CHAPTER 5

Safety Performance

Summary

This chapter describes the safety of highway and transit facilities across the United States. It looks at the number of fatalities and injuries from several different perspectives. For highway safety, this chapter examines fatalities and injuries on different functional systems, the causes of highway-related fatalities, fatalities and injuries by different vehicle groups, and the distribution of crashes by age of passengers. For transit safety, this chapter examines injuries and fatalities by mode and passenger miles of travel.

This chapter describes safety statistics. It does not describe the various programs used by the U.S. Department of Transportation (DOT) and its partners to increase highway and transit safety. See Chapter 11 of the 2004 edition of the C&P report for a discussion of such programs.

Exhibit 5-1 compares the key highway and transit statistics discussed in this chapter with the values shown in the last report. The first data column contains the values reported in the 2004 C&P report, which were based on 2002 data. Had any of the 2002 data been subsequently revised, updated values would have been shown in the second column. (Although this column is blank, it has been retained to maintain consistency with the comparable tables in other chapters and to indicate that no revisions have occurred). The third column contains comparable values, based on 2004 data.

Exhibit 5-1

Comparison of Safety Statistics with Those in the 2004 C&P Report

	2002 Data		
	2004 C&P Report	Revised	2004 Data
Highway Safety			
Number of Fatalities	43,005		42,636
Fatality Rate per 100,000 People	14.94		14.52
Fatality Rate per 100 Million VMT	1.5		1.4
Number of Injuries	2,926,000		2,788,000
Injury Rate per 100,000 People	1,016		950
Injury Rate per 100 Million VMT	102		94
Transit Safety			
Number of Fatalities	282		248
Fatalities per 100 Million PMT	0.66		0.55
Number of Injuries	19,367		18,982
Injuries per 100 Million PMT	46		42
Number of Incidents	24,247		20,939
Incidents per 100 Million PMT	57		46

Highway fatalities decreased by 0.86 percent between 2002 (43,005) and 2004 (42,636). Although the number of fatalities has fallen sharply since 1966, when Federal legislation first addressed highway safety, there has been a steady increase in the annual number of fatalities between 1994 and 2004.

In 2004, the fatality rate per 100,000 people was 14.52, down from the 2002 fatality rate of 14.94. The fatality rate per 100 million vehicle miles traveled (VMT) declined from 1.51 in 2002 to 1.44 in 2004.

Q&A

What do preliminary 2005 traffic fatality data show?

While this report focuses primarily on 2004 data, some 2005 traffic fatality data are available. The National Highway Traffic Safety Administration (NHTSA) has issued a set of *Transportation Safety Fact Sheets* dated September 2006. The *Overview* fact sheet indicates that in 2005, 43,443 people died on the Nation's highways, an increase of 1.4 percent from the total number of traffic fatalities in 2004. This fact sheet also indicates an increase in the fatality rate, from 1.44 per 100 million VMT in 2004 to 1.47 per 100 million VMT in 2005. Traffic-related injuries were estimated to have declined from 2.79 million in 2004 to 2.70 million in 2005. The *Overview* fact sheet can be viewed at http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2005/OverviewTSF05.pdf.

Q&A

Where can I find additional information on fatalities and injuries?

The National Highway Traffic Safety Administration (NHTSA) has posted fatality and injury information on its public Web site at: www.nhtsa.dot.gov/people/ncsa. In addition, there are annual publications that focus on fatalities and injuries in general, along with fact sheets that focus on high-interest areas. The Web site also contains an interactive fatality encyclopedia that enables all national tables to be produced at the State level.

The number of highway injuries declined from 2.93 million in 2002 to 2.79 million in 2004. The injury rate per 100,000 people declined from 1,016 in 2002 to 950 in 2004, and the injury rate per 100 illion VMT dropped from 102 in 2002 to 94 in 2004.

Public transit in the United States has been and continues to be a highly safe mode of transportation, as evidenced by statistics on incidents, injuries, and fatalities as reported by public transportation agencies for the vehicles they operate directly.

Rail transit vehicles that travel on separate fixed guideway have historically had a lower number of fatalities relative to use than rail transit vehicles that share their guideway with nontransit vehicles. Buses, which travel at slower speeds, have also had low fatalities per 100 million passenger miles traveled (PMT). Total fatalities have fluctuated from 274 in 1995, to 282 in 2002, and 248 in 2004. When adjusted for passenger use, however, the fatality rate per 100 million PMT decreased, falling from 0.77 in 1995, to 0.66 in 2002, to 0.55 in 2004.

Between 2002 and 2004 incidents and injuries both decreased, falling substantially from 2002 to 2003 before rising slightly in 2004. Adjusted for passenger use, however, both incidents and injuries per 100 million PMT declined over both years during this time period. In 2004, there were 20,939 incidents and 18,982 injuries on transit. When adjusted for passenger travel, there were 46 incidents per 100 million PMT and 42 injuries per 100 million PMT on transit in 2004.

Highway Safety Performance

This section describes highway safety performance. It looks at fatalities and injuries on highway functional systems, across vehicle types, and among different segments of the population. It also examines the causes and costs of fatal crashes.

Statistics in this section are drawn from the Fatality Analysis Reporting System (FARS). The FARS is maintained by the National Highway Traffic Safety Administration (NHTSA), which has a cooperative agreement with an agency in each State to provide information on all qualifying crashes in that State. Police accident reports, death certificates, and other documents provide data that are tabulated daily and included in the FARS.

The NHTSA publishes an annual Traffic Safety Facts report that comprehensively describes safety characteristics on the surface transportation network.

Overall Fatalities and Injuries

Exhibit 5-2 describes the considerable improvement in highway safety since Federal legislation first addressed the issue in 1966. That year, the fatality rate was 5.50 per 100 million VMT. By 2004, the fatality rate had declined to 1.44 per 100 million VMT. This sharp decline in the fatality rate occurred even as the number of licensed drivers grew by 97 percent.

The number of traffic deaths also decreased between 1966 and 2004. In 1966, there were 50,894 traffic deaths. Fatalities reached their highest point in 1972 (54,598) and then declined sharply following the implementation of a national speed limit, reaching their lowest point in 1992 (39,250). Since then, the number of fatalities has steadily increased; by 2004, the number of traffic deaths had risen to 42,636. *Exhibits 5-3* and *5-4* compare the number of fatalities with fatality rates between 1980 and 2004.

The number of traffic-related injuries also decreased between 1988 and 2004, from 3,416,000 to 2,788,000; however, like the number of fatalities, injuries increased between 1992 and 1996. The injury rate also declined between 1988 and 2004, the years for which statistics are available. In 1988, the injury rate was 169 per 100 million VMT; by 2004, the number had dropped to 94 per 100 million VMT.

