

Guidance: FHWA Procedure for Safety Performance Measure Computation and State Target Achievement Assessment

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1 Overview

Safety Performance Management (Safety PM) is part of the overall Transportation Performance Management (TPM) program, which the Federal Highway Administration (FHWA) defines as a strategic approach that uses system information to make investment and policy decisions to achieve national performance goals. The Safety PM Final Rule¹ is codified under Title 23 of the Code of Federal Regulations (CFR)², part 490, subpart B. The regulation establishes national safety performance requirements for the purposes of carrying out the Highway Safety Improvement Program (HSIP) and to assess fatalities and serious injuries on all public roads. Therefore, the purpose of this document is to provide the data sources and calculations for the safety performance measures that FHWA will use when determining whether a State DOT has met or made significant progress towards meeting their safety performance targets. This document is guidance only and does not create any requirements other than those stipulated in statute or regulations.

1.1 Safety Performance Measures

The Safety PM regulation (23 CFR 490.207(a)) established five safety performance measures for the purpose of carrying out the HSIP. The safety performance measures are:

- (1) Number of fatalities;
- (2) Rate of fatalities;
- (3) Number of serious injuries;
- (4) Rate of serious injuries; and
- (5) Number of non-motorized fatalities and non-motorized serious injuries.

The main attributes of the safety performance measures are as follows:

- Safety targets are established annually for each of the safety performance measures (23 CFR 490.209(a)).
- Each safety performance measure is based on a 5-year rolling average (23 CFR 490.207(b)).
- All rate measures are expressed in 100 million vehicle miles traveled (VMT) (23 CFR 490.205).
- Safety targets are reported by each State Department of Transportation (DOT) to FHWA in the State HSIP Annual Report (23 CFR 490.213(a)).
- Safety targets must be identical for the common measures in the National Highway Traffic Safety Administration (NHTSA) Highway Safety Plan (HSP) (23 CFR 490.209(a)(1)).
- Safety performance measures are applicable to all public roads covered by the HSIP (23 CFR 490.203).
- The performance targets represent the anticipated performance outcome for all public roads regardless of ownership and functional class (23 CFR 490.209(a)(3)).

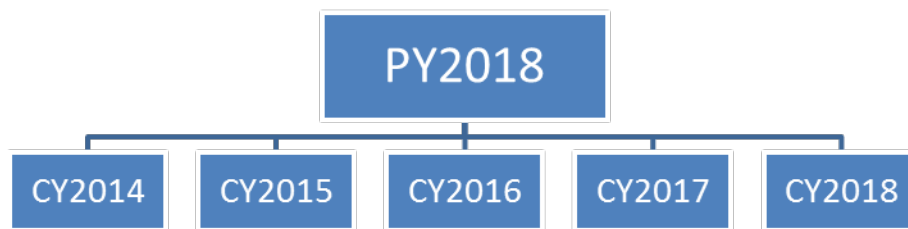
¹ Safety PM Final Rule: <https://www.federalregister.gov/documents/2016/03/15/2016-05202/national-performance-management-measures-highway-safety-improvement-program>

² Code of Federal Regulations: <https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=7c955ec3c47ba5f35529b89f21c02213&mc=true&n=pt23.1.490&r=PART&ty=HTML>

- The FHWA will evaluate whether a State DOT has met or made significant progress toward meeting performance targets (23 CFR 490.211(c)).
- The Metropolitan Planning Organizations (MPO) will establish performance targets for each of the measures (23 CFR 490.209(c)) no later than 180 days after the respective State DOT establishes and reports targets in the State HSIP annual report (23 CFR 490.209(c)(1)).
- The MPO’s will annually report their established safety targets to their respective State DOT, in a manner that is documented and mutually agreed upon by both parties (23 CFR 490.213(b)).

The term Performance Year (PY) is being used for the purposes of this document, but is not a defined term under 23 CFR part 490. Since all safety performance measures are based on 5-year rolling averages, this document will refer to the last calendar year (CY) of the 5-year period as the Performance Year. For example, if the last calendar year of the 5-year period is CY2018, it would include years 2014 through 2018 and be denoted as PY2018, as shown in the example in Figure 1.

Figure 1 – Performance Year Example



To ensure consistent definitions, a distinction between *metric* and *measure* was made in 23 CFR 490.101.

- A *metric* is defined as a quantifiable indicator of performance or condition (e.g., annual number of fatalities).
- A *measure* is defined as an expression based on a metric that is used to establish targets and to assess progress toward meeting established targets (e.g., 5-year rolling average of number of fatalities).

1.2 Met or Made Significant Progress

The FHWA will determine annually whether a State DOT has “**met or made significant progress towards meeting its safety performance targets.**” The FHWA will not make determinations for MPO targets established under 23 CFR 490.209(c) or State DOT additional targets under 23 CFR 490.209(b).

For the purpose of this document, the following terms will be used:

- “*Actual performance*” is the outcome for a performance measure for a performance year.
- “*Baseline performance*” is the outcome for a performance measure for the year prior to the establishment of the State’s target.

A State DOT is determined to have “**met or made significant progress toward meeting its safety performance targets**” when at least four of the performance targets established are: (1) met; or (2) not met but made significant progress towards meeting the targets. A performance target is met when the

actual performance is less than or equal to the target. If the actual performance is greater than the target, then the target has not been met.

If FHWA determines that a target is not met, FHWA will assess whether the State DOT has made significant progress towards meeting that target by comparing the actual performance and the baseline performance. If the target has not been met, but the actual performance is less than the baseline performance (indicates that a State DOT has improved performance compared to the baseline performance), then FHWA will determine that the State DOT has made significant progress towards meeting that target. If the actual performance is greater than the baseline performance, then FHWA will determine that the State DOT has not made significant progress towards meeting that target.

The FHWA will make the described evaluations for each of the five performance measures. If FHWA determines that four out of the five performance targets reported by a State DOT have been met (the actual performance is less than or equal to the target) or made significant progress towards meeting the target (the actual performance is less than the baseline performance), then that State DOT will be determined to have ***“met or made significant progress towards achieving its safety performance targets.”***

1.3 Data Sources for Computing Safety Performance Measures

The FHWA will use public data sources to assess safety target achievement and to determine whether a State DOT has met or made significant progress towards meeting their performance targets. These data sources are defined below.

