable, no eye coverage
- (98) other (specify)
- (99) unknown

Range: 00–04, 97–99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

crack, break, chip: This is used when there are cracks, breaks, or chips in the eye coverage.

abrasion: The process of wearing down or rubbing away by means of friction.

deformation: Deformation is a change in the shape or size of an object due to an applied force. It can be a result of tensile (pulling) forces, compressive (pushing) forces, shear, bending, or torsion (twisting). Deformation is often described as strain.

item lost during crash: This term means that a piece of the shell or fragment of the lens or some other component was missing during the helmet inspection.

HELMET TESTING/EVALUATION FORM

GENERAL HELMET EXAMINATION

29. Retention-System Misuse

OECD Reference: C.5.1.1.8

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no misuse
- (01) fastened too loosely, allowed helmet removal without unfastening
- (02) cannot be fastened because of frayed and unrepaired retention-system webbing
- (03) retention system not fastened because of prior damage to retention-system hardware
- (04) retention system not properly fastened; end snap or Velcro® comfort feature used to fasten strap
- (05) chin cup used on chinstrap
- (97) not applicable, no retention system
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: MOST SEVERE IMPACT (# 30 TO 53)

30. Type of Impact

External Exam

OECD Reference: C.5.1.1.9

Convention/Coding Source: OECD

Element Attributes:

- (00) no impact
- (01) essentially normal
- (02) essentially tangential
- (03) both normal and tangential evidence
- (04) crushing, exterior force application
- (05) crushing, coincident external and interior forces
- (98) other (specify)
- (99) unknown

Range: 00–05, 98, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: MOST SEVERE IMPACT

31. Impact Location

OECD Reference: C.5.1.1.10

Convention/Coding Source: OECD

Element Attributes:

- (00) no impact
- (01) shell, including integral chin bar
- (02) edge bead
- (03) shell edge without edge bead
- (04) chinstrap webbing, cover
- (05) chinstrap hanger fitting
- (06) helmet liner, crown
- (07) chinstrap fastening, D-rings, slide bar, buckle, quick fasten/release
- (08) comfort padding, crown
- (09) accessory radio equipment, microphone, boom, speakers
- (10) appliance chin guard, mouth protector
- (11) face shield, integral
- (12) liner or padding underneath chin bar, integral
- (13) face shield, snap-on accessory
- (14) visor, peak
- (15) chin bar of full-face helmet
- (98) other (specify)
- (99) unknown

Range: 00–15, 98, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: MOST SEVERE IMPACT

32. Clockface Location

Left-Side View _____
Top View _____
Right-Side View _____
Top View _____

OECD Reference: C.5.1.1.11.1, C.5.1.1.11.2

Convention/Coding Source: OECD, DSI

Element Attributes:

(00)	no impact
(01–12)	o'clock direction
(98)	other (specify)
(99)	unknown

Range: 00–12, 98, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

The 12 o'clock sector should be used for impacts occurring from the front and also used for the left and right side of the helmet if the impact occurred within the respective sector.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: MOST SEVERE IMPACT

33. Number of Distinct Impacts at This Location (Code the Total Number of Distinct Impacts at This Location)

OECD Reference: C.5.1.1.12

Convention/Coding Source: OECD, DSI

Element Attributes:

(00)	no impact
(01–08)	number of distinct impacts
(99)	unknown

Range: 00–08, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET IMPACT: MOST SEVERE IMPACT

34. Shell Material

OECD Reference: C.5.1.1.13

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no shell
- (01) hand-laminated glass fiber
- (02) machine chop, pressure-molded glass fiber
- (03) polycarbonate
- (04) acetyl butadiene styrene
- (05) nylon, derivative
- (06) polypropylene, reinforced
- (07) polyethylene
- (08) polystyrene
- (98) other (specify)
- (99) unknown

Range: 00–08, 98, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

hand-laminated, glass fiber: In reference to laminated structure and materials related to no-pressure versus high-pressure laminating, the difference is that using high pressure versus no pressure controls the laminate and its compaction. Compacting the fiber and injecting exactly the right amount of resin results in a shell that far exceeds the shell produced with no pressure. Having exactly the right amount of resin versus fiber controls laminate structure. This is called fiber volume. In the very best wet lay-up hand-laminated helmet, the best resin content versus fiber volume is 50 percent, which means there is 50 percent resin and 50 percent fiber. Resin has no strength in comparison to the fiber.

machine chop, pressure-molded glass fiber: Fiberglass helmets have traditionally shown their best strength against chemical exposure. Today's fiberglass helmets also protect well in high-heat environments. However, over time and with repeated exposures to extreme temperatures, the thermoset resin that holds the glass fibers together in fiberglass helmets begins to degrade with each exposure.