Fatalities by Functional Class

Exhibits 5-5 and *5-6* show the number of fatalities and fatality rates by rural and urban functional system between 1995 and 2004. These exhibits are important in describing the recent increase in fatalities and the distinction between fatalities and the fatality rate.

Exhibit 5-2

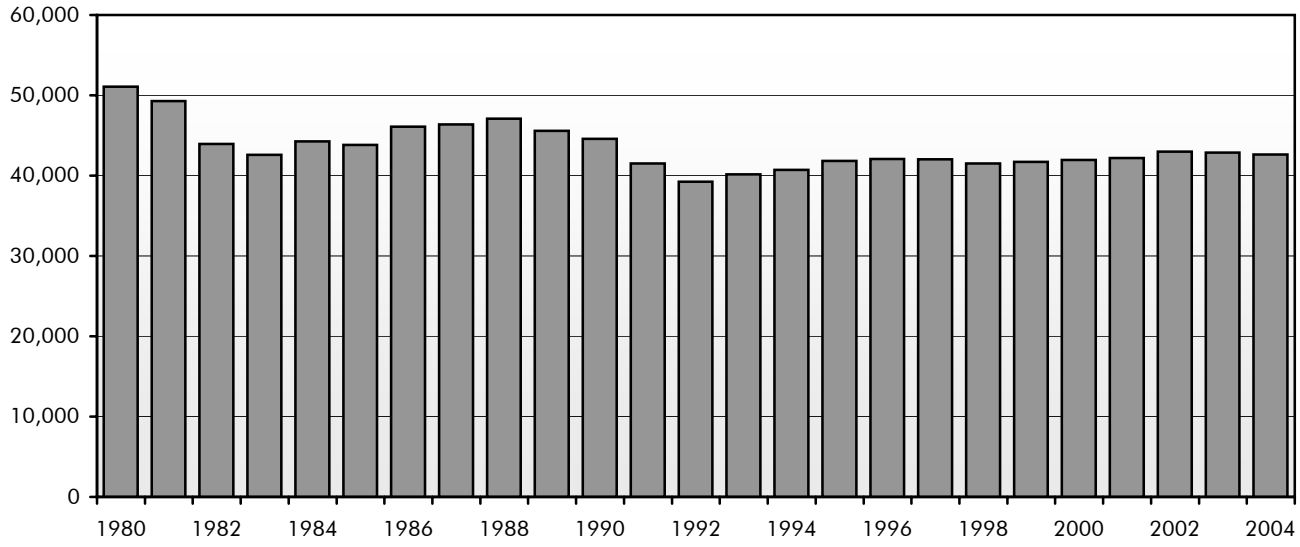
Summary of Fatality and Injury Rates, 1966–2004

Year	Fatalities	Resident Population (Thousands)	Fatality Rate per 100,000 Population	Licensed Drivers (Thousands)	Fatality Rate per 100 Million VMT	Injured	Injury Rate per 100,000 Population	Injury Rate per 100 Million VMT
1966	50,894	196,560	25.89	100,998	5.5			
1968	52,725	200,706	26.27	105,410	5.2			
1970	52,627	205,052	25.67	111,543	4.7			
1972	54,589	209,896	26.01	118,414	4.3			
1974	45,196	213,854	21.13	125,427	3.5			
1976	45,523	218,035	20.88	134,036	3.3			
1978	50,331	222,585	22.61	140,844	3.3			
1980	51,091	227,225	22.48	145,295	3.4			
1982	43,945	231,664	18.97	150,234	2.8			
1984	44,257	235,825	18.77	155,424	2.6			
1986	46,087	240,133	19.19	159,486	2.5			
1988	47,087	244,499	19.26	162,854	2.3	3,416,000	1,397	169
1990	44,599	249,439	17.88	167,015	2.1	3,231,000	1,295	151
1992	39,250	254,995	15.39	173,125	1.7	3,070,000	1,204	137
1994	40,716	260,327	15.64	175,403	1.7	3,266,000	1,255	139
1996	42,065	265,229	15.86	179,539	1.7	3,483,000	1,313	140
1998	41,501	270,248	15.36	184,980	1.6	3,192,000	1,181	121
2000	41,945	282,192	14.86	190,625	1.5	3,189,000	1,130	116
2002	43,005	287,941	14.94	194,296	1.5	2,926,000	1,016	102
2004	42,636	293,655	14.52	198,889	1.4	2,788,000	950	94

Source: Fatality Analysis Reporting System / National Center for Statistics & Analysis, NHTSA.

Exhibit 5-3

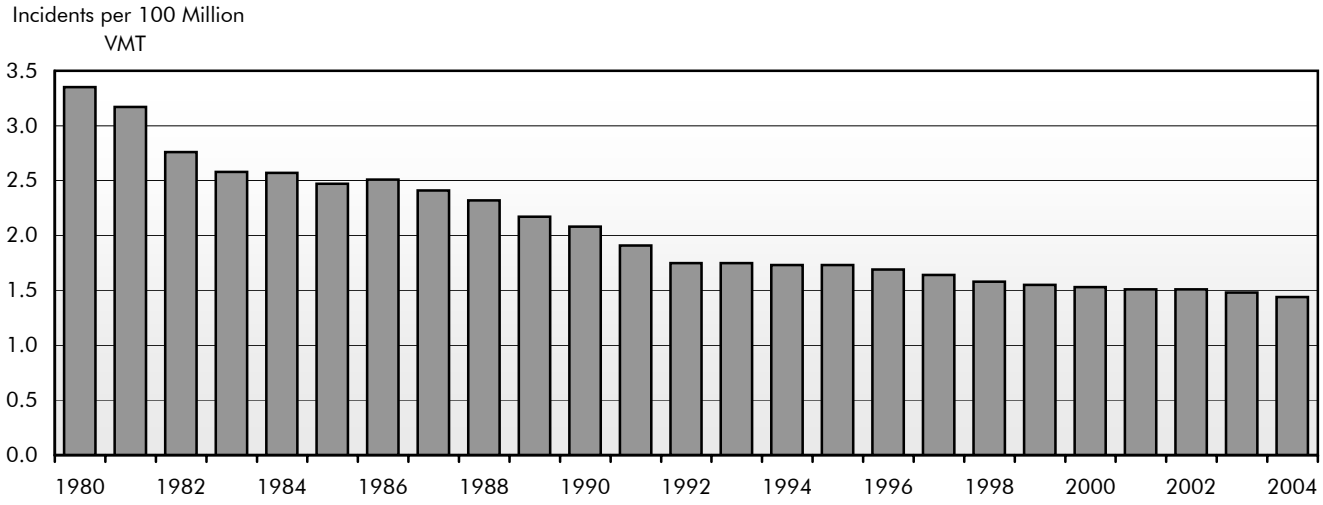
Fatalities, 1980–2004



Source: Fatality Analysis Reporting System.

