U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

NHTSA
www.nhtsa.gov

DOT HS 811 346

June 2010

An Analysis of the Significant Decline in Motor Vehicle Traffic Fatalities in 2008

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Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
DOT HS 811 346		

4. Title and Subtitle	5. Report Date
An Analysis of the Significant Decline in Motor Vehicle Traffic Crashes in 2008	June 2010
	6. Performing Organization Code: NVS-421

7. Author(s)	8. Performing Organization Report No.
Anders Longthorne,* Rajesh Subramanian,† and Chou-Lin Chen††	

9. Performing Organization Name	10. Work Unit No. (TRAIS)
Mathematical Analysis Division, National Center for Statistics and Analysis National Highway Traffic Safety Administration U.S. Department of Transportation, NVS-421 1200 New Jersey Avenue SE. Washington, DC 20590	11. Contract or Grant No.

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
Mathematical Analysis Division, National Center for Statistics and Analysis National Highway Traffic Safety Administration U.S. Department of Transportation, NVS-421 1200 New Jersey Avenue SE. Washington, DC 20590	NHTSA Technical Report
	14. Sponsoring Agency Code

15. Supplementary Notes

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Abstract

Fatalities in motor vehicle traffic crashes reached 43,510 in 2005. This was the highest number of fatalities reached since 1990. Since this recent peak, the number of reported fatalities has steadily declined every year, down to 37,261 in 2008. In particular, the number of fatalities reported for 2008, by NHTSA's Fatality Analysis Reporting System (FARS), decreased by almost 10 percent as compared to 2007. The 37,261 fatalities reported for 2008 also represented the lowest level of traffic fatalities since 1961. With fatalities projected to decline again in 2009 (down to 33,963), this would mean that between 2005 and 2009 motor vehicle traffic crash fatalities have declined almost 22 percent. Also in 2008, the fatality rate per 100 million vehicle miles traveled (VMT) reached an all-time low of 1.25. The decline (down 2 percent) in the VMT was much less significant than the decline in the fatalities (down 10 percent). In addition to the sustained benefits from various vehicle and behavioral programs, the objective of this report is to identify areas that contributed to this significant decline in 2008. This report analyzes crash data from FARS and the National Automotive Sampling System General Estimates System (NASS GES), along with data from the U.S. Census Bureau and the Bureau of Labor Statistics (BLS), to provide insight into the recent decline in fatalities. While the recorded number of fatalities is projected to significantly decline again in 2009 (down around 9%), the FARS data will not be available until the fall of 2010 for in-depth analysis.

A significant decline from 2007 to 2008, slightly higher than 17 percent, was recorded for fatalities in crashes involving young drivers of passenger vehicles (ages 16-24). In comparison, fatalities in crashes involving passenger vehicle drivers between the ages of 25 to 44 decreased by about 11 percent, those between 45-64 years old decreased by about 10 percent, and those 65 years old and older decreased by about 7 percent. Child fatalities (under 16 years old) decreased by about 20 percent. Other areas of significant declines in fatalities were those that occurred in multiple-vehicle crashes (about 13%), crashes involving large trucks (about 12%), crashes that occurred during the weekend (about 11%) and for occupant fatalities in vehicles that rolled over in multiple-vehicle crashes (19%). Motorcyclist and pedalcyclist fatalities showed an increase in 2008.

The long-term declining trend observed in fatalities since reaching a high in the early 1970s has occurred while significant vehicle and occupant safety regulations and programs were being enacted by NHTSA and the States. NHTSA-administered behavioral and vehicle safety programs, both in the crashworthiness and crash avoidance areas, and through the issuing of Federal Motor Vehicle Safety Standards has contributed significantly to the long-term downward trend seen in motor vehicle traffic crash fatalities. Roadway improvements, as well as commercial vehicle programs have also contributed to the decline. In addition to the continued effect of these safety countermeasures, the large drop in fatalities in 2008 and 2009 has also coincided with a recession in the U.S. economy.