HELMET IMPACT: MOST SEVERE IMPACT

34. Shell Material (Continued)

polycarbonate: This is a molded thermoplastic such as ABS or polycarbonate; it is the same basic material used in face shields and F-16 canopies.

acetyl butadiene styrene: Acetyl butadiene styrene (ABS) plastic will not distribute high-energy impacts well. As a low energy “bump-and-scrape” shell, it is adequate but not for high-energy impacts. The shell alone of ABS relegates this helmet mostly to light use.

nylon, derivative: This is a strong, lightweight, impact-resistant helmet system primarily used in contact sports. This type of helmet protects the wearer from impact injury and minimizes bodily injury to other players brought into contact during blocking and tackling events. Weight reduction is achieved by reinforcing the inner and outer surfaces of the helmet shell with long-length, high-strength fibers. Orientation of the fibers is such that the fiber lengths are aligned generally in the direction of tension and compression forces imposed on the helmet surface during impact. This reinforcement geometry permits use of a thin helmet shell. Efficient impact absorption by the helmet shell is accomplished by limiting the bend curvature produced at the impact location. The bend curvature reduction increases the contact area between the helmet shell and a second pliable, padded inner helmet made from energy-absorbing polymeric foam disposed within the helmet shell in contact with its inner surface.

polypropylene, reinforced: EPP is very similar in appearance to EPS but has a slight rubbery feel on the surface and a little bit of give if squeezed. EPP is a multi-impact foam, recovering its shape and most of its impact protection slowly after a crash. It can be trickier to work with and is a little more expensive than EPS. EPP also has a modest amount of rebound (in technical terms, a less-favorable coefficient of restitution) that usually requires a thicker helmet than one using EPS. Most of the rebound takes place after test rigs have stopped measuring the impact severity, so that characteristic is not well documented. EPP looks identical to EPS, and only the label will verify if the helmet has this multi-impact foam or the one-use-only EPS. There are some, but not many, EPP helmets on the market, mostly for multi-impact sports like skateboarding.

polyethylene: This is the most popular plastic used for making grocery bags, shampoo bottles, children’s tops and bulletproof vests. It is a polymer with a very simple chemical structure.

polystyrene: This is a synthetic aromatic hydrocarbon polymer made from the monomer styrene. It can be solid or foamed. General purpose polystyrene is clear, hard, and rather brittle.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: MOST SEVERE IMPACT

35. Shell Thickness (Code in Hundredths of an Inch)

OECD Reference: C.5.1.1.14

Convention/Coding Source: OECD, DSI

Element Attributes:

(0.01–9.96)	hundredths of an inch
(9.97)	not applicable, no shell
(9.99)	unknown

Range: 0.01–9.97, 9.99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET IMPACT: MOST SEVERE IMPACT

36. Liner Material

OECD Reference: C.5.1.1.15

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ DSI

Element Attributes:

- (00) no liner, including comfort pads
- (01) expanded polystyrene, large bead
- (02) expanded polystyrene, small bead
- (03) polyurethane
- (04) Ethafoam®
- (05) neoprene sponge, Rubatex®, nitrile vinyl pad
- (06) expanded polypropylene
- (07) headband suspension system
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

polystyrene: This is a synthetic aromatic hydrocarbon polymer made from the monomer styrene. It can be solid or foamed. General purpose polystyrene is clear, hard, and rather brittle.

polyurethane: Polyurethane is any polymer consisting of a chain of organic units joined by urethane (carbamate) links. Polyurethane polymers are formed through step-growth polymerization by reacting a monomer containing at least two isocyanate functional groups with another monomer containing at least two hydroxyl (alcohol) groups in the presence of a catalyst.

Formulations cover an extremely wide range of stiffness, hardness, and density. These materials include low-density flexible foam used for upholstery and bedding, low-density rigid foam used for thermal insulation and resin transfer molding cores, soft solid elastomers used for gel pads and print rollers, and hard solid plastics used for electronic instrument bezels and structural parts.

HELMET IMPACT: MOST SEVERE IMPACT

36. Liner Material (Continued)

Ethafoam®: This is a strong, resilient, medium-density, closed-cell, white polyethylene foam that is acceptable for use in the preservation of historic objects. Sold in planks 2 or 4 inches thick, it is an ideal material to use to cushion and protect fragile items. Ethafoam® is easy to cut into the appropriate shape for particular purposes, including displaying items and creating cushioned housings, or for protection during transportation.

neoprene: Neoprene, or polychloroprene, is a family of synthetic rubbers that are produced by polymerization of chloroprene. It is used in a wide variety of applications, such as in wetsuits, laptop sleeves, orthopedic braces (wrist, knee, etc.), electrical insulation, liquid- and sheet-applied elastomeric membranes or flashings, and car fan belts. Neoprene is the trade name used by DuPont Performance Elastomers.

Rubatex®: Rubatex® International is an ISO-certified manufacturer and industry leader of industrial, commercial-grade, closed-cell foam Rubatex®.

nitrile vinyl pad: Nitrile is any organic compound that has a $-C\equiv N$ functional group. Consequently, the $-C\equiv N$ functional group is called a nitrile group. In the $-C\equiv N$ group, the carbon atom and the nitrogen atom are triple bonded. The prefix cyano is used in chemical nomenclature to indicate the presence of a nitrile group in a molecule.