Exhibit 5-4

Fatality Rate, 1980–2004



Source: Fatality Analysis Reporting System.

Exhibit 5-5

Fatalities by Functional System, 1995–2004

Functional System	1995	1997	2000	2002	2004
Rural Areas (under 5,000 in population)					
Interstate	2,658	3,040	3,254	3,298	3,246
Other Principal Arterial	4,965	5,394	4,917	4,894	5,012
Minor Arterial	4,406	4,284	4,090	4,467	5,049
Major Collector	6,218	5,920	5,501	6,014	5,552
Minor Collector	1,598	1,723	1,808	2,003	1,801
Local	4,556	4,450	4,414	5,059	4,080
Unknown Rural	48	324	854	161	235
Subtotal Rural	**24,449**	**25,135**	**24,838**	**25,896**	**24,975**
Urban Areas (5,000 and over in population)					
Interstate	2,177	2,292	2,419	2,482	2,516
Other Freeway and Expressway	1,807	1,296	1,364	1,506	1,656
Other Principal Arterial	5,041	5,420	4,948	5,124	4,811
Minor Arterial	3,732	3,523	3,211	3,218	3,536
Collector	1,213	1,163	1,001	1,151	1,339
Local	3,163	3,064	2,912	3,497	3,303
Unknown Urban	30	71	258	35	220
Subtotal Urban	**17,163**	**16,829**	**16,113**	**17,013**	**17,381**
Unknown Rural or Urban	205	49	994	96	280
Total Highway Fatalities	**41,817**	**42,013**	**41,945**	**43,005**	**42,636**

Source: Fatality Analysis Reporting System/ National Center for Statistics & Analysis, NHTSA.

Exhibit 5-6

Fatality Rates by Functional System, 1995–2004 (per 100 Million VMT)

Functional System	1995	1997	2000	2002	2004
Rural Areas (under 5,000 in population)					
Interstate	1.18	1.26	1.21	1.17	1.21
Other Principal Arterial	2.30	2.35	1.97	1.90	2.08
Minor Arterial	2.82	2.61	2.37	2.52	2.98
Major Collector	3.20	2.92	2.61	2.80	2.76
Minor Collector	3.17	3.26	3.11	3.22	2.99
Local	4.31	3.93	3.46	3.62	3.08
Subtotal Rural	**2.58**	**2.51**	**2.28**	**2.29**	**2.33**
Urban Areas (5,000 and over in population)					
Interstate	0.63	0.63	0.61	0.60	0.55
Other Freeway and Expressway	1.20	0.81	0.77	0.79	0.79
Other Principal Arterial	1.37	1.40	1.23	1.25	1.06
Minor Arterial	1.28	1.16	0.98	0.94	0.97
Collector	0.98	0.88	0.73	0.80	0.81
Local	1.53	1.48	1.23	1.45	1.33
Subtotal Urban	**1.16**	**1.08**	**0.95**	**0.98**	**0.98**
Total Highway Fatality Rate	**1.71**	**1.64**	**1.48**	**1.49**	**1.42**

Source: Fatality Analysis Reporting System / National Center for Statistics & Analysis, NHTSA.

As shown in Exhibit 5-5, the overall number of fatalities grew slightly between 1995 and 2004, largely because of deaths on rural roads. Between 1995 and 2004, the number of fatalities on rural roads grew from 24,449 to 24,975 and accounted for 58.6 percent of total 2004 fatalities. At the same time, the number of fatalities on urban roads increased from 17,163 to 17,381. The fatality rate, however, declined on both rural and urban roads. Although the absolute number of fatalities slightly increased, the fatality rate dropped due to a significant increase in the number of VMT.

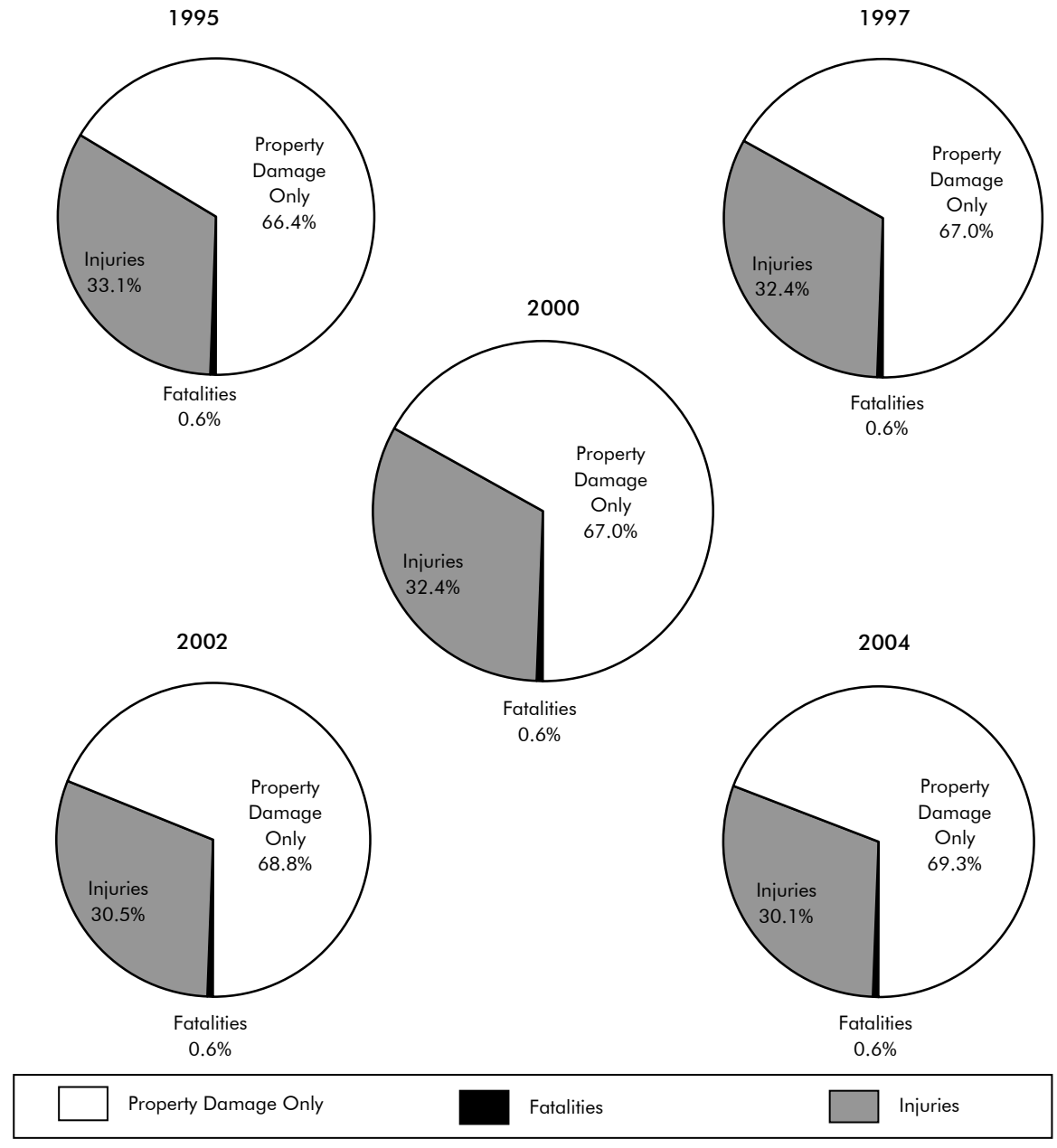
Exhibit 5-6 reveals that fatality rates declined on every urban functional system between 1995 and 2004. Urban Interstate highways were the safest functional system, with a 0.55 fatality rate in 2004. Other freeways and expressways, however, recorded the sharpest decline in fatality rates. The fatality rate for other urban freeways and expressways in 2004 was about 34.0 percent lower than in 1995.