1.3.1 Fatality Analysis Reporting System

The safety performance metrics for the annual number of fatalities and the annual numbers of non-motorized fatalities come from the NHTSA Fatality Analysis Reporting System (FARS) database. The FARS data is published annually and becomes available approximately in December of each calendar year. For example, fatality data for CY2018 will be available by December 2019. The FARS Query Tool can be used to access fatality data. The FARS data contains both final data on fatalities for previous years and preliminary data on fatalities for the most recent year.

- The FARS Annual Report File (ARF) is published annually and contains preliminary data on fatalities for the most current year.
- The Final FARS data replace the FARS ARF and contains additional cases or updates to cases that became available after the FARS ARF was released, and is no longer subject to future changes.

When computing the performance measures for Number of Fatalities and Fatality Rate, the FARS ARF data are used if Final FARS data are not available, as stipulated in CFR 490.207(b). Please note that the year of the FARS data file refers to the calendar year when the fatalities occurred.

The FARS Query Tool is available at:

<https://www-fars.nhtsa.dot.gov//QueryTool/QuerySection/SelectYear.aspx>

1.3.2 Highway Safety Improvement Program Annual Report

The safety performance metrics for number of serious injuries and number of non-motorized serious injuries comes from the State DOT data submitted in the HSIP Annual Report. As specified in 23 CFR 490.209(a)(5), the State DOT must include, in the HSIP Annual Report, the most recent five years of serious injury data and non-motorized serious injury data by calendar year. The HSIP Annual Report also contains safety performance targets for the five performance measures. The year of the HSIP Annual Report refers to the year of reporting. For example, the 2017 HSIP Annual Report means the report was submitted in 2017 (by August 31, 2017) and includes the baseline performance for PY2016 and the performance targets for PY2018. However, FHWA will use the most recent HSIP Annual Report that is available at the time of assessment to collect the baseline data for serious injuries and non-motorized serious injuries. The HSIP Annual Report data becomes available by December of each calendar year. A download of the HSIP Annual Report data is available via a Microsoft Excel spreadsheet from the HSIP Program Manager.

The HSIP Reports are available at: <https://safety.fhwa.dot.gov/hsip/reports/>

1.3.3 Highway Statistics Series

The safety performance metric for VMT estimates are provided in FHWA's Highway Statistics Series Publication in Table VM-2 (Vehicle-miles of travel, by functional system). The Highway Statics Series is available at: <https://www.fhwa.dot.gov/policyinformation/statistics.cfm>

The VMT numbers are used as the denominator to calculate the rate of fatalities and the rate of serious injuries per 100 million VMT. The VMT data in HPMS becomes available approximately in December of each calendar year. For example, in December 2019, VMT estimates for CY2018 will be available. Please note that the year in the HPMS data and the Highway Statistics Series refers to the calendar year the VMT occurred.

Table 1 below provides a description of the five safety performance measures and the corresponding data sources. These data sources will be used to compute the safety performance measures and to assess whether a State DOT has met or made significant progress towards meeting their safety performance targets.

Table 1 – Safety Performance Measures and Data Sources

Safety Performance Measures	Safety Performance Measure Description	Data	Data Source
Number of Fatalities	The total number of persons suffering fatal injuries in a motor vehicle crash during a calendar year	Fatalities	Final FARS and FARS ARF
		Target	HSIP Annual Report
Rate of Fatalities	The ratio of the total number of fatalities to the number of VMT (expressed in 100 million VMT)	Fatalities	Final FARS and FARS ARF
		VMT	VM-2 Table in Highway Statistics Series
		Target	HSIP Annual Report
Number of Serious Injuries	The total number of persons suffering at least one serious injury in a motor vehicle crash during a calendar year	Serious injuries	HSIP Annual Report
		Target	HSIP Annual Report
Rate of Serious Injuries	The ratio of the total number of serious injuries to the number of VMT (expressed in 100 million VMT)	Serious injuries	HSIP Annual Report
		VMT	VM-2 Table in Highway Statistics Series
		Target	HSIP Annual Report
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	The total number of fatalities with the FARS person attribute codes: (5) Pedestrian, (6) Bicyclist, (7) Other Cyclist, (8) Person on Personal Conveyances and the total number of serious injuries where the injured person is, or equivalent to, a pedestrian (2.2.36) or a pedalcyclist (2.2.39) as defined in the American National Standards Institute (ANSI) D16.1-2007.	Non-motorized fatalities	Final FARS and FARS ARF
		Non-motorized serious injuries	HSIP Annual Report
		Target	HSIP Annual Report

2 Safety Performance Measure Computation Equations

This section provides the computation equations for the five safety performance measures. Please note that annual fatality metrics are a whole number while the rate metrics and calculated measures are rounded to the nearest decimal place, as indicated in each of the equations.

2.1 Number of Fatalities

Number of Fatalities Measure $_{PY}$ =

$$\frac{\{\text{Fatalities}_{PY-4} + \text{Fatalities}_{PY-3} + \text{Fatalities}_{PY-2} + \text{Fatalities}_{PY-1} + \text{Fatalities}_{PY}\}}{5}$$

Where,

Number of Fatalities Measure $_{PY}$ = Calculated fatality measure for the PY (*rounded to the nearest tenth decimal place*)

Fatalities $_{PY}$ = Annual number of fatalities metric (*whole number*)

2.2 Rate of Fatalities

Rate of Fatalities Measure $_{PY}$ =

$$\frac{\left\{ \left(\frac{\text{Fatalities}_{PY-4}}{\text{Total VMT}_{PY-4}} \right) + \left(\frac{\text{Fatalities}_{PY-3}}{\text{Total VMT}_{PY-3}} \right) + \left(\frac{\text{Fatalities}_{PY-2}}{\text{Total VMT}_{PY-2}} \right) + \left(\frac{\text{Fatalities}_{PY-1}}{\text{Total VMT}_{PY-1}} \right) + \left(\frac{\text{Fatalities}_{PY}}{\text{Total VMT}_{PY}} \right) \right\}}{5}$$

Where,

Rate of Fatalities Measure $_{PY}$ = Calculated fatality rate measure for the PY (*rounded to the nearest thousandth decimal place*)