17. Key Words	18. Distribution Statement
Decline in Motor Vehicle Crash Fatalities, 2008, Young Drivers, Vehicle Miles Traveled (VMT), Unemployment Rate, Metropolitan Statistical Areas (MSA), Rural/Urban	Document is available to the public from the National Technical Information Service www.ntis.gov .

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	38	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

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1. Executive Summary

Fatalities in motor vehicle traffic crashes reached 43,510 in 2005. This was the highest number of fatalities reached since 1990. Since this recent peak, the number of reported fatalities has steadily declined every year, down to 37,261 in 2008. In particular, the number of fatalities reported for 2008, by National Highway Traffic Safety Administration's Fatality Analysis Reporting System (FARS), decreased by almost 10 percent as compared to 2007. The 37,261 fatalities reported for 2008 also represented the lowest level of traffic fatalities since 1961. With fatalities projected to decline again in 2009 (down to 33,963), this would mean that between 2005 and 2009 motor vehicle traffic crash fatalities have declined almost 22 percent. Also in 2008, the fatality rate per 100 million vehicle miles traveled (VMT) reached an all-time low of 1.25. The decline (down 2 percent) in the VMT was much less significant than the decline in the fatalities (down 10 percent). In addition to the sustained benefits from various vehicle and behavioral programs, the objective of this report is to identify areas that contributed to this significant decline in 2008. This report analyzes crash data from FARS and the National Automotive Sampling System General Estimates System (NASS GES), along with data from the U.S. Census Bureau and the Bureau of Labor Statistics (BLS), to provide insight into the recent decline in fatalities. While the recorded number of fatalities is projected to significantly decline again in 2009 (down around 9%), the FARS data will be available in August of 2010 for in-depth analysis.

A significant decline from 2007 to 2008, slightly higher than 17 percent, was recorded for fatalities in crashes involving young drivers (age 16 to 24) of passenger vehicles. In comparison, fatalities in crashes involving passenger vehicle drivers 25 to 44 years old decreased by about 11 percent, those 45 to 64 years old decreased by about 10 percent, and those 65 and older decreased by about 7 percent. In fact, a large portion of the overall decline in fatalities (down 3,998) was in crashes involving young drivers (down 2,205 fatalities).

Fatalities to children (under 16) decreased by about 20 percent. Other areas where fatality declines outpaced the overall decline of nearly 10 percent were those that occurred in multiple-vehicle crashes (down 13%), crashes involving large trucks (down 12%) and crashes that occurred during the weekend (down 11%) and for occupant fatalities in vehicles that rolled over in multiple-vehicle crashes (down 19%). Motorcyclist and pedalcyclist fatalities were among the few categories that showed an increase in 2008.

A joint distribution of fatalities in crashes involving young drivers 16 to 24 of passenger vehicles with the day of the week (weekday versus weekend) and type of the crash (single-vehicle versus multiple-vehicle) reveals some situations where declines were much greater than the overall decline. While fatalities in crashes involving a young driver decreased by 17 percent, those in crashes that did not involve a young driver decreased by only 6 percent. Significant declines of close to 20 percent were recorded in multiple-vehicle crashes involving young drivers during both the weekdays and the weekend. Fatalities in crashes involving young drivers during the weekend decreased by about 19 percent while those in weekend crashes that did not involve a young driver decreased by only about 7 percent.

In the past, similar significant declines in fatalities were seen during the early 1980s and the early 1990s. Both of these periods coincided with significant economic recessions in the United

States. During both these time periods, fatalities in crashes involving younger drivers (16 to 24) declined significantly as compared to drivers in the other, older age groups. Both of these periods of traffic fatality decline were followed by periods of increasing fatalities and the magnitude of the increase was the greatest in crashes involving the younger drivers. This trend was also observed in multiple-vehicle fatal crashes. However, during each period of increase following a period of decline, the annual fatality counts did not rise back to the level they were at prior to the decline.