Fatality rates declined by 9.7 percent on the rural functional system between 1995 and 2004; however, the fatality rate for rural Interstates has remained more constant. The rural Interstate fatality rate in 2004 was more than twice that of urban Interstates, as travel speeds tend to be higher on rural Interstates than urban Interstates.

There were a total of 6,181,000 crashes reported in 2004. Only a small percentage of these crashes, 0.6 percent, were severe enough to result in a fatality, while 69.3 percent of these crashes resulted in property damage only. *Exhibit 5-7* describes the number of crashes by severity between 1995 and 2004.

Exhibit 5-7

Crash by Severity, 1995 –2004



Source: Fatality Analysis Reporting System / National Center for Statistics & Analysis, NHTSA.

Highway Fatalities by Crash Type

Exhibit 5-8 displays three types of fatalities by roadway-related crash types that have been identified by the Federal Highway Administration (FHWA) as focus areas: roadway departures, intersection-related crashes, and pedestrian-related crashes. These categories are not mutually exclusive; the fatalities shown in Exhibit 5-8 can involve a combination of factors—intersection and pedestrian-related, for example—so that some fatalities will appear in more than one category.

Exhibit 5-8

Highway Fatalities by Crash Type, 1995 –2004

	1995	1997	2000	2002	2004
Roadway Departures	22,675	22,741	23,046	25,412	25,676
Intersection-related	9,148	9,093	8,689	9,273	9,117
Pedestrian-related	6,526	6,288	5,597	5,630	5,494

Some fatalities may overlap; for example, some intersection-related fatalities may involve pedestrians.

Roadway Departures

In 2004, there were a total of 25,676 fatalities related to a vehicle leaving its lane and crashing. In some cases, the vehicle crossed the centerline and struck another vehicle, hitting it head-on or sideswiping it. In other cases, the vehicle left the roadway and rolled over and/or struck one or more man-made or natural objects (e.g., utility poles, bridge walls, embankments, guardrails, trees, or parked vehicles). *Exhibit 5-9* shows roadway departure-related fatalities by functional system. Almost two-thirds of roadway departure-related fatalities occurred on rural roads.

Exhibit 5-9

Roadway Departure-related Fatalities by Functional System, 2004

Functional System	Single-vehicle run-off-the-road	Other Roadway Departures	Total Roadway Departure Fatalities	Percent of Total
Rural Areas (under 5,000 in population)				
Interstate	1,567	393	1,960	7.6%
Other Principal Arterial	1,297	1,789	3,086	12.0%
Minor Arterial	1,818	1,670	3,488	13.6%
Major Collector	2,617	1,320	3,937	15.3%
Minor Collector	1,027	376	1,403	5.5%
Local	2,517	516	3,033	11.8%
Unknown Rural	133	28	161	0.6%
Subtotal Rural	**10,976**	**6,092**	**17,068**	**66.5%**
Urban Areas (5,000 and over in population)				
Interstate	1,057	247	1,304	5.1%
Other Freeway and Expressway	652	217	869	3.4%
Other Principal Arterial	937	1,034	1,971	7.7%
Minor Arterial	1,003	718	1,721	6.7%
Collector	548	227	775	3.0%
Local	1,341	383	1,724	6.7%
Unknown Urban	54	30	84	0.3%
Subtotal Urban	**5,592**	**2,856**	**8,448**	**32.9%**
Unknown Rural or Urban	115	45	160	0.6%
Total Highway Fatalities	**16,683**	**8,993**	**25,676**	

Source: Fatality Analysis Reporting System/ National Center for Statistics & Analysis, NHTSA.

Rollovers

Exhibit 5-10 displays rollover crash data by vehicle type. Of the 25,676 roadway departure fatalities that occurred in 2004, 41.1 percent involved the rollover of a passenger vehicle. The total number of passenger vehicle occupant fatalities in rollovers has shown a steady increase, from 9,527 in 1997 to 10,553 in 2004 (an increase of 10.8 percent). While the number of occupant fatalities in rollovers among passenger cars decreased slightly, from 4,765 in 1997 to 4,334 in 2004 (a 9.0 percent decrease), the number of occupant fatalities in rollovers among sport utility vehicles (SUVs) nearly doubled from 1,489 in 1997 to 2,920 in 2004 (an increase of 96.1 percent). The number of occupant fatalities in rollovers among pickups for the same period has shown an increase of 4.5 percent (from 2,479 in 1997 to 2,591 in 2004) and among vans a decrease of 9.9 percent (from 768 in 1997 to 692 in 2004).

Exhibit 5-10

Summary of Fatalities and Fatality Rates for Vehicles Involved in Rollover Crashes, 1997 & 2004

	Fatalities	Registered Passenger Vehicles	Fatality Rate per 100,000 Registered Vehicles
1997			
Passenger Cars	4,765	124,672,920	3.82
Vans	768	16,159,473	4.75
SUVs	1,489	14,531,850	10.25
Pickup Trucks	2,479	34,314,455	7.22
Other	26	2,281,692	1.14
Total	9,527	191,960,390	4.96
2004			
Passenger Cars	4,334	133,275,377	3.25
Vans	692	18,931,753	3.66
SUVs	2,920	31,415,143	9.29
Pickup Trucks	2,591	38,557,291	6.72
Other	16	1,034,394	1.55
Total	10,553	223,213,958	4.73
Percent Change	10.8%	16.3%	

Source: Fatality Analysis Reporting System / National Center for Statistics & Analysis, NHTSA.