Fatalities $_{PY}$ = Annual number of fatalities metric (*whole number*)

Total VMT $_{PY}$ = Annual VMT per 100 million metric (*calculated per 100 million and rounded to the nearest hundredth decimal place*)

$\frac{\text{Fatalities}_{PY}}{\text{Total VMT}_{PY}}$ = Annual fatality rate metric (*rounded to the nearest hundredth decimal place*)

2.3 Number of Serious Injuries

Number of Serious Injuries Measure $_{PY}$ =

$$\frac{\{\text{Serious Injuries}_{PY-4} + \text{Serious Injuries}_{PY-3} + \text{Serious Injuries}_{PY-2} + \text{Serious Injuries}_{PY-1} + \text{Serious Injuries}_{PY}\}}{5}$$

Where,

Number of Serious Injuries Measure $_{PY}$ = Calculated serious injury measure for the PY (*rounded to the nearest tenth decimal place*)

Serious Injuries $_{PY}$ = Annual number of serious injuries metric (*whole number*)

2.4 Rate of Serious Injuries

Rate of Serious Injuries Measure $_{PY}$ =

$$\frac{\left\{ \left(\frac{\text{Serious Injuries}_{PY-4}}{\text{Total VMT}_{PY-4}} \right) + \left(\frac{\text{Serious Injuries}_{PY-3}}{\text{Total VMT}_{PY-3}} \right) + \left(\frac{\text{Serious Injuries}_{PY-2}}{\text{Total VMT}_{PY-2}} \right) + \left(\frac{\text{Serious Injuries}_{PY-1}}{\text{Total VMT}_{PY-1}} \right) + \left(\frac{\text{Serious Injuries}_{PY}}{\text{Total VMT}_{PY}} \right) \right\}}{5}$$

Where,

Rate of Serious Injuries Measure $_{PY}$ = Calculated serious injury rate measure for the PY (*rounded to the nearest thousandth decimal place*)

Serious Injuries $_{PY}$ = Annual number of serious injury metric (*whole number*)

Total VMT $_{PY}$ = Annual VMT (per 100 million) metric (*calculated per 100 million and rounded to the nearest hundredth decimal place*)

$\frac{\text{Serious Injuries}_{PY}}{\text{Total VMT}_{PY}}$ = Annual serious injury rate metric (*rounded to the nearest hundredth decimal place*)

2.5 Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries

Number of Non-Motorized Measure $_{PY}$ =

$$\frac{\{\text{Non-Motorized}_{PY-4} + \text{Non-Motorized}_{PY-3} + \text{Non-Motorized}_{PY-2} + \text{Non-Motorized}_{PY-1} + \text{Non-Motorized}_{PY}\}}{5}$$

Where,

Number of Non-Motorized Measure $_{PY}$ = Calculated number of non-motorized fatalities and number of serious injury measure for the PY (*rounded to the nearest tenth decimal place*)

Non-Motorized $_{PY}$ = Combined annual number of non-motorized fatalities and non-motorized serious injuries metric (*whole number*)

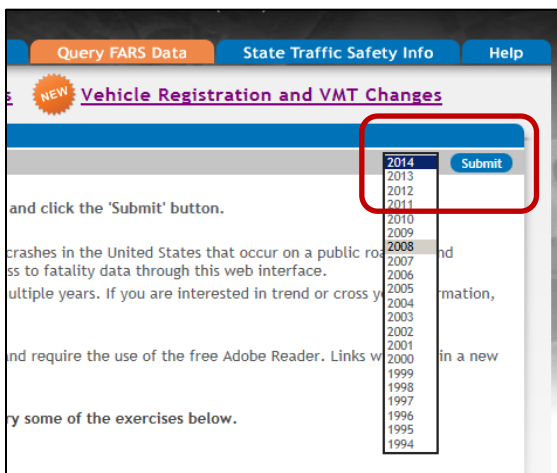
3 Obtaining Number of Fatality Metrics through NHTSA FARS

3.1 Obtaining the Metric for Number of Fatalities Measures

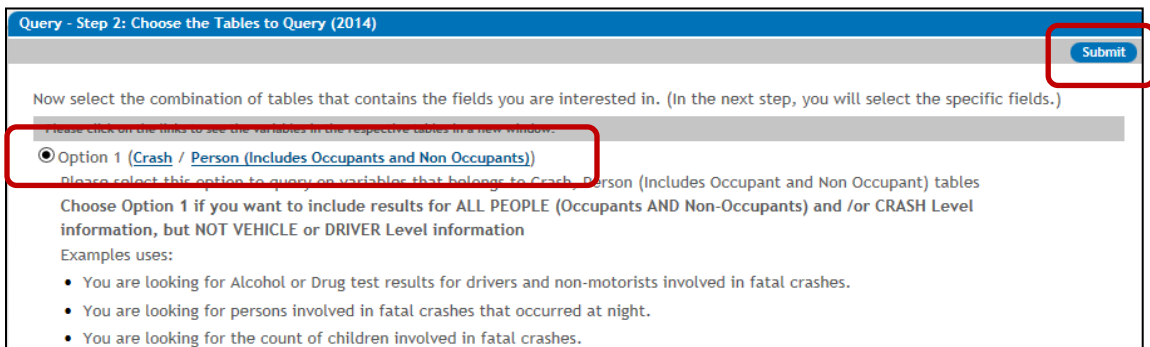
The following instructions detail how to obtain the annual number of fatalities metric by State using the FARS Query Tool.

Step 1: Go to 'Query FARS Data': <http://www-fars.nhtsa.dot.gov/QueryTool/QuerySection/SelectYear.aspx>.