Also, the GES data showed that an estimated 57,000 fewer 16- to 24-year-old drivers were involved in injury crashes in 2008, a 7-percent decline from 2007. This decline was statistically significant. In comparison, drivers 25 old and older involved in injury crashes declined by 5 percent. There were statistically significant declines across both age groups among drivers involved in injury crashes during the weekend, although the magnitude of the decline was greater for the younger drivers (14% versus 8% decline). Also, there were declines across both age groups in drivers involved in multiple-vehicle injury crashes, although the decline among the younger drivers was not statistically significant.

The long-term declining trend observed in fatalities since reaching a high in the early 1970s has occurred while significant vehicle and occupant safety regulations and programs were being enacted by NHTSA and the States. NHTSA-administered behavioral and vehicle safety programs, both in the crashworthiness and crash avoidance areas, and through the issuing of Federal Motor Vehicle Safety Standards has contributed tremendously to the long-term downward trend seen in motor vehicle traffic crash fatalities. In 2008, an estimated 244 lives were saved by the use of child restraints, 13,250 lives of people 5 and older were saved by seat belts, 2,546 lives of people 13 and older were saved by air bags, 1,829 lives were saved by the use of motorcycle helmets, and 714 lives were saved by minimum-drinking-age laws (NHTSA, 2009). Significant life-saving vehicle technologies like electronic stability control (ESC) have begun to penetrate the vehicle fleet. NHTSA estimates ESC would save 5,300 to 9,600 lives and prevent 156,000 to 238,000 injuries in all types of crashes annually once all light vehicles on the road are equipped with ESC (NHTSA, 2007).

In addition to the continued effect of these safety countermeasures, the large drop in fatalities in 2008 and 2009 has also coincided with a recession in the U.S. economy.

Analyzing the FARS fatality data along with the national and local unemployment rates, as reported by the Bureau of Labor Statistics (BLS), showed that large fatality declines tended to coincide with areas that had higher increases in rates of unemployment. The national unemployment rate steadily increased from late 2007 through late 2009 but has recently held steady through mid 2010.

Data from BLS also tracks the unemployment rates for major metropolitan areas and their adjoining counties, collectively known as Metropolitan Statistical Areas (MSAs). MSAs were categorized into top, middle, and bottom third on the basis of the change in the unemployment rate. MSAs in the bottom third, i.e., those with the highest increase in unemployment rates between 2007 and 2008, also had the largest percentage decline (-12%) in fatalities, followed by MSAs in the middle third (-9%). MSAs in the top third, i.e., those with the lowest increase in the unemployment rates had the smallest decline in fatalities (-8%).

Within States, there were significant disparities in the extent of the decline in fatalities among (1) the major MSAs and (2) the rest of the State. MSAs are clusters of counties around major populated cities that have heavy commuting and economic ties between them. For example, while fatalities in Arizona declined by 13 percent in 2008, those within the Phoenix MSA declined by 32 percent as compared to fatalities within the Tucson MSA which declined by 10 percent. While Nevada recorded a decline of 13 percent statewide, fatalities within the Las Vegas MSA declined by 19 percent and those within the Reno-Sparks MSA were down by 27 percent.

Fatalities are projected to continue their significant decline into 2009. The crash data will be available for analysis in August of 2010 and at that time a similar analysis will be performed to see if current trends have continued.

2. Introduction

In 2008 there were 37,261 people killed in motor vehicle crashes as defined and collected by the Fatality Analysis Reporting System. This represents a decline of nearly 10 percent from the 41,259 killed in 2007. This decline, in both numbers and percentage, is the largest since 1982. The total fatalities for 2008 is now the lowest number ever recorded by FARS, whose operations began in 1975, and the lowest recorded in all previous United States Government records since 1961. NHTSA is also projecting a further large drop in fatalities for 2009 (NHTSA, 2010). If this projection holds then fatalities will be the lowest recorded since 1954.