A cyanide ion is a negative ion with the formula CN^- . The $-C\equiv N$ group is sometimes referred to as a cyanide group or cyano group, and compounds with them are sometimes referred to as cyanides.

polypropylene: This is a thermoplastic polymer made by the chemical industry and used in a wide variety of applications, including packaging, textiles (e.g., ropes, thermal underwear, and carpets), stationery, plastic parts and reusable containers, laboratory equipment, loudspeakers, automotive components, and polymer banknotes. An additional polymer made from the monomer propylene, it is rugged and unusually resistant to many chemical solvents, bases, and acids.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: MOST SEVERE IMPACT

37. Liner Thickness (Code in Hundredths of an Inch)

OECD Reference: C.5.1.1.16

Convention/Coding Source: OECD, DSI

Element Attributes:

(0.01–9.96)	hundredths of an inch
(9.97)	not applicable, no liner
(9.99)	unknown

Range: 0.01–9.97, 9.99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

Most liners are less than 1-inch thick. A liner 0.75-inch thick would be coded as 0.75. A liner 1.25-inches thick would be coded as 1.25.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: MOST SEVERE IMPACT

38. Liner Density (Code in Pounds per Cubic Foot (lb/ft³))

OECD Reference: C.5.1.1.17

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ DSI

Element Attributes:

(0.01–9.96)	pounds per cubic foot
(9.97)	not applicable, no liner
(9.99)	unknown

Range: 0.01–9.97, 9.99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

The density of a material is defined as its mass per unit volume.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: MOST SEVERE IMPACT

39. Maximum Liner Crush (Code in Hundredths of an Inch)

OECD Reference: C.5.1.1.18

Convention/Coding Source: OECD, DSI

Element Attributes:

(0.00)	no liner crush
(0.01–9.96)	hundredths of an inch
(9.97)	not applicable, no liner
(9.99)	unknown

Range: 0.00–9.97, 9.99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: MOST SEVERE IMPACT

40. Area of Liner Crush or Signature (Code in Square Inches to Two Decimal Places)

OECD Reference: C.5.1.1.19

Convention/Coding Source: OECD, DSI

Element Attributes:

(00.01–99.96)	square inches
(99.97)	not applicable, no liner
(99.99)	unknown

Range: 00.01–99.97, 99.99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

Many crush areas are elliptical. The area of an ellipse can be calculated as follows:

$$\text{area of ellipse} = \pi \times a \times b \quad (2)$$

Where:

$\pi = 3.142$.

a = length of semimajor axis.

b = length of semiminor axis.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: MOST SEVERE IMPACT

41. Geometry of Impacting Surface

OECD Reference: C.5.1.1.20

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ DSI

Element Attributes:

- (00) no impact
- (01) complex, not easily described
- (02) flat
- (03) spherical, large radius
- (04) spherical, small radius
- (05) cylindrical, large radius
- (06) cylindrical, small radius
- (07) sharp edge
- (08) blunt edge
- (09) point
- (98) other (specify)
- (99) unknown

Range: 00–09, 98, 99

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

sphere: This is any surface that has double curvature, and it does not have to be perfectly spherical.

cylinder: This is a surface with a single curvature. Motorcycle handlebars are almost always cylindrical.

pointed: A pointed surface need not come to a sharp point, like the point of a pencil. Examples of pointed surfaces include lug bolts holding the wheels onto cars and trucks.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: MOST SEVERE IMPACT

42. Material of Impacting Surface

OECD Reference: C.5.1.1.21

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ DSI

Element Attributes:

- (00) no impact
- (01) liquid, water
- (02) solid metal (e.g., lamppost)
- (03) sheet metal, less than 0.15-inch thick
- (04) curbstone
- (05) solid masonry, concrete structure, large rock
- (06) rolled asphalt (e.g., road surface)
- (07) troweled or brush-finished concrete pavement
- (08) compacted dirt
- (09) gravel, small rock
- (10) wood, post, solid fiber
- (11) glass
- (12) loose dirt, sand
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–12, 97– 99

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the helmet tester from the source.

curbstone: This is a paving stone forming part of a curb. The curb is an edge between a sidewalk and a roadway consisting of a line of curbstones (usually forming part of a gutter).

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: MOST SEVERE IMPACT

43. Which Headform Is Used for Replication Testing?

OECD Reference: C.5.1.1.22

Convention/Coding Source: OECD

Element Attributes:

- (01) ISO A
- (02) ISO E
- (03) ISO J
- (04) ISO M
- (05) ISO O
- (06) USDOT small
- (07) USDOT medium
- (08) USDOT large
- (09) Hybrid III
- (10) Hybrid II
- (11) NOCSAE
- (97) not applicable
- (98) other (specify)

Range: 01–11, 97, 98

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

ISO: International Safety Organization.