Step 2: Select a Year in the drop-down list and click 'Submit'



Step 3: Select 'Option 1' and click 'Submit'



Step 4: Under the 'Person fields' section, check 'Injury Severity' and 'Person Type' and click 'Submit'

Click Here to check all Persons fields		Person	Click Here to uncheck all Persons fields	
<input type="checkbox"/> Age*	<input type="checkbox"/> Alcohol Test Results*	<input type="checkbox"/> Alcohol Test Status	<input type="checkbox"/> Alcohol Test Type	
<input type="checkbox"/> Death Date	<input type="checkbox"/> Death Day	<input type="checkbox"/> Death Hour	<input type="checkbox"/> Death Minute	
<input type="checkbox"/> Death Month	<input type="checkbox"/> Death Time	<input type="checkbox"/> Death Year	<input type="checkbox"/> Died at Scene/En Route	
<input type="checkbox"/> Drug Test Results (1)	<input type="checkbox"/> Drug Test Results (2)	<input type="checkbox"/> Drug Test Results (3)	<input type="checkbox"/> Drug Test Status	
<input type="checkbox"/> Drug Test Type (1)	<input type="checkbox"/> Drug Test Type (2)	<input type="checkbox"/> Drug Test Type (3)	<input type="checkbox"/> Fatal Injury At Work	
<input type="checkbox"/> Hispanic Origin	<input checked="" type="checkbox"/> Injury Severity*	<input type="checkbox"/> Method of Alcohol Determination by Police	<input type="checkbox"/> Method of Drug Determination by Police	
<input type="checkbox"/> Person Related Factor (1)	<input type="checkbox"/> Person Related Factor (2)	<input type="checkbox"/> Person Related Factor (3)	<input checked="" type="checkbox"/> Person Type*	
<input type="checkbox"/> Police Reported Drug Involvement*	<input type="checkbox"/> Police-Reported Alcohol Involvement	<input type="checkbox"/> Race	<input type="checkbox"/> Sex*	
<input type="checkbox"/> Time Between Crash And Death (Hrs)	<input type="checkbox"/> Transported to First Medical Facility By			

Step 5: Select 'All' for State, select '(4) Fatal Injury (K)' for Injury Severity, select 'All' for Person Type and click 'Univariate Tabulation'

Crash	
State	<input checked="" type="text" value="All"/> (1)Alabama (2)Alaska (4)Arizona (5)Arkansas (6)California (8)Colorado (9)Connecticut
Person	
Injury Severity	All (-1)Blank (0)No Apparent Injury (O) (1)Possible Injury (C) (2)Suspected Minor Injury(B) (3)Suspected Serious Injury(A) <input checked="" type="text" value="(4)Fatal Injury (K)"/> (5)Injured; Severity Unknown
Person Type	<input checked="" type="text" value="All"/> (-1)Blank (1)Driver of a Motor Vehicle In-Transport (2)Passenger of a Motor Vehicle In-Transport (3)Occupant of a Motor Vehicle Not In- Transport (4)Occupant of a Non-Motor Vehicle Transport Device (5)Pedestrian (6)Bicyclist

Step 6: From the drop-down list under 'Select Data to Count' select 'Number of Persons' and click 'Submit'.

Select a Variable: State

Select Data to Count: **Number of Persons**

Select Grouping Option: None

Show ZERO Values: Yes No

Report Title: _____

Search Criteria:
Year: 2014
[Injury Severity](#) 4

Submit Clear Form

Step 7: The Number of Fatalities metrics by State can be obtained as shown below by exporting a text (.txt) file or a Microsoft Excel (.xls) spreadsheet.

Pubs/Data Requests | FARS Data Tables | Query FARS Data | State

NEW File Versions 2014 data based on FARS data publication, 1st release

NEW GIS Map features

NEW Vehicle Registration a

Report:

STATE: All YEAR: 2014 COUNT: Number of P

OUTPUT OPTIONS: **EXPORT (TXT)**

NOTE: Map display takes time if pins are more than 250

State	Total
Alabama	820
Alaska	73
Arizona	770
Arkansas	466
California	3074
Colorado	488
Connecticut	248
Delaware	121
District of Columbia	23
Florida	2494
Georgia	1164
Hawaii	95

Step 8: To find out whether metric values are from FINAL FARS or FARS ARF, click 'File Versions' as highlighted below.

The screenshot shows a web application interface with several navigation tabs: 'Pubs/Data Requests', 'FARS Data Tables', 'Query FARS Data', and 'State'. Below these tabs, there are three 'NEW' callouts: 'File Versions' (with subtext '2014 data based on FARS data publication, 1st release'), 'GIS Map features', and 'Vehicle Registration'. Below the callouts is a 'Report:' section with filters for 'STATE: All', 'YEAR: 2014', and 'COUNT: Number of F'. There are also 'OUTPUT OPTIONS' for 'MAP IT', 'EXPORT (TXT)', and 'EXPORT (XLS)'. A note states 'NOTE: Map display takes time if pins are more than 250'. Below this is a table with columns 'State' and 'Total'.

State	Total
Alabama	820
Alaska	73
Arizona	770
Arkansas	466
California	3074
Colorado	488
Connecticut	248
Delaware	121
District of Columbia	23
Florida	2494
Georgia	1164
Hawaii	95

Step 9: The following pop-box will open detailing the data year, file version and release date.

Data Year	File Version	Release Date
1999	Final	August 2001
2000	Final	August 2002
2001	Final	September 2003
2002	Final	August 2004
2003	Final	September 2005
2004	Final	August 2006
2005 ^(*)	Final	September 21, 2007
2006	Final	September 5, 2008
2007	Final	July 6, 2009
2008	Final	September 13, 2010
2009	Final	December 8, 2011
2010	Final	December 11, 2012
2011	Final	November 13, 2013
2012	Final	December 19, 2014
2013	Final	December 14, 2015
2014	Final	August 29, 2016
2015	Final	October 03, 2018
2016	Final	October 03, 2018
2017	Annual ^(**)	October 03, 2018

3.2 Obtaining the Metric for Numbers of Non-Motorized Fatalities Measure

The following instructions detail how to obtain the annual number of non-motorized fatalities metric by State using the FARS Query Tool.

Steps 1 through 4: Follow Steps 1 through 4 above for obtaining a metric for the number of fatalities.

Step 5: Select 'All' for State, select '(4) Fatal Injury (K)' for Injury Severity, select '(5) Pedestrian, (6) Bicyclists, (7) Other Cyclists, and (8) Person and Personal Conveyances' for Person Type and click 'Univariate Tabulation'.