The number of vehicle miles traveled (VMT) is the primary exposure measure used when analyzing the occurrence of fatal motor vehicle crashes. VMT is collected by the Federal Highway Administration and in 2008 FHWA reported a decrease in VMT of almost 2 percent from that reported in 2007. This is the first reported decline in VMT since 1980. The number of motor vehicle crash fatalities per 100 million VMT was 1.25 in 2008, which is a decline of approximately 8 percent from the 2007 rate and is the lowest fatality rate per 100 million VMT ever recorded. The estimated number of people injured in crashes continued a long-term decline, dropping by 5.8 percent in 2008. The estimated number of property-damage-only crashes declined by 3 percent and the overall number of police-reported crashes fell by 3.5 percent.

Table 1: Motor Vehicle Crash Fatalities and Fatality Rates (per 100 Million VMT) 2007-2009, Persons Injured and Police-Reported Crashes, 2007-2008

Fatalities, Injuries, VMT, Type of Police-Reported Crash, Fatality Rates	Year			Percent Change 2007-2008
	2007	2008	*2009	
Motor Vehicle Crash Fatalities	41,259	37,261	*33,963*	-9.7%
VMT in Billions	3,032	2,974	*2,932*	-1.9%
Fatalities per 100 Million VMT	1.36	1.25	*1.16*	-8.1%
Persons Injured	2,491,000	2,346,000	-	-5.8%
Property-Damage-Only Crashes	4,275,000	4,146,000	-	-3.0%
All Police-Reported Crashes	6,024,000	5,811,000	-	-3.5%

Sources: Fatalities: FARS 2007 Final and 2008 Annual Report File,
* 2009 data are estimates
People Injured: GES 2007-2008. 2009 data not yet available
Vehicle Miles Traveled (VMT): Federal Highway Administration (FHWA) Traffic Volume Trends (TVT)

The purpose of this report is to examine the current decline in fatalities, not just in relation to recent trends and but also in relation to any long-term changes that may be occurring.

3. Data and Methodology

The fatal crash data analyzed in this report is from NHTSA's Fatality Analysis Reporting System, except for the 2009 numbers that are statistical projections (NHTSA, 2010). FARS, which became operational in 1975, contains data on a census of fatal traffic crashes within the 50 States, the District of Columbia, and Puerto Rico. To be included in FARS, a crash must involve a motor vehicle traveling on a trafficway customarily open to the public, and must result in the death of an occupant of a vehicle or a nonoccupant within 30 days of the crash.

Data on people injured and injury- and property-damage only crashes are estimates from NHTSA's National Automotive Sampling System General Estimates System. GES data is obtained from a nationally representative probability sample selected from all police-reported crashes. The system began operation in 1988. To be eligible for the GES sample, a police crash report (PAR) must be completed, and the crash must involve at least one motor vehicle traveling on a trafficway and must result in property damage, injury, or death. Chi-square tests (performed at $\alpha = 0.05$ significance level) were used for statistical significance testing of the year-to-year changes. However, since FARS is census data, statistical significance does not apply. In this report, unless otherwise stated, the terms *significance* or *significant* refer to a measure, or change, that is notable or large, and not to *statistical significance*.

The vehicle miles of travel (VMT) information is from the Federal Highway Administration. The 2009 VMT is a preliminary estimate from FHWA's Traffic Volume Trends (TVT), January 2010.

Unemployment rates and other economic indicators are excerpted from the Bureau of Labor Statistics' Local Area Unemployment (LAU) data. The LAU data also tracks the unemployment rates for major metropolitan areas and their adjoining counties, collectively known as Metropolitan Statistical Areas. An MSA has at least one urbanized area of 50,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties. In order to obtain the corresponding fatality totals by MSAs, the FARS data was loaded into Geographic Information System (GIS) software called ESRI ArcMap, and a layer of the MSAs in the United States was overlaid on the fatality data to get total fatality counts within MSAs.

For this report, young drivers are defined as drivers 16 to 24 years old.