USDOT: United States Department of Transportation.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: MOST SEVERE IMPACT

44. Mass of Replication Drop Apparatus (Code in Pounds; Not Including Helmet)

OECD Reference: C.5.1.1.23

Convention/Coding Source:

Element Attributes:

(01–96) pounds

Range: 01–96

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: MOST SEVERE IMPACT

45. Equivalent Laboratory Testing Anvil

OECD Reference: C.5.1.1.24

Convention/Coding Source: OECD

Element Attributes:

- (00) no anvil
- (01) flat steel anvil
- (02) hemispherical steel anvil
- (03) steel-edge anvil
- (04) curb anvil
- (05) cylindrical anvil
- (06) penetration point
- (07) steel-angle edge
- (08) flat pavement
- (09) sheet metal
- (10) windshield glass
- (97) not applicable
- (98) other (specify)

Range: 00–10, 97, 98

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: MOST SEVERE IMPACT

46. Helmet Impact Velocity From Crash Reconstruction (Code in Miles per Hour and Tenths)

OECD Reference: C.5.1.1.25

Convention/Coding Source: OECD

Element Attributes:

(00.0)	no velocity calculated
(0.01–99.6)	miles per hour and tenths
(99.9)	unknown

Range: 00.0–99.6, 99.9

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: MOST SEVERE IMPACT

47. Impact Velocity From Laboratory Replication (Code in Miles Per Hour and Tenths)

OECD Reference: C.5.1.1.26

Convention/Coding Source: OECD, laboratory test

Element Attributes:

(00.0)	no velocity calculated
(00.1–99.6)	miles per hour and tenths
(99.9)	unknown

Range: 00.0–99.6, 99.9

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: MOST SEVERE IMPACT

48. Peak Headform Acceleration

OECD Reference: C.5.1.1.27

Convention/Coding Source: OECD

Element Attributes:

(000)	not calculated
(001–996)	measure of acceleration (g)

Range: 000–996

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: MOST SEVERE IMPACT

49. Dwell Time Above 200 g (Code in Milliseconds per USDOT 218)

OECD Reference: C.5.1.1.28

Convention/Coding Source: OECD, USDOT 218

Element Attributes:

(0.0)	not calculated
(0.1–9.6)	milliseconds

Range: 0.0–9.6

Source: Primary—test measurement per USDOT 218 and helmet inspection

Remarks: This variable is assigned by the investigator from the sources.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: MOST SEVERE IMPACT

50. Head Injury Criteria (HIC)

OECD Reference: C.5.1.1.29

Convention/Coding Source: OECD, HIC

Element Attributes:

(0000) not calculated
(0001–9996) HIC value

Range: 0000–9996

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: MOST SEVERE IMPACT

51. Gadd Severity Index (GSI)

OECD Reference: C.5.1.1.30

Convention/Coding Source: OECD, GSI

Element Attributes:

(0000)	not calculated
(0001–9996)	GSI value

Range: 0000–9996

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

The Gadd Severity Index was developed with data from tests on human cadavers and supported with real crash data.

The simplified formula is as follows:

$$GSI = -ve^{5/2} \times t \quad (3)$$

Where ve is acceleration (or deceleration) in g (1 g is the measurement of the acceleration of Earth's gravity or 9.80 ms^{-2}).

A human head can sustain values as high as 1,000 without serious injury, as long as the peak value does not last for more than 10 to 15 ms. For comparison, a hammer hitting a nail into wood gives a value of about 3,000; a baseball hitting a concrete wall is about 10,000; and a hammer hitting a concrete wall is about 3,600,000.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: MOST SEVERE IMPACT

52. Equivalent Specific Energy/Equivalent Drop Height From Crash Reconstruction (Code in Feet and Tenths)

OECD Reference: C.5.1.1.31

Convention/Coding Source: OECD

Element Attributes:

(00.0)	not calculated
(00.1–99.5)	feet and tenths
(99.6)	99.6 feet or greater
(99.9)	unknown

Range: 00.0–99.6, 99.9

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: MOST SEVERE IMPACT

53. Equivalent Specific Energy/Equivalent Drop Height From Laboratory Replication (Code in Feet and Tenths)

OECD Reference: C.5.1.1.32

Convention/Coding Source: OECD, laboratory test

Element Attributes:

(00.0)	not calculated
(00.1–99.5)	feet and tenths
(99.6)	99.6 feet or greater
(99.9)	unknown

Range: 00.0–99.6, 99.9

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: SECOND MOST SEVERE IMPACT (# 54 TO 77)

54. Type of Impact (Code From External Exam)

OECD Reference: C.5.1.1.9

Convention/Coding Source: OECD

Element Attributes:

- (00) no impact
- (01) essentially normal
- (02) essentially tangential
- (03) both normal and tangential evidence
- (04) crushing, exterior force application
- (05) crushing, coincident external and interior forces
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–05, 97–99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: SECOND MOST SEVERE IMPACT