Among the vehicles that rolled over, the occupant fatality rates for SUVs were the highest, followed by the rates for pickup trucks, vans, and passenger cars. In 2004, in fatal crashes where a rollover occurred, the occupant fatality rate per 100,000 registered vehicles for SUVs was 9.29, 6.72 for pickup trucks, 3.66 for vans, and 3.25 for passenger cars.

The fatality rate for roadway departure-related crashes per 100 million VMT in 2004 was 0.87; the FHWA target goal in 2004 was 0.82.

Intersection-related Crashes

Another frequent type of highway fatality occurs at intersections. *Exhibit 5-11* displays intersection-related fatalities by functional system. As previously stated, of the 42,636 fatalities that occurred in 2004, 21.4 percent (9,117) was attributed to crashes that were related to intersections.

Q&A

What is the distribution of intersection-related fatalities among functional systems?

Combining rural and urban functional systems, about 62.2 percent of intersection-related fatalities were on arterials, 18.6 percent were on collector roads, 17.5 percent were on local roads, and 1.7 percent were on unspecified roads.

More than one-half (55.7 percent) of intersection-related fatalities occurred on urban roadways, compared with 44 percent that occur in rural areas. The majority of urban fatalities (22.2 percent) occurred on urban other principal arterials. Rural other principal arterials, rural minor arterials, rural major collectors, and urban local roads each account for between 11.0 to 11.5 percent of intersection-related fatalities in 2004.

Exhibit 5-11

Intersection-related Fatalities by Functional System, 2004

Functional System	Fatalities	Percent of Total
Rural Areas (under 5,000 in population)		
Interstate	6	0.1%
Other Principal Arterial	1,051	11.5%
Minor Arterial	1,049	11.5%
Major Collector	1,004	11.0%
Minor Collector	279	3.1%
Local	569	6.2%
Unknown Rural	26	0.3%
Subtotal Rural	**3,984**	**43.7%**
Urban Areas (5,000 and over in population)		
Interstate	17	0.2%
Other Freeway and Expressway	169	1.9%
Other Principal Arterial	2,026	22.2%
Minor Arterial	1,349	14.8%
Collector	415	4.6%
Local	1,025	11.2%
Unknown Urban	77	0.8%
Subtotal Urban	**5,078**	**55.7%**
Unknown Rural or Urban	55	0.6%
Total Highway Fatalities	**9,117**	

Source: Fatality Analysis Reporting System/ National Center for Statistics & Analysis, NHTSA.

Older drivers and pedestrians are particularly at risk at intersections; half of the fatal crashes for drivers aged 80 or older and one-third of the pedestrian deaths among people aged 70 or older occurred at intersections.

The fatality rate for intersection-related crashes per 100,000 in 2004 was 3.10; the FHWA target goal in 2004 was 2.96.

Pedestrian-related Crashes

Exhibit 5-12 displays pedestrian-related fatalities that occurred from 1997 to 2004. The number of pedestrian-related fatalities decreased from 6,526 in 1995 to 5,494 in 2004, a decrease of 15.8 percent. Note that the term "pedestrian-related" in this report refers to fatalities and crashes that involve pedestrians, pedalcyclists, and other nonmotorists (skateboard riders, roller skaters, etc.).

As previously stated, nonmotorist fatalities accounted for 12.9 percent of all traffic fatalities in 2004. Among nonmotorist fatalities, pedestrians accounted for 84.5 percent, pedalcyclists for 13.2 percent, with the remaining 2.3 percent being skateboard riders, roller skaters, etc.

In 2004, pedestrian fatalities occurred most frequently in urban areas, at non-intersections, in normal weather conditions, and at night. Pedalcyclist fatalities occurred most frequently in urban areas, at non-intersections, in the early evening hours (5 p.m. to 9 p.m.), during the summer months (June, July, and August). Cross-sectioning intersection-related fatalities, 950 pedestrians and 236 pedalcyclists were fatally injured at intersections.

Exhibit 5-12

Pedestrian-related Fatalities, 1995 –2004

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Pedestrians	5,584	5,449	5,321	5,228	4,939	4,763	4,901	4,851	4,774	4,641
Pedalcyclists	833	765	814	760	754	693	732	665	629	725
Other Nonmotorists	109	154	153	131	149	141	123	114	140	128
Total	**6,526**	**6,368**	**6,288**	**6,119**	**5,842**	**5,597**	**5,756**	**5,630**	**5,543**	**5,494**

Source: Fatality Analysis Reporting System / National Center for Statistics & Analysis, NHTSA.

Of the traffic crashes that resulted in pedestrian fatalities in 2004, 47 percent were alcohol-related, as either the driver or the pedestrian had consumed alcohol; in 6 percent of the crashes that occurred, both driver and pedestrian had a blood alcohol concentration (BAC) of 0.08 or higher. More than one-third of crashes that occurred in 2004 involving pedalcyclists and drivers who had consumed alcohol resulted in fatality.

The fatality rate for pedestrian-related crashes per 100,000 in 2004 was 1.87; the FHWA target goal in 2004 was 1.5.

Highway Fatalities by Contributing Factor

Alcohol-related Crashes

Alcohol-impaired driving is a serious public safety problem in the United States. The NHTSA estimates that alcohol was involved in 39 percent of all traffic fatalities and 7 percent of all crashes in 2004. The 16,694 fatalities in 2004 represent an average of one alcohol-related fatality every 31 minutes.

Exhibit 5-13 shows the number of fatalities attributable to alcohol between 1995 and 2004. The number of fatalities dropped from 17,732 in 1995 to 16,694 in 2004, although the pattern of alcohol-related fatalities has been uneven—declining between 1996 and 1999, then increasing between 1999 and 2002, then declining until 2004.

Q&A

How is "alcohol-related" defined in this report?

The term "alcohol-related" does not indicate that a crash or fatality was caused by the presence of alcohol. As defined by the NHTSA, a motor vehicle crash is considered to be alcohol-related if at least one driver or non-occupant (pedestrian or pedalcyclist) involved in the crash is determined to have a BAC of 0.01 or higher. Thus, any fatality that occurs in an alcohol-related crash is considered an alcohol-related fatality.

Exhibit 5-13

Alcohol-related Fatalities, 1995 –2004

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
17,732	17,749	16,711	16,673	16,572	17,380	17,400	17,524	17,105	16,694

Source: Fatality Analysis Reporting System / National Center for Statistics & Analysis, NHTSA; Traffic Safety Facts 2004; National Center of Statistics & Analysis, NHSTA.

There are three main groups involved in alcohol-impaired driving. In 2004, 32 percent of drivers between the ages of 21 and 24 who were involved in fatal crashes had a BAC of 0.08 grams per deciliter, the highest for all age groups. Recent statistical reports show that drivers in this age group tend to have much higher levels of intoxication than other age groups. Drivers involved in fatal crashes with a BAC greater than 0.08 grams per deciliter were eight times more likely than sober drivers to have a prior conviction for driving while impaired.