"Weekday" and "Weekend" as used in the data tables are defined as the following:

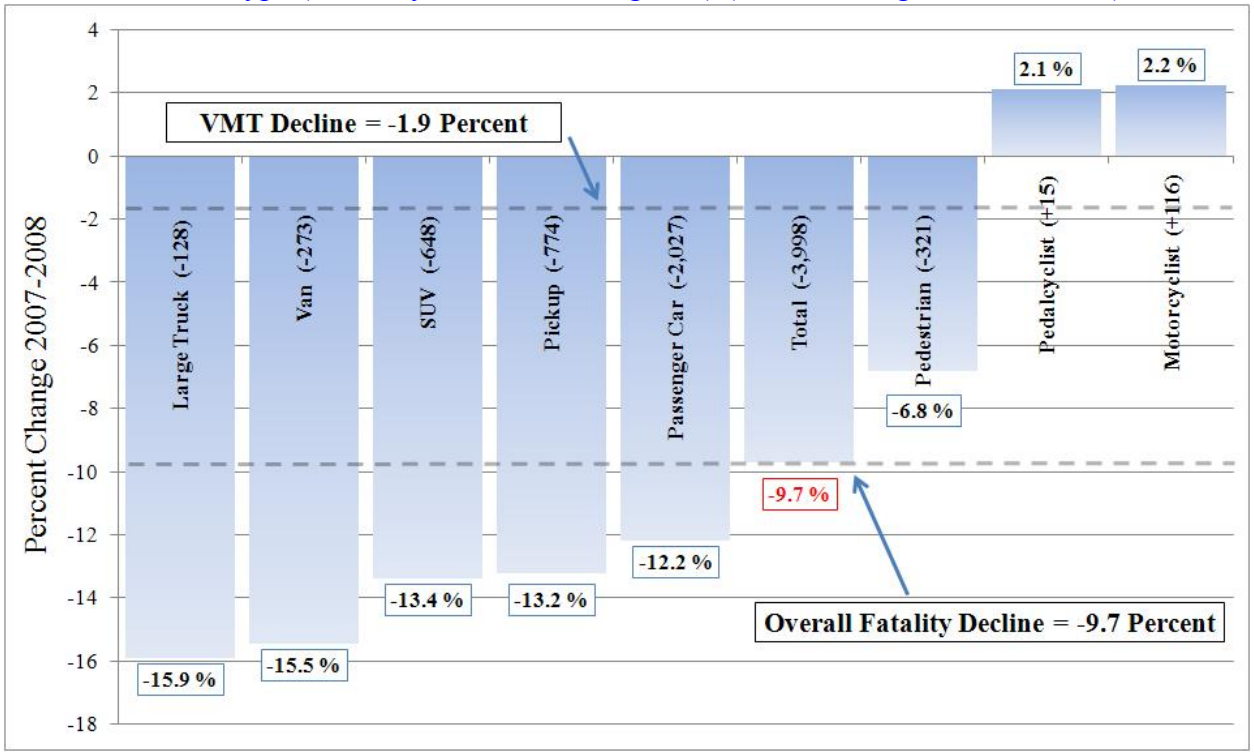
1. Weekday: 6 a.m. Monday – 5:59 p.m. Friday.
2. Weekend: 6 p.m. Friday – 5:59 a.m. Monday

4. Results of FARS and GES Data Analysis

FARS data were analyzed, by numerous categories of interest, to determine potential reasons for the fatality decline. The following sections present the noteworthy findings of this analysis.

Figure 1 (see below) shows the percent change in fatalities, from 2007 to 2008, by person role, i.e., if they are occupants of vehicle (passenger cars, large trucks, etc.) or non-occupants (pedalcyclists or pedestrians). There were declines in all occupant and non-occupant categories except for pedalcyclists and motorcyclists. Motorcyclist fatalities continued upward for the 11th consecutive year. The largest decline in terms of numbers was the 2,027 fewer fatalities to occupants of passenger cars. The largest decline by person role, in terms of percentages, was the nearly 16 percent decrease in the number of fatally injured occupants of large trucks.