55. Impact Location

Convention/Coding Source: OECD

Element Attributes:

- (00) no impact
- (01) shell, including integral chin bar
- (02) edge bead
- (03) shell edge without edge bead
- (04) chinstrap webbing, cover
- (05) chinstrap hanger fitting
- (06) helmet liner, crown
- (07) chinstrap fastening, D-rings, slide bar, buckle, quick fasten/release
- (08) comfort padding, crown
- (09) accessory radio equipment, microphone, boom, speakers
- (10) appliance chin guard, mouth protector
- (11) face shield, integral
- (12) liner or padding underneath chin bar, integral
- (13) face shield, snap-on accessory
- (14) visor, peak
- (15) chin bar of full-face helmet
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–15, 97–99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: SECOND MOST SEVERE IMPACT

56. Clockface Location

Left-Side View _____
Top View _____
Right-Side View _____
Top View _____

OECD Reference: C.5.1.1.11.1, C.5.1.1.11.2

Convention/Coding Source: OECD, DSI

Element Attributes:

(00)	no impact
(01–12)	o'clock direction
(97)	not applicable
(98)	other (specify)
(99)	unknown

Range: 00–12, 97–99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

The 12 o'clock sector should be used for impacts occurring from the front and also used for the left and right side of the helmet if the impact occurred within the respective sector.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: SECOND MOST SEVERE IMPACT

57. Number of Distinct Impacts at This Location (Code the Total Number of Distinct Impacts at This Location)

OECD Reference: C.5.1.1.12

Convention/Coding Source: OECD, DSI

Element Attributes:

(00)	no impact
(01–08)	number of distinct impacts
(97)	not applicable
(99)	unknown

Range: 00–08, 97, 99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

Page 1 of 2

HELMET IMPACT: SECOND MOST SEVERE IMPACT

58. Shell Material

OECD Reference: C.5.1.1.13

Convention/Coding Source: OECD, DSI

Element Attributes:

- (00) no shell
- (01) hand-laminated glass fiber
- (02) machine chop, pressure-molded glass fiber
- (03) polycarbonate
- (04) acetyl butadiene styrene
- (05) nylon, derivative
- (06) polypropylene, reinforced
- (07) polyethylene
- (08) polystyrene
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–08, 97–99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

hand-laminated, glass fiber: In reference to a laminated structure and materials related to no-pressure versus high-pressure laminating, the difference is that using high pressure versus no pressure controls the laminate and its compaction. Compacting the fiber and injecting exactly the right amount of resin results in a shell that far exceeds the shell produced with no pressure. Having exactly the right amount of resin versus fiber controls the laminate structure. This is called fiber volume. In the best wet lay-up hand-laminated helmet, the resin content versus fiber volume is 50 percent, which means there is 50 percent resin and 50 percent fiber. Resin has no strength in comparison to fiber.

machine chop, pressure-molded glass fiber: Fiberglass helmets have traditionally shown their best strength against chemical exposure. Today's fiberglass helmets also protect well in high-heat environments. However, over time and with repeated exposures to extreme temperatures, the thermoset resin that holds the glass fibers together in fiberglass helmets begins to degrade with each exposure.

HELMET IMPACT: SECOND MOST SEVERE IMPACT

58. Shell Material (Continued)

polycarbonate: This is a molded thermoplastic such as ABS or polycarbonate; it is the same basic material used in face shields and F-16 canopies.

acetyl butadiene styrene: Acetyl butadiene styrene (ABS) plastic will not distribute high-energy impacts well. As a low energy “bump-and-scrape” shell, it is adequate but not for high-energy impacts. The shell alone of ABS relegates this helmet mostly to light use.

nylon, derivative: This is a strong, lightweight, impact-resistant helmet system primarily used in contact sports. This type of helmet protects the wearer from impact injury and minimizes bodily injury to other players brought into contact during blocking and tackling events. Weight reduction is achieved by reinforcing the inner and outer surfaces of the helmet shell with long-length, high-strength fibers. Orientation of the fibers is such that the fiber lengths are aligned generally in the direction of tension and compression forces imposed on the helmet surface during impact. This reinforcement geometry permits use of a thin helmet shell. Efficient impact absorption by the helmet shell is accomplished by limiting the bend curvature produced at the impact location. The bend curvature reduction increases the contact area between the helmet shell and a second pliable, padded inner helmet made from energy-absorbing polymeric foam disposed within the helmet shell in contact with its inner surface.

polypropylene, reinforced: EPP is very similar in appearance to EPS but has a slight rubbery feel on the surface and a little bit of give if squeezed. EPP is a multi-impact foam, recovering its shape and most of its impact protection slowly after a crash. It can be trickier to work with and is a little more expensive than EPS. EPP also has a modest amount of rebound (in technical terms, a less-favorable coefficient of restitution) that usually requires a thicker helmet than one using EPS. Most of the rebound takes place after test rigs have stopped measuring the impact severity, so that characteristic is not well documented. EPP looks identical to EPS, and only the label will verify if the helmet has this multi-impact foam or the one-use-only EPS. There are some, but not many, EPP helmets on the market, mostly for multi-impact sports like skateboarding.