The screenshot shows a web-based interface for the FARS Query Tool. It features three main selection sections: 'Crash', 'Person', and 'Univariate Tabulation'. The 'Crash' section is currently selected, showing a list of states. The 'Person' section is also visible, showing a list of injury severity levels and person types. The 'Univariate Tabulation' button is located at the bottom right of the interface.

Crash	
State	All (1)Alabama (2)Alaska (4)Arizona (5)Arkansas (6)California (8)Colorado (9)Connecticut

Person	
Injury Severity	All (-1)Blank (0)No Apparent Injury (O) (1)Possible Injury (C) (2)Suspected Minor Injury(B) (3)Suspected Serious Injury(A) (4)Fatal Injury (K) (5)Injured; Severity Unknown
Person Type	(2)Passenger of a Motor Vehicle In-Transport (3)Occupant of a Motor Vehicle Not In- Transport (4)Occupant of a Non-Motor Vehicle Transport Device (5)Pedestrian (6)Bicyclist (7)Other Cyclist (8)Persons on Personal Conveyances (9)Unknown Occupant Type in a Motor Vehicle In- Transport

Univariate Tabulation

Step 6: From the drop-down list under 'Select Data to Count' select 'Number of Persons' and then click 'Submit'.

The image shows a web form with the following fields and options:

- Select a Variable:** A dropdown menu with 'State' selected.
- Select Data to Count:** A dropdown menu with 'Number of Persons' selected. This field is highlighted with a red rectangular box.
- Select Grouping Option:** A dropdown menu with 'None' selected.
- Show ZERO Values:** Radio buttons for 'Yes' (selected) and 'No'.
- Report Title:** An empty text input field.
- Search Criteria:** A section showing 'Year: 2014', 'Injury Severity: 4', and 'Person Type: 5, 6, 7, 8'.
- Buttons:** 'Submit' and 'Clear Form' buttons at the bottom right. The 'Submit' button is highlighted with a red rectangular box.

Steps 7 through 9: The Number of Non-Motorized Fatalities metrics by State can be obtained by exporting a text (.txt) file or a Microsoft Excel (.xls) spreadsheet (similar to the Steps 7 through 9 above for obtaining a metric for the number of fatalities).

4 Obtaining VMT Metrics through the HPMS Highway Statistics Series

The following instructions detail how to obtain the annual VMT by State using the HPMS Highway Statistics Series.

Step 1: Go to the Highway Statistics Series website at:

<https://www.fhwa.dot.gov/policyinformation/statistics.cfm>

Step 2: Select the year of the Highway Statistics and click 'Go'

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Highway Statistics Series

The Highway Statistics Series consists of annual reports containing analyzed statistical information on motor fuel, motor vehicle registrations, driver licenses, highway user taxation, highway mileage, travel, and highway finance. These information are presented in tables as well as selected charts. It has been published annually since 1945.

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Highway Statistics 2016 Go

How Statistics are Compiled

Most highway data are submitted by the States directly to FHWA. Each State's data is analyzed for completeness, reasonableness, consistency, and compliance with data reporting instructions contained in "A Guide to Reporting Highway Statistics". While the Office of Highway Policy Information of FHWA is responsible for preparation of this publication, a number of the statistical summaries are prepared by other units within the FHWA

Federal Legislation

Federal legislation and policy has required this data from the States for FHWA to assess the health of the highway system for Congress, and other interested entities including a host of other users such as State and local governments, the private sector, the media, and the general public.

[All Reports and Publications \(Archive\)](#)
[Staff Contacts](#)
[Highway Statistics Seminars 2011, 2012, 2013 - Presentations](#)
[Public Data for Highway Statistics](#)

[Guide to Reporting Highway Statistics](#)
[HPMS Field Manual](#)
[Traffic Monitoring Guide](#)
[Public Roads: What's in the Numbers - article](#)

Step 3: Under '5. Highway Travel' select VM-2 Table '5.4.1 Vehicle-miles of travel, by functional system'

5. Highway Travel	
5.1. Overview	
5.2. Multi-year trends & charts	
5.2.1 Vehicle-miles of travel, by functional system, 1980-2016	VM-202 Excel PDF
5.2.2 Vehicle-miles of travel, by Federal-aid highways, 1957-2016	VM-203
5.3. National tables	
5.3.1 Vehicle miles of travel and related data, by highway category and vehicle type	VM-1 Excel PDF
5.4. State tables	
5.4.1. Vehicle-miles of travel, by functional system	VM-2 Excel PDF
5.4.2. Vehicle-miles of travel, by Federal-aid highways	VM-3 Excel PDF
5.4.3. Distribution of Annual Vehicle Distance Traveled	VM-4
5.4.4. Vehicle miles of travel by functional system	HM-44 Excel PDF
5.4.5. Length by average daily traffic volume, Federal-aid highways	HM-37 Excel PDF
5.4.6. Length by average daily traffic volume, Arterials and Collectors	HM-57

Step 4: The total VMT for each State is listed in the last column under 'Total' and can either be viewed (as shown below) or downloaded as a Microsoft Excel file

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FHWA Home / Policy & Governmental Affairs / Highway Policy Information / Table VM-2 - Highway Statistics 2016

Highway Statistics 2016

FUNCTIONAL SYSTEM TRAVEL - 2016 (1)

ANNUAL VEHICLE - MILES

September 18, 2017
Table VM-2

Printable Excel Version (69 KB)
Printable PDF Version (48 KB)
To view PDF files, you can use the [Acrobat® Reader®](#).
To view XLS files, you can use the [Excel Viewer](#).