Figure 1: Percent Change in Motor Vehicle Crash Fatalities, 2007 to 2008, by Vehicle and Person Type (Mutually Exclusive Categories) (Actual Change in Parenthesis)

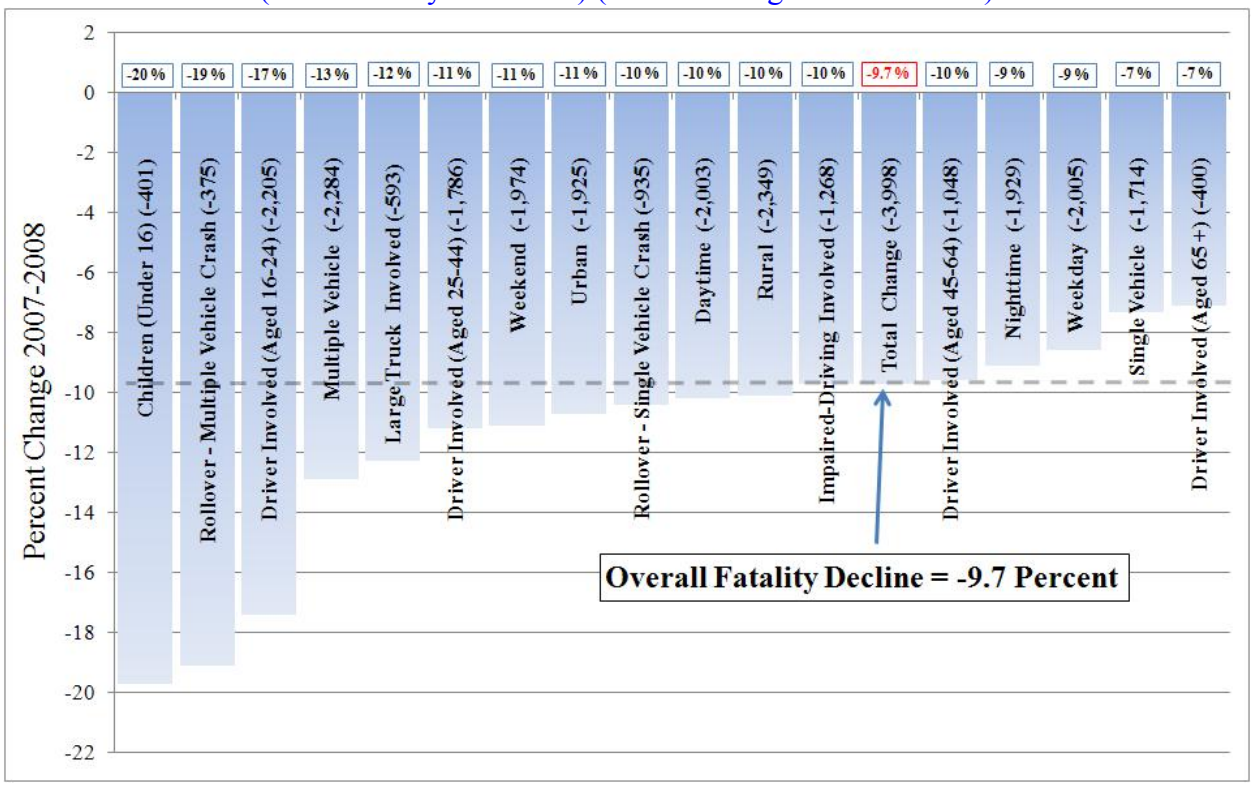


Source: NHTSA FARS 2007 Final and 2008 ARF, FHWA VMT TVT

Figure 2 (see next page) shows percent changes by specific crash categories (day of the week, single versus multiple-vehicle, etc.) and other demographic characteristics (age) of the fatally injured people. These data points are not mutually exclusive and should be interpreted appropriately. Declines larger than the overall decline (a drop of 9.7%) were recorded for fatalities in crashes involving young drivers 16 to 24 years old of passenger vehicles (down 17.4%), and in crashes involving more than one vehicle (down 12.9%). Fatalities among passenger vehicle drivers 25 to 44 years old decreased by 11 percent, those between 45 