polyethylene: This is the most popular plastic used for making grocery bags, shampoo bottles, children’s tops and bulletproof vests. It is a polymer with a very simple chemical structure.

polystyrene: Expanded polystyrene (EPS) is one of the most widely used foams. It is used for picnic coolers, egg cartons, food cartons and drink cups, and packing peanuts. It is cheap to manufacture, light, and has almost ideal crush characteristics with no bounce-back, which makes the impact more severe. EPS can be reliably manufactured with reasonable quality-control procedures.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: SECOND MOST SEVERE IMPACT

59. Shell Thickness (Code in Hundredths of an Inch)

OECD Reference: C.5.1.1.14

Convention/Coding Source: OECD, DSI

Element Attributes:

(0.01–9.96)	hundredths of an inch
(9.97)	not applicable
(9.99)	unknown

Range: 0.01–9.97, 9.99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET IMPACT: SECOND MOST SEVERE IMPACT

60. Liner Material

OECD Reference: C.5.1.1.15

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ DSI

Element Attributes:

- (00) no liner, including comfort pads
- (01) expanded polystyrene, large bead
- (02) expanded polystyrene, small bead
- (03) polyurethane
- (04) Ethafoam®
- (05) neoprene sponge, Rubatex®, nitrile vinyl pad
- (06) expanded polypropylene
- (07) headband suspension system
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–07, 97–99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

polystyrene: This is a thermoplastic substance that is in a solid (glassy) state at room temperature. It flows if heated above its glass transition temperature (for molding or extrusion) and becomes solid again when cooling off. Pure solid polystyrene is a colorless, hard plastic with limited flexibility. It can be cast into molds with fine detail. Polystyrene can be transparent or made to take on various colors.

polyurethane: Polyurethane is any polymer consisting of a chain of organic units joined by urethane (carbamate) links. Polyurethane polymers are formed through step-growth polymerization by reacting a monomer containing at least two isocyanate functional groups with another monomer containing at least two hydroxyl (alcohol) groups in the presence of a catalyst.

Formulations cover an extremely wide range of stiffness, hardness, and density. These materials include low-density flexible foam used for upholstery and bedding, low-density rigid foam used for thermal insulation and resin transfer molding cores, soft solid elastomers used for gel pads and print rollers, and hard solid plastics used for electronic instrument bezels and structural parts.

HELMET IMPACT: SECOND MOST SEVERE IMPACT

60. Liner Material (Continued)

Ethafoam®: This is a strong, resilient, medium-density, closed-cell, white polyethylene foam that is acceptable for use in the preservation of historic objects. Sold in planks 2- or 4-inches thick, it is an ideal material to use to cushion and protect fragile items. Ethafoam® is easy to cut into the appropriate shape for particular purposes, including displaying items and creating cushioned housings or for protection during transportation.

neoprene: Neoprene, or polychloroprene, is a family of synthetic rubbers that are produced by polymerization of chloroprene. It is used in a wide variety of applications, such as in wetsuits, laptop sleeves, orthopedic braces (wrist, knee, etc.), electrical insulation, liquid- and sheet-applied elastomeric membranes or flashings, and car fan belts. Neoprene is the trade name used by DuPont Performance Elastomers.

Rubatex®: Rubatex® International is an ISO-certified manufacturer and industry leader of industrial, commercial-grade, closed-cell foam Rubatex®.

nitrile vinyl pad: Nitrile is any organic compound that has a $-C\equiv N$ functional group. Consequently, the $-C\equiv N$ functional group is called a nitrile group. In the $-C\equiv N$ group, the carbon atom and the nitrogen atom are triple bonded. The prefix cyano is used in chemical nomenclature to indicate the presence of a nitrile group in a molecule.

A cyanide ion is a negative ion with the formula CN^- . The $-C\equiv N$ group is sometimes referred to as a cyanide group or cyano group, and compounds with them are sometimes referred to as cyanides.

polypropylene: This is a thermoplastic polymer made by the chemical industry and used in a wide variety of applications, including packaging, textiles (e.g., ropes, thermal underwear, and carpets), stationery, plastic parts and reusable containers, laboratory equipment, loudspeakers, automotive components, and polymer banknotes. An additional polymer made from the monomer propylene, it is rugged and unusually resistant to many chemical solvents, bases, and acids.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: SECOND MOST SEVERE IMPACT

61. Liner Thickness (Code in Hundredths of an Inch)

OECD Reference: C.5.1.1.16

Convention/Coding Source: OECD, DSI

Element Attributes:

(0.01–9.96)	hundredths of an inch
(9.97)	not applicable, no liner
(9.99)	unknown

Range: 0.01–9.97, 9.99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the sources.