(MILLIONS)

STATE	RURAL						URBAN						TOTAL					
	INTERSTATE	OTHER FREIGHTWAYS AND EXPERIENCED	OTHER PRINCIPAL ARTERIALS	MINOR ARTERIAL	MAJOR COLLECTOR	MINOR COLLECTOR	LOCAL	TOTAL	INTERSTATE	OTHER FREIGHTWAYS AND EXPERIENCED	OTHER PRINCIPAL ARTERIALS	MINOR ARTERIAL		MAJOR COLLECTOR	MINOR COLLECTOR	LOCAL		
Alabama	6,333	-	5,489	4,527	4,394	1,357	7,036	29,135	8,988	-	-	-	-	-	64	9,109	40,992	69,227
Alaska	896	-	326	128	307	148	434	2,238	768	-	-	971	547	244	115	375	3,020	5,259
Arizona	6,550	30	3,348	1,446	2,485	458	1,390	15,708	7,972	7,821	8,226	15,562	4,199	147	6,531	50,076	65,746	
Arkansas	3,995	275	3,710	2,859	3,528	666	2,193	17,227	5,400	965	3,746	4,551	1,841	71	1,954	18,528	35,755	
California	15,316	4,889	10,163	7,736	8,008	2,524	4,360	52,995	74,066	62,237	57,101	49,120	23,679	313	20,605	287,120	340,115	
Colorado	4,683	248	4,202	2,057	1,796	764	1,528	15,277	9,375	5,406	9,297	6,342	2,722	46	3,687	36,874	52,152	
Connecticut	470	286	443	409	813	148	583	3,161	9,866	4,179	3,842	5,169	2,617	240	2,545	28,478	31,638	
Delaware	-	601	861	317	603	174	444	3,600	1,432	646	2,168	1,098	813	56	965	7,176	10,178	
Dist. of Columbia	-	-	-	-	-	-	-	-	474	382	1,020	701	272	-	772	3,622	3,622	
Florida	10,256	2,040	8,165	3,648	3,729	1,634	5,600	35,072	29,799	14,814	44,898	28,937	19,190	3,482	39,357	180,478	215,551	
Georgia	7,710	-	6,181	5,678	5,142	1,158	4,174	30,844	24,351	3,581	16,906	17,827	6,145	470	23,478	92,758	122,802	
Hawaii	-	-	329	557	163	45	724	1,819	2,059	488	2,073	1,011	727	277	2,181	8,817	10,635	
Idaho	2,604	378	2,043	997	1,286	224	3,275	9,907	1,619	187	2,166	1,663	684	5	968	7,252	17,199	
Illinois	8,951	173	3,950	4,579	4,866	552	3,273	25,544	24,853	1,200	19,812	15,506	8,128	771	11,501	81,770	107,314	
Indiana	7,694	692	4,228	3,552	5,495	5,898	4,947	32,506	11,428	1,316	10,179	9,029	4,575	973	13,175	50,677	83,183	
Iowa	5,021	-	6,176	2,672	3,467	838	1,451	19,626	3,137	-	4,146	3,454	1,129	0	1,846	13,712	33,337	
Kansas	3,654	1,308	3,153	2,316	2,640	332	1,764	15,217	4,158	1,955	1,329	4,539	2,219	225	2,461	16,886	32,103	
Kentucky	8,039	1,862	3,470	3,606	4,047	2,203	3,126	26,354	6,652	885	4,790	5,446	2,282	440	4,264	22,959	49,313	
Louisiana	5,931	208	2,904	3,260	3,323	1,109	2,204	18,939	9,739	784	8,329	6,547	2,969	222	1,625	30,216	49,156	
Maine	2,956	-	1,814	1,676	2,218	817	1,439	10,020	1,228	144	779	1,080	1,011	90	487	4,818	14,838	
Maryland	2,129	599	2,815	1,738	1,578	952	1,751	10,671	15,456	6,732	10,627	7,607	4,229	602	3,214	48,467	59,137	
Massachusetts	1,029	188	484	593	514	124	560	3,492	16,772	6,490	11,731	11,356	3,774	41	8,169	58,333	61,825	
Michigan	5,268	2,492	4,168	6,773	8,818	897	2,297	29,913	17,640	6,347	17,656	15,543	5,002	99	7,234	69,520	96,437	

5 Example Safety Performance Measure Computation and Determining Significant Progress

This section provides an example of how to calculate the performance measures for PY2018. The approximate time of measure calculation would be December 2019, which is approximately when the FARS, VMT, and HSIP data all become available. As noted previously, FHWA will use the most recent HSIP Annual Report that is available for collecting baseline performance data for serious injuries and non-motorized serious injuries. This example illustrates the computation of the five safety performance measures and whether a State DOT met or made significant progress towards meeting their performance targets. Table 2 below provides a list of data sources and the corresponding years required for calculating PY2018 actual performance and PY2016 baseline performance for the five safety performance measures.

Table 2 – 2018 Safety Performance Measure Data Sources for Measure Calculation

Safety Performance Measures	Metrics for PY2018 Actual Performance		PY2018 Target	Metrics for PY2016 Baseline Performance	
	Safety Data	VMT Data		Safety Data	VMT Data
Number of Fatalities	2014-2017 Final FARS and 2018 FARS ARF from NHTSA FARS	N/A	2017 HSIP Annual Report	2012-2016 Final FARS from NHTSA FARS	N/A
Rate of Fatalities	2014-2017 Final FARS and 2018 FARS ARF from NHTSA FARS	2014-2018 VMT from VM-2 Table in Highway Statistics	2017 HSIP Annual Report	2012-2016 Final FARS from NHTSA FARS	2012-2016 VMT from VM-2 Tables in Highway Statistics
Number of Serious Injuries	2019 HSIP Annual Report	N/A	2017 HSIP Annual Report	2012-2016 serious injuries from 2019 HSIP Annual Report	N/A
Rate of Serious Injuries	2014-2018 Serious Injury Numbers from 2019 HSIP Annual Report	2014-2018 VMT from VM-2 Table in Highway Statistics	2017 HSIP Annual Report	2012-2016 serious injuries from 2019 HSIP Annual Report	2012-2016 VMT from VM-2 Tables in Highway Statistics
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Fatality Numbers: 2014-2017 Final FARS and 2018 FARS ARF from NHTSA FARS Serious Injury Numbers: 2019 HSIP Annual Report	N/A	2017 HSIP Annual Report	Fatality Numbers: 2012-2016 Final FARS from NHTSA FARS Serious Injury Numbers: 2012-2016 serious injuries from 2019 HSIP Annual Report	N/A

Table 3 represents sample values of the metrics for each of the performance measures. The following example demonstrates the calculations of the 5-year rolling average for each of the performance measures actual performance and baseline performance. If the actual performance is less than or equal to the target, no further analysis would be required. If the actual performance is greater than the target, the baseline performance is calculated to determine if actual performance is better than the baseline performance. In this example, the performance year is 2018 (PY2018) and the baseline performance year is 2016 (PY2016).