Speed-related Crashes

Speeding is one of the most prevalent factors contributing to traffic crashes. In 2004, nearly 13,192 lives were lost in speed-related crashes. The estimated annual economic costs of speed-related crashes exceeded $40.4 billion in 2000. This included $10.3 billion in fatalities, $13.3 billion in injuries, and $3.8 billion in property damage.

For drivers involved in fatal crashes, young males are most likely to speed. The relative proportion of speed-related crashes to all crashes decreases with increasing driver age. For example, in 2004, 38 percent of male drivers between the ages of 15 and 20 who were involved in fatal crashes were speeding at the time of the crash, while the comparable figure for male drivers between the ages of 35 and 44 was only 20 percent.

Q&A

What is the distribution of speed-related fatalities among functional systems?

About 14 percent of fatalities were on Interstates, 37 percent were on other arterial roads, 24 percent were on collector roads, and 25 percent were on local roads.

Research completed by NHTSA shows the correlation between speeding and alcohol consumption in fatal crashes. In 2004, 40 percent of the drivers with a BAC of 0.08 or higher involved in fatal crashes were speeding, compared with only 15 percent of drivers with a BAC of 0.00 involved in fatal crashes.

Many speeding crashes also occur during bad weather. Speeding was a factor in 29 percent of the fatal crashes that occurred on dry roads in 2004 and in 34 percent of those that occurred on wet roads. Speeding was a factor in 50 percent of the fatal crashes that occurred when there was snow or slush on the road and in 59 percent of those that occurred on icy roads.

Although much of the public concern about speed-related crashes focuses on high-speed roadways, speeding is a safety concern on all roads. Almost half of speed-related fatalities occur on lower functional systems.

Crashes by Vehicle Type

Exhibit 5-14 shows the number of occupant fatalities by vehicle type from 1995 to 2004. The number of occupant fatalities that involved passenger cars decreased from 22,423 in 1995 to 19,091 in 2004, while occupant fatalities involving light and large trucks, motorcycles, and other vehicles all increased during this period. *Exhibit 5-15* presents the number of occupant injuries by vehicle type from 1995 to 2004.

The number of occupant fatalities in light trucks increased sharply between 1995 and 2004. Fatalities in these vehicles increased from 9,568 in 1995 to 12,602 in 2004, or an increase of 31.7 percent. There were 900,171 light truck occupants injured in 2004, up from 722,496 in 1995.

The number of occupant fatalities in large trucks increased 17.4 percent, from 648 in 1995 to 761 in 2004. There were 27,287 large truck occupants injured in 2004.

Exhibit 5-14

Fatalities for Vehicle Occupants by Type of Vehicle, 1995–2004

Type of Vehicle	1995	1997	2000	2002	2004
Motorists					
Passenger Cars	22,423	22,199	20,699	20,569	19,091
Light Trucks	9,568	10,249	11,526	12,274	12,602
Large Trucks	648	723	754	689	761
Motorcycles	2,227	2,116	2,897	3,270	4,008
Buses	33	18	22	45	41
Other & Unknown Vehicles	392	420	450	528	639
Nonmotorists					
Pedestrians	5,584	5,321	4,763	4,851	4,641
Pedalscyclists	833	814	693	665	725
Other & Unknown	109	153	141	114	128
Total	**41,817**	**42,013**	**41,945**	**43,005**	**42,636**

Source: Fatality Analysis Reporting System / National Center for Statistics & Analysis, NHTSA.

Exhibit 5-15

Injuries for Vehicle Occupants by Type of Vehicle, 1995–2004

Type of Vehicle	1995	1997	2000	2002	2004
Motorists					
Passenger Cars	2,469,358	2,340,612	2,051,609	1,804,788	1,642,549
Light Trucks	722,496	754,820	886,566	879,338	900,171
Large Trucks	30,344	30,913	30,832	26,242	27,287
Motorcycles	57,480	52,574	57,723	64,713	76,379
Buses	19,214	16,887	17,769	18,819	16,410
Other & Unknown Vehicles	4,468	5,602	10,120	6,187	7,262
Nonmotorists					
Pedestrians	86,000	77,000	78,000	71,000	68,000
Pedalscyclists	67,000	58,000	51,000	48,000	41,000
Other & Unknown	10,000	11,000	5,000	7,000	9,000
Total	**3,466,360**	**3,347,408**	**3,188,619**	**2,926,087**	**2,788,058**

Source: Fatality Analysis Reporting System / National Center for Statistics & Analysis, NHTSA.

The number of motorcyclists who died in crashes increased significantly between 1995 and 2004, from 2,227 in 1995 to 4,008 in 2004, an 80.0 percent increase; there were 76,379 motorcyclists injured in 2004, an increase of 32.9 percent from the 57,480 motorcyclists who were injured in 1995.

Motorcycle crashes are frequently speed-related. In 2004, for instance, about 36 percent of all motorcyclists involved in fatal crashes were speeding. Speed was two times more likely to be a factor in fatal motorcycle crashes than in passenger car or light truck crashes. Studies also have shown that alcohol was more likely to have been a factor in motorcycle crashes than passenger car or light truck crashes.

Crashes by Age Group

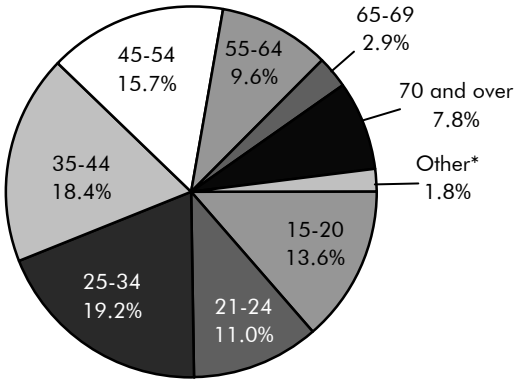
Another important way of examining highway crashes is by demographic segment. *Exhibit 5-16* shows the breakdown of drivers, by age, involved in fatal crashes in 2004.

Drivers between the ages of 15 and 20 constitute 6.3 percent of licensed drivers, but 13.6 percent of total drivers involved in fatal crashes. In 2004, 29 percent of the drivers killed in this age group had been drinking. Drivers in the next oldest age category, those between 21 and 24 years, made up 6.9 percent of licensed drivers and 11.2 percent of drivers involved in fatal crashes.

On the other end of the spectrum, there were 20.0 million drivers aged 70 or older in 2004, accounting for 10.0 percent of licensed drivers in 2004. This age group accounted for 7.9 percent of drivers involved in fatal crashes and 11.2 percent of driver fatalities in 2004.