to 64 years old decreased by 10 percent, and those 65 and older decreased by 7 percent. There was also a large percentage decline (of 20%) for fatalities among children 15 and younger (a total decline of 401 fatalities) and for occupants killed in vehicles that rolled over in multiple-vehicle crashes (down 19%). Also, fatalities in crashes during the weekend recorded a larger percentage

decline than those that occurred during the weekdays (down 11 percent and 9 percent respectively).

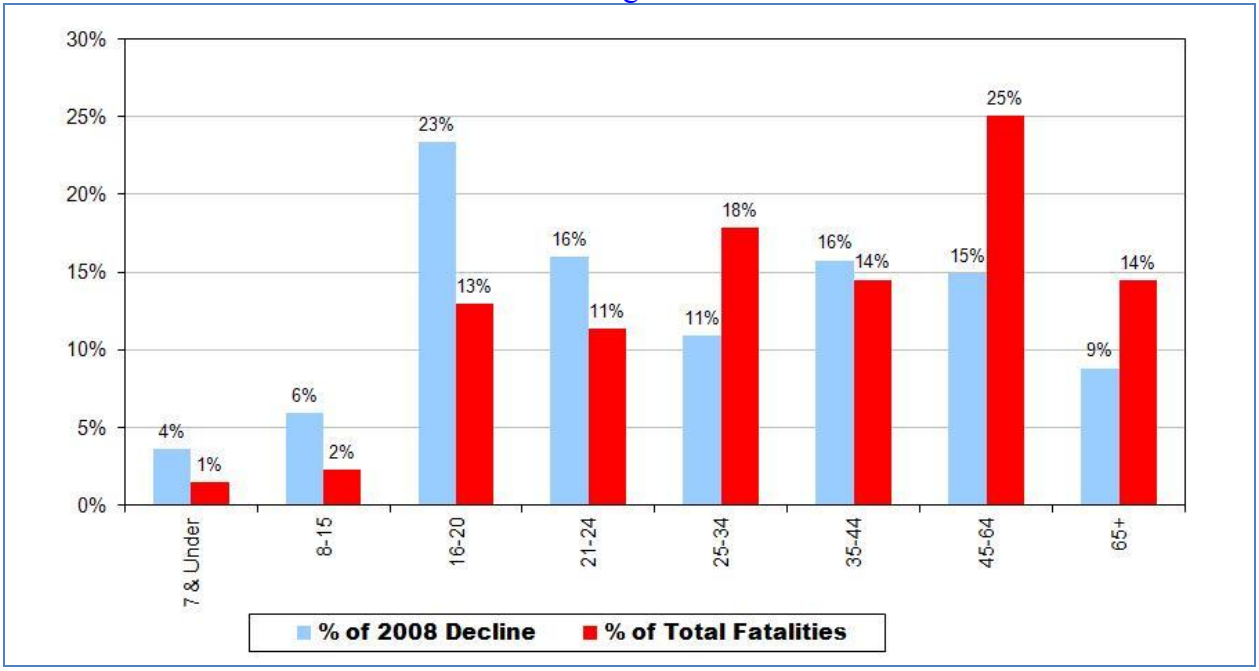
Figure 2: Percent Change in Motor Vehicle Crash Fatalities 2007 to 2008, by Crash Category (Not Mutually Exclusive) (Actual Change in Parenthesis)



Source: NHTSA FARS 2007 Final and 2008 ARF, FHWA VMT

Figure 3 (see next page) looks at these differences more closely and shows how different age groups accounted for the decline in vehicle occupant fatalities seen from 2