Most liners are less than 1-inch thick. A liner 0.75-inch thick would be coded as 0.75. A liner 1.25-inches thick would be coded as 1.25.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: SECOND MOST SEVERE IMPACT

62. Liner Density (Code in Pounds per Cubic Foot (lb/ft³))

OECD Reference: C.5.1.1.17

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ DSI

Element Attributes:

(0.01–9.96)	pounds per cubic foot
(9.97)	not applicable, no liner
(9.99)	unknown

Range: 0.01–9.97, 9.99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

The density of a material is defined as its mass per unit volume.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: SECOND MOST SEVERE IMPACT

63. Maximum Liner Crush (Code in Hundredths of an Inch)

OECD Reference: C.5.1.1.18

Convention/Coding Source: OECD, DSI

Element Attributes:

(0.00)	no liner crush
(0.01–9.96)	hundredths of an inch
(9.97)	not applicable, no liner
(9.99)	unknown

Range: 0.00–9.97, 9.99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: SECOND MOST SEVERE IMPACT

64. Area of Liner Crush or Signature (Code in Square Inches to 2 Decimal Places)

OECD Reference: C.5.1.1.19

Convention/Coding Source: OECD, DSI

Element Attributes:

(00.01–99.96)	square inches
(99.97)	not applicable, no liner
(99.99)	unknown

Range: 00.01–99.97, 99.99

Source: Primary—helmet inspection

Remarks: This variable is assigned by the investigator from the source.

Many crush areas are elliptical. The area of an ellipse can be calculated as follows:

$$\text{area of ellipse} = \pi \times a \times b \quad (4)$$

Where:

$\pi = 3.142$.

a = length of semimajor axis.

b = length of semiminor axis.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: SECOND MOST SEVERE IMPACT

65. Geometry of Impacting Surface

OECD Reference: C.5.1.1.20

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ DSI

Element Attributes:

- (00) no impact
- (01) complex, not easily described
- (02) flat
- (03) spherical, large radius
- (04) spherical, small radius
- (05) cylindrical, large radius
- (06) cylindrical, small radius
- (07) sharp edge
- (08) blunt edge
- (09) point
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–09, 97–99

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

sphere: This is any surface that has double curvature, and it does not have to be perfectly spherical.

cylinder: This a surface with a single curvature. Motorcycle handlebars are almost always cylindrical.

pointed: A pointed surface need not come to a sharp point, like the point on a pencil. Examples of pointed surfaces would include lug nuts holding tires onto cars and trucks.

HELMET TESTING/EVALUATION FORM

HELMET IMPACT: SECOND MOST SEVERE IMPACT

66. Material of Impacting Surface

OECD Reference: C.5.1.1.21

Convention/Coding Source: OECD, Wikipedia,⁽⁷⁾ DSI

Element Attributes:

- (00) no impact
- (01) liquid, water
- (02) solid metal (e.g., lamppost)
- (03) sheet metal, less than 0.15-inch thick
- (04) curbstone
- (05) solid masonry, concrete structure, large rock
- (06) rolled asphalt (e.g., road surface)
- (07) troweled or brush-finished concrete pavement
- (08) compacted dirt
- (09) gravel, small rock
- (10) wood, post, solid fiber
- (11) glass
- (12) loose dirt, sand
- (97) not applicable
- (98) other (specify)
- (99) unknown

Range: 00–12, 97–99

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

curbstone: This is a paving stone forming part of a curb. The curb is an edge between a sidewalk and a roadway consisting of a line of curbstones (usually forming part of a gutter).

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: SECOND MOST SEVERE IMPACT

67. Which Headform Is Used for Replication Testing?

OECD Reference: C.5.1.1.22

Convention/Coding Source: OECD, DSI

Element Attributes:

- (01) ISO A
- (02) ISO E
- (03) ISO J
- (04) ISO M
- (05) ISO O
- (06) USDOT small
- (07) USDOT medium
- (08) USDOT large
- (09) Hybrid III
- (10) Hybrid II
- (11) NOCSAE
- (97) not applicable
- (98) other (specify)

Range: 01–11, 97, 98

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

ISO: International Safety Organization.