Table 3 – Sample Safety Performance Metrics for Measure Calculations

Year	Fatalities (FARS)	Serious Injuries (HSIP)	Non-Motorized Fatalities (FARS)	Non-Motorized Serious Injuries (HSIP)	Total VMT (HPMS)
2012	486	1,746	29	71	30,215
2013	416	1,811	22	70	30,048
2014	384	1,709	25	79	29,727
2015	386	1,670	27	88	29,497
2016	431	1,717	16	95	29,900
2017	386	1,581	16	97	30,021
2018	405*	1,592	33*	104	30,572

* FARS ARF

Table 4 – Sample PY2018 Performance Targets

Performance Measure	Target
Number of Fatalities	390.0
Rate of Fatalities per 100 million VMT	1.320
Number of Serious Injuries	1,650.0
Rate of Serious Injuries per 100 million VMT	5.585
Number of Non-Motorized Fatalities and Serious Injuries	112.0

5.1 Number of Fatalities Measure Computation Example

Calculation for the number of fatalities measure using the metrics from Table 3 and the target from Table 4, as summarized below.

2012	2013	2014	2015	2016	2016	2018	PY18 Target
486	416	384	386	431	386	405*	390.0

*FARS ARF

Step 1: Calculate the Number of Fatalities Measure for PY2018 actual performance using the annual metrics for fatalities for 2014 through 2018.

$$\text{PY2018 Number of Fatalities} = \frac{(384 + 386 + 431 + 386 + 405)}{5} = 398.4$$

Step 2: Determine if the PY2018 actual performance (398.4) is less than or equal to the PY2018 target (390.0).

PY2018 Number of Fatalities > PY2018 Target

$$398.4 > 390.0$$

Target Met = No

Step 3: Since the PY2018 actual performance for the number of fatalities measure is greater than the PY2018 Target, the target has not been met. Therefore, the next step is to calculate the PY2016 baseline performance using 2012 through 2016 metrics. (*Note: If the target is equal to or less than the actual performance, this step would not be required*)

$$\text{PY2016 Number of Fatalities Baseline} = \frac{(486 + 416 + 384 + 386 + 431)}{5} = 420.6$$

Step 4: Determine if the PY2018 actual performance (398.4) is less than the PY2016 baseline performance (420.6).

PY2018 Number of Fatalities < PY2016 Number of Fatalities Baseline

$$398.4 < 420.6$$

Better than Baseline = Yes

Step 5: Since the actual performance for the number of fatalities measure is less than the baseline performance, it is determined that significant progress has been made for this measure.

5.2 Rate of Fatalities Measure Computation Example

Calculation for the rate of fatalities measure using the metrics from Table 3 and the target from Table 4, as summarized below.

Metric	2012	2013	2014	2015	2016	2016	2018	PY18 Target
Fatalities	486	416	384	386	431	386	405*	1.320
Total VMT	30,215	30,048	29,727	29,497	29,900	30,021	30,572	
VMT/100M	302.15	300.48	297.27	294.97	299.00	300.21	305.72	

*FARS ARF

Step 1: Calculate the Rate of Fatalities Measure for PY2018 actual performance using the annual metrics for fatalities and VMT per 100 million for 2014 through 2018.

$$\begin{aligned} \text{PY2018 Rate of Fatalities} &= \frac{\left(\frac{384}{297.27} + \frac{386}{294.97} + \frac{431}{299.00} + \frac{386}{300.21} + \frac{405}{305.72}\right)}{5} \\ &= \frac{(1.29 + 1.31 + 1.44 + 1.29 + 1.32)}{5} = 1.330 \end{aligned}$$

Step 2: Determine if the PY2018 actual performance (1.330) is less than or equal to the PY2018 target (1.320).

PY2018 Rate of Fatalities > PY2018 Target

$$1.330 > 1.320$$

Target Met = No

Step 3: Since the PY2018 actual performance for the rate of fatalities measure is greater than the PY2018 Target, the target has not been met. Therefore, the next step is to calculate the PY2016 baseline performance using 2012 through 2016 metrics. (*Note: If the actual performance is less than or equal to the target, this step would not be required*)

$$\begin{aligned} \text{PY2016 Rate of Fatalities Baseline} &= \frac{\left(\frac{486}{302.15} + \frac{416}{300.48} + \frac{384}{297.27} + \frac{386}{294.97} + \frac{431}{299.00}\right)}{5} \\ &= \frac{(1.61 + 1.38 + 1.29 + 1.31 + 1.44)}{5} = 1.406 \end{aligned}$$

Step 4: Determine if the PY2018 actual performance (1.330) is less than the PY2016 baseline performance (1.406).

PY2018 Rate of Fatalities < PY2016 Rate of Fatalities Baseline

$$1.330 < 1.394$$

Better than Baseline = Yes

Step 5: Since the actual performance for the rate fatalities measure is less than the baseline performance, it is determined that significant progress has been made for this measure.

5.3 Number of Serious Injuries Measure Computation Example

Calculation for the number of fatalities measure using the metrics from Table 3 and the target from Table 4, as summarized below.

2012	2013	2014	2015	2016	2016	2018	PY18 Target
1,746	1,811	1,709	1,670	1,717	1,581	1,592	1,650.0

Step 1: Calculate the Number of Serious Injuries Measure for PY2018 actual performance using the annual metrics for series injuries for 2014 through 2018.

$$\text{PY2018 Number of Serious Injuries} = \frac{(1,709 + 1,670 + 1,717 + 1,581 + 1,592)}{5} = 1,653.8$$

Step 2: Determine if the PY2018 actual performance (1,653.8) is less than or equal to the PY2018 target (1,650.0).

PY2018 Number of Serious Injuries > PY2018 Target

$$1,653.8 > 1,650.0$$

Target Met = No

Step 3: Since the PY2018 actual performance for the number of serious injuries measure is greater than the PY2018 Target, the target has not been met. Therefore, the next step is to calculate the PY2016 baseline performance using 2012 through 2016 metrics. (Note: If the actual performance is less than or equal to the target, this step would not be required)

$$\text{PY2016 Number of Serious Injuries Baseline} = \frac{(1,746 + 1,811 + 1,709 + 1,670 + 1,717)}{5} = 1,730.6$$

Step 4: Determine if the PY2018 actual performance (1,653.8) is less than the PY2016 baseline performance (1,730.6).

PY2018 Number of Serious Injuries < PY2016 Number of Serious Injuries Baseline

$$1,653.8 < 1,730.6$$

Better than Baseline = Yes

Step 5: Since the actual performance for the number of series injuries measure is less than the baseline performance, it is determined that significant progress has been made for this measure.

5.4 Rate of Serious Injuries Measure Computation Example

Calculation for the rate of serious injuries measure using the metrics from Table 3 and the target from Table 4, as summarized below.

Metric	2012	2013	2014	2015	2016	2016	2018	PY18 Target
Serious Injuries	1,746	1,811	1,709	1,670	1,717	1,581	1,592	5.585
Total VMT	30,215	30,048	29,727	29,497	29,900	30,021	30,572	
VMT/100M	302.15	300.48	297.27	294.97	299.00	300.21	305.72	

Step 1: Calculate the Rate of Serious Injuries Measure for PY2018 actual performance using the annual metrics for serious injuries and VMT per 100 million for 2014 through 2018.

$$\begin{aligned} \text{PY2018 Rate of Serious Injuries} &= \frac{\left(\frac{1,709}{297.27} + \frac{1,670}{294.97} + \frac{1,717}{299.00} + \frac{1,581}{300.21} + \frac{1,592}{305.72} \right)}{5} \\ &= \frac{(5.75 + 5.66 + 5.74 + 5.27 + 5.21)}{5} = 5.526 \end{aligned}$$

Step 2: Determine if the PY2018 actual performance (5.526) is less than or equal to the PY2018 target (5.585).

PY2018 Rate of Serious Injuries > PY2018 Target

$$5.526 < 5.585$$

Target Met = Yes

Step 3: Since the PY2018 actual performance for the rate of fatalities measure is less than the PY2018 Target, the target has been met. Since the target is met, there is no need to assess whether the actual performance is less than or equal to the baseline performance.

5.5 Number of Non-Motorized Fatalities and Serious Injuries Measure Computation Example

Calculation for the rate of fatalities measure using the metrics from Table 3 and the target from Table 4, as summarized below.

Metric	2012	2013	2014	2015	2016	2016	2018	PY18 Target
Non-motorized Fatalities	29	22	25	27	16	16	33*	112.0
Non-motorized Serious Injuries	71	70	79	88	95	97	104	

*FARS ARF

Step 1: Calculate the Number of Non-Motorized Measure for PY2018 actual performance using the annual metrics for non-motorized fatalities and non-motorized serious injuries for 2014 through 2018.

$$\begin{aligned} \text{PY2018 Number of Non-Motorized} &= \frac{((25+79)+(27+88)+(16+95)+(16+97)+(33+104))}{5} \\ &= \frac{(104 + 115 + 111 + 113 + 137)}{5} = 116.0 \end{aligned}$$

Step 2: Determine if the PY2018 actual performance (116.0) is less than or equal to the PY2018 target (112.0).

PY2018 Number of Non-Motorized > PY2018 Target

$$116.0 > 112.0$$

Target Met = No

Step 3: Since the PY2018 actual performance for the non-motorized measure is greater than the PY2018 Target, the target has not been met. Therefore, the next step is to calculate the PY2016 baseline performance using 2012 through 2016 metrics. (*Note: If the actual performance is less than or equal to the target, this step would not be required*)

$$PY16 \text{ Non-Motorized Baseline} = \frac{((29+71)+(22+70)+(25+79)+(27+88)+(16+95))}{5} = 104.4$$

Step 4: Determine if the PY2018 actual performance (116.0) is less than the PY2016 baseline performance (94.2).

PY2018 Number of Non-Motorized < PY2016 Number of Non-Motorized Baseline

$$116.0 < 104.4$$

Better than Baseline = No

Step 5: Since the actual performance for the number of non-motorized fatalities and serious injuries measure is greater than the baseline performance, it is determined that significant progress has not been made for this measure.

5.6 Example Determination of Met or Made Significant Progress

To determine whether a State DOT has met or made significant progress toward achieving their performance targets, the computations from the above examples (5.1 through 5.5) will be used and are summarized in Table 5 below.

Table 5 – Example Determination of Met or Made Significant Progress

Safety Performance Measures	2018 Target	PY2018 Actual Performance	PY2016 Baseline Performance	Met Target?	Better than the Baseline?	Met or Made Significant Progress?
Number of Fatalities	390.0	398.4	420.6	No	Yes	YES (4 of the 5 targets were either met or significant progress was made towards meeting the targets)
Rate of Fatalities	1.320	1.330	1.406	No	Yes	
Number of Serious Injuries	1,650.0	1,653.8	1,730.6	No	Yes	
Rate of Serious Injuries	5.585	5.526	5.792	Yes	N/A	
Number of Non-Motorized Fatalities and Serious Injuries	112.0	116.0	104.4	No	No	

In this example, the only target met for PY2018 is the Rate of Serious Injuries Measure. Since this target is met, no further assessment is required for this measure. The performance targets for the Number of Fatalities Measure, Rate of Fatalities Measure, and Number of Serious Injury Measure were not met. Therefore, those measures were compared against the PY2016 baseline performance to determine if

the actual performance was less than the baseline performance. For these measures, it was determined that the actual performance was better than the baseline performance. Lastly, the Number of Non-Motorized Measure was not met and the actual performance was not better than the baseline performance. Therefore, for this example, FHWA would determine that the State DOT has met or made significant progress towards meeting the PY2018 performance targets since four of the five targets were either met or better than the baseline performance.

6 Acronyms Table

Acronym	Full Form
ANSI	American National Standards Institute
FARS ARF	Fatality Analysis Reporting System Annual Report File
CFR	Code of Federal Regulation
CY	Calendar Year
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
HPMS	Highway Performance Monitoring System
HSIP	Highway Safety Improvement Program
HSP	Highway Safety Plan
NHTSA	National Highway Traffic Safety Administration
PM	Performance Management
PY	Performance Year
State DOT	State Department of Transportation
TPM	Transportation Performance Management
USC	United States Code
VMT	Vehicle miles traveled