Exhibit 5-16

Age of Drivers Involved in Fatal Crashes, 2004



*Other includes drivers under age 15 and those whose age could not be determined from the accident data reported.

Source: Fatality Analysis Reporting System / National Center for Statistics & Analysis, NHTSA

Older drivers tend to take shorter trips. They usually avoid driving during bad weather and at night; in 2004, for instance, most traffic fatalities involving older drivers occurred during the daytime (81 percent). Older drivers involved in fatal crashes also had the lowest proportion of intoxication of all adult drivers.

Transit Safety

Transit operators report safety information to the National Transit Database (NTD) for three major categories: incidents, injuries, and fatalities. Safety information presented in this chapter is for directly operated services only, in order to facilitate comparisons with data in previous editions of the C&P report.

In 2002, the FTA Office of Safety revised the definitions of an "incident" and an "injury." Given that there is no "statistical bridge" across the change in definitions that occurred between 2001 and 2002, this chapter provides only injury and incident data from 2002 onward. Data on injuries and incidents prior to 2002, which are not comparable with the 2002 to 2004 data, are available in the 2004 C&P report.

An incident is recorded by a transit agency for a variety of events occurring on transit property or vehicles, involving transit vehicles, or to persons using the transit system. Included among these is any event that results in significant property damage, one or more reported injuries, one or more reported fatalities, or some combination thereof. Since 2002, the definition of "significant property damage" has been total property damage in excess of $7,500; prior to 2002, the definition was property damage in excess of $1,000. This increase in the property damage threshold has greatly reduced the number of reported incidents.

In 2002, the definition of an injury was switched from a claims basis to a verifiable basis, leading to a reduction in reported injuries. Since 2002, an injury has been reported only when a person has been immediately transported away from the scene of a transit incident for medical care. Prior to 2002, all injuries for which claims were made were reported by transit agencies to the NTD. Since any event producing a reported injury is also reported as an incident, the definitional change for an injury also reduced the number of reported incidents.

Q&A

What sort of events result in a recorded transit incident?

A transit agency records an incident for any event occurring on transit property, onboard or involving transit vehicles,, or to persons using the transit system that results in one of the following:

- One or more confirmed fatalities within 30 days of the incident
- One or more injuries requiring immediate transportation away from the scene for medical attention
- Total property damage to transit property or private property in excess of $7,500
- An evacuation due to life safety reasons
- A mainline derailment (i.e., occurring on a revenue service line, regardless of whether the vehicle was in service or out-of-service)
- A fire.

Additionally, an incident is recorded by a transit agency whenever one of the following security situations occurs on transit property, onboard or involving transit vehicles, or to persons using the transit system:

- A robbery, burglary, or theft
- A rape
- A suicide or attempted suicide
- An aggravated assault
- An arrest or citation, such as for trespassing, vandalism, fare evasion, or an assault
- A bomb threat
- A bombing
- A release of chemical, biological, nuclear, or radiological materials
- A cybersecurity incident
- A hijacking
- A nonviolent civil disturbance that results in the disruption of transit service
- A sabotage.

The definition of a fatality was not revised in 2002. A fatality is reported for any death occurring within 30 days of a transit incident, which is confirmed to be a result of that incident. Although suicides are reported as transit incidents, they are not included in the data on transit fatalities. Fatality data are provided from 1995 through 2004.

Injuries and fatalities include those suffered by riders, as well as those suffered by pedestrians, bicyclists, and people in other vehicles. Injuries and fatalities may occur while traveling on transit, as well as while boarding, alighting, or waiting for transit vehicles to arrive. An injury or fatality may also occur while not using transit, such as in the cases of being struck by a transit vehicle, or in the case of a collision in a transit station parking lot.

Exhibit 5-17 shows annual fatalities for directly operated transit services in both absolute numbers and adjusted according to the number of passenger miles traveled (PMT) in each year for 1995 to 2004. Between 1995 and 2004, total fatalities fluctuated between a high of 299 in 1999 and a low of 234 in 2003. There were 282 fatalities in 2002 and 248 in 2004. When adjusted for passenger use, however, the fatality rate per PMT has decreased over this time period, falling from 0.77 fatalities per 100 million PMT in 1995, to 0.66 per 100 million PMT in 2002, and to 0.55 fatalities per 100 million PMT in 2004.

Exhibit 5-17

Annual Transit Fatalities, 1995 –2004: Directly Operated Service

Year	Total	Per 100 Million PMT
1995	274	0.77
1996	265	0.73
1997	275	0.73
1998	286	0.73
1999	299	0.73
2000	292	0.69
2001	268	0.61
2002	282	0.66
2003	234	0.56
2004	248	0.55

Source: National Transit Database—Transit Safety and Security Statistics and Analysis Reporting.

Exhibit 5-18 provides total incidents and injuries for directly operated services in both absolute terms and per 100 million PMT. Incidents and injuries both decreased from 2002 to 2004, falling substantially from 2002 to 2003 before rising slightly in 2004. Adjusted for passenger use, however, both incidents and injuries per 100 million PMT declined in both years during this time period.

Exhibit 5-18

Annual Incidents and Injuries, 2002 –2004: Directly Operated Service

	Incidents		Injuries	
Year	Total	Per 100 Million PMT	Total	Per 100 Million PMT
2002	24,247	57	19,367	46
2003	19,797	47	18,235	44
2004	20,939	46	18,982	42

Source: National Transit Database—Transit Safety and Security Statistics and Analysis Reporting.

Exhibit 5-19 shows fatality rates per 100 million PMT for motorbus, heavy rail, commuter rail, light rail, and demand response, the five largest transit modes in terms of PMT. Together, these modes accounted for 97 percent of total PMT in 2004. [Absolute fatalities are not comparable across modes because of the wide range of passenger miles traveled on each mode and are therefore not provided.] This information is presented graphically in *Exhibit 5-20* for all these modes except demand response. Fatalities per 100 million PMT for demand response are excluded from the graph due to their volatility.

Exhibit 5-19

Transit Fatalities by Mode, 1995–2004:
Annual Rates per 100 Million Passenger Miles, Directly Operated Service

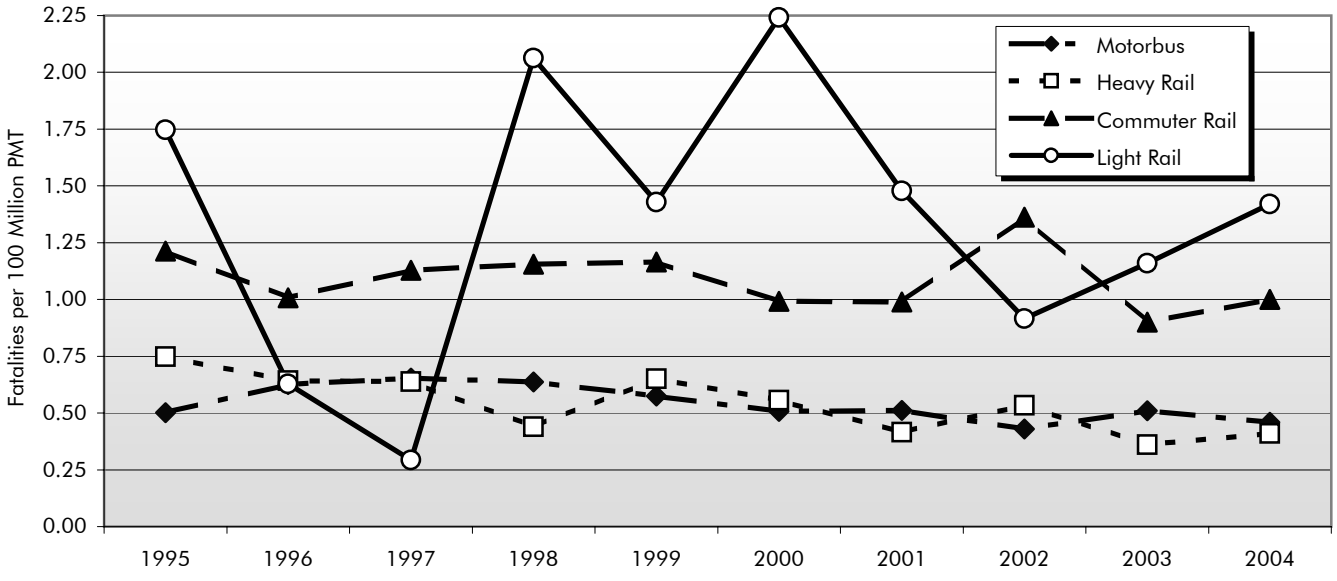
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Motorbus	0.50	0.63	0.65	0.64	0.57	0.51	0.51	0.43	0.51	0.46
Heavy Rail	0.75	0.64	0.64	0.44	0.65	0.56	0.42	0.53	0.36	0.41
Commuter Rail	1.21	1.01	1.13	1.16	1.16	0.99	0.99	1.36	0.90	1.00
Light Rail	1.75	0.63	0.29	2.06	1.43	2.24	1.48	0.92	1.16	1.42
Demand Response	4.04	8.26	3.00	2.07	0.48	3.77	0.42	0.00	1.81	0.00

Source: National Transit Database—Transit Safety and Security Statistics and Analysis Reporting.

Rail transit vehicles that travel on separate fixed guideway have historically had a lower number of fatalities relative to use than rail transit vehicles that share their guideway with nontransit vehicles. Motorbuses, which travel at slower speeds, have also had a relatively low number of fatalities per 100 million PMT. Between 1995 and 2004, heavy rail and motorbus had the fewest fatalities per 100 million PMT among the five largest modes. In 2004 heavy rail had 0.41 fatalities per 100 million PMT and motorbus had 0.46 fatalities per 100 million PMT. [Heavy rail fatalities per 100 million PMT were above those for motorbus between 1990 and 1996, but decreased significantly over these years.] Commuter rail, which has frequent grade crossings with roads and shares track with freight rail vehicles, had more fatalities per 100 million PMT than heavy rail for each year from 1995 to 2004. Light rail had the highest number of fatalities per 100 million PMT among the rail modes in 7 of the 10 years from 1995 to 2004; light rail guideway is often at grade level and has minimal barriers between streets and sidewalks.

Exhibit 5-20

Fatality Rates by Mode, 1995–2004



Source: National Transit Database—Transit Safety and Security Statistics and Analysis Reporting.

The number of fatalities per 100 million PMT on demand response systems fluctuated considerably between 1995 and 2004, ranging from no fatalities in 2004 to 8.26 fatalities per 100 million PMT in 1996. Demand response accounts for only 1 percent of PMT; therefore, the underlying absolute number of demand response fatalities is very low, which accounts for the high degree of volatility in these numbers.

Exhibit 5-21 provides data on injuries and incidents per 100 million PMT for directly operated services on the five largest modes from 2002 to 2004. In 2004, commuter rail, which provides longer trips than other modes, had 19 incidents per 100 million PMT and 16 injuries per 100 million PMT, similar to the preceding 2 years. Heavy rail had 43 incidents and 33 injuries per 100 million PMT, light rail had 60 incidents and 41 injuries per 100 million PMT, and motorbuses had 70 incidents and 71 injuries per 100 million PMT. Demand response had the highest number of incidents and injuries per 100 million PMT from 2002 to 2004. Incidents on demand response systems declined from 225 per 100 million PMT in 2002 to 156 per 100 million PMT in 2004, and injuries declined from 173 per 100 million PMT to 131 per 100 million PMT. It is not clear, however, if this decline indicates a longer-term trend because, under the old definitions, incidents and injuries per 100 million PMT on demand response systems shown in the 2004 C&P Report did not decline between 1998 and 2002.

Exhibit 5-21

Transit Incidents and Injuries by Mode, 2002–2004: Directly Operated Service

Incidents per 100 Million PMT			
	2002	**2003**	**2004**
Motorbus	76	65	70
Heavy Rail	51	41	43
Commuter Rail	20	20	19
Light Rail	76	67	60
Demand Response	225	187	156
Injuries per 100 Million PMT			
	2002	**2003**	**2004**
Motorbus	66	67	71
Heavy Rail	35	31	33
Commuter Rail	17	19	16
Light Rail	39	37	41
Demand Response	173	181	131

Source: National Transit Database—Transit Safety and Security Statistics and Analysis Reporting.

Exhibit 5-22 shows the number of fatalities per 100 incidents for each of the five largest transit modes from 2002 to 2004. This metric does not represent the percentage of incidents that are fatal, as some incidents result in multiple fatalities. The metric does, however, show the likelihood that fatality will result from an incident. Although commuter rail has a very low number of incidents per PMT, commuter rail incidents are far more likely to result in a fatality than incidents occurring on any other mode. Motorbuses, on the other hand, have a high number of incidents per PMT, but a lower chance of having an incident result in a fatality than on almost any other mode. While light rail and motorbus have similar numbers of incidents per PMT, an incident on light rail is two to three times more likely to produce a fatality than an incident on a motorbus.

Exhibit 5-22

Fatalities per 100 Incidents by Mode, 2002–2004

	2002	**2003**	**2004**
Motorbus	0.57	0.79	0.65
Heavy Rail	1.05	0.88	0.95
Commuter Rail	6.74	4.40	5.38
Light Rail	1.20	1.73	2.36
Demand Response	0	0.97	0

Source: National Transit Database—Transit Safety and Security Statistics and Analysis Reporting.