USDOT: United States Department of Transportation.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: SECOND MOST SEVERE IMPACT

68. Mass of Replication Drop Apparatus (Code in Pounds; Not Including Helmet)

OECD Reference: C.5.1.1.23

Convention/Coding Source: OECD

Element Attributes:

(01–96)	pounds
(97)	not applicable

Range: 01–97

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: SECOND MOST SEVERE IMPACT

69. Equivalent Laboratory Testing Anvil

OECD Reference: C.5.1.1.24

Convention/Coding Source: OECD

Element Attributes:

- (00) no anvil
- (01) flat steel anvil
- (02) hemispherical steel anvil
- (03) steel-edge anvil
- (04) curb anvil
- (05) cylindrical anvil
- (06) penetration point
- (07) steel-angle edge
- (08) flat pavement
- (09) sheet metal
- (10) windshield glass
- (97) not applicable
- (98) other (specify)

Range: 00–10, 97, 98

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: SECOND MOST SEVERE IMPACT

70. Helmet Impact Velocity From Crash Reconstruction (Code in Miles per Hour)

OECD Reference: C.5.1.1.25

Convention/Coding Source: OECD, DSI

Element Attributes:

(00.0)	no velocity calculated
(00.1–99.6)	miles per hour and tenths
(99.7)	not applicable
(99.9)	unknown

Range: 00.0–99.7, 99.9

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: SECOND MOST SEVERE IMPACT

71. Impact Velocity From Laboratory Replication (Code in Miles Per Hour and Tenths)

OECD Reference: C.5.1.1.26

Convention/Coding Source: OECD, laboratory test, DSI

Element Attributes:

(00.0)	no velocity calculated
(00.1–99.6)	miles per hour and tenths
(99.7)	not applicable
(99.9)	unknown

Range: 00.1–99.7, 99.9

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: SECOND MOST SEVERE IMPACT

72. Peak Headform Acceleration

OECD Reference: C.5.1.1.27

Convention/Coding Source: OECD

Element Attributes:

(000)	not calculated
(001–996)	measure of acceleration (g)
(997)	not applicable

Range: 000–997

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: SECOND MOST SEVERE IMPACT

73. Dwell Time Above 200 g (Code in Milliseconds per USDOT 218)

OECD Reference: C.5.1.1.28

Convention/Coding Source: OECD, USDOT 218

Element Attributes:

(0.0)	not calculated
(0.1–9.6)	milliseconds
(9.7)	not applicable

Range: 0.0–9.7

Source: Primary—calculation per USDOT 218 and helmet inspection

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: SECOND MOST SEVERE IMPACT

74. Head Injury Criteria (HIC)

OECD Reference: C.5.1.1.29

Convention/Coding Source: OECD, HIC

Element Attributes:

(0000)	not calculated
(0001–9996)	HIC value
(9997)	not applicable

Range: 0000–9997

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: SECOND MOST SEVERE IMPACT

75. Gadd Severity Index (GSI)

OECD Reference: C.5.1.1.30

Convention/Coding Source: OECD, GSI

Element Attributes:

(0000)	not calculated
(0001–9996)	GSI value
(9997)	not applicable

Range: 0000–9997

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

The Gadd Severity Index was developed with data from tests on human cadavers and supported with real crash data.

The simplified formula is as follows:

$$GSI = -ve^{5/2} \times t \tag{5}$$

Where *ve* is acceleration (or deceleration) in g (1 g is the measurement of the acceleration of Earth’s gravity or 9.80 ms²).

A human head can sustain values as high as 1,000 without serious injury, as long as the peak value does not last for more than 10 to 15 ms. For comparison, a hammer hitting a nail into wood gives a value of about 3,000; a baseball hitting a concrete wall is about 10,000; and a hammer hitting a concrete wall is about 3,600,000.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: SECOND MOST SEVERE IMPACT

76. Equivalent Specific Energy/Equivalent Drop Height From Crash Reconstruction (Code in Feet and Tenths)

OECD Reference: C.5.1.1.31

Convention/Coding Source: OECD, DSI

Element Attributes:

(00.0)	not calculated
(00.1–99.5)	feet and tenths
(99.6)	99.6 feet or greater
(99.7)	not applicable
(99.9)	unknown

Range: 00.0–99.7, 99.9

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

HELMET TESTING/EVALUATION FORM

LABORATORY REPLICATION: SECOND MOST SEVERE IMPACT

77. Equivalent Specific Energy/Equivalent Drop Height From Laboratory Replication (Code in Feet and Tenths)

OECD Reference: C.5.1.1.32

Convention/Coding Source: OECD, laboratory test, DSI

Element Attributes:

(00.0)	not calculated
(00.1–99.5)	feet and tenths
(99.6)	99.6 feet or greater
(99.7)	not applicable
(99.9)	unknown

Range: 00.0–99.7, 99.9

Source: Primary—impact absorption tester

Remarks: This variable is assigned by the investigator from the source.

PROCEDURES FOR OBTAINING ELECTRONIC MCCS FILES AND DATA

Instructions for obtaining copies of the data from the MCCA or copies of the final report and corresponding Volumes are provided on the FHWA MCCA website.⁽²⁵⁾

DATA AVAILABLE ON REQUEST

Electronic versions of the data gathered during the MCCA are available to researchers in SAS® and Excel™ formats. The complete dataset or selected subsets of the crash and control data collected during the study are available upon request to FHWA as outlined on the website.⁽²⁵⁾ Data from each of the 14 data-collection forms are available in SAS® and Excel™ formats as well as metadata files of all variables and how cases were classified for grouping and analysis in the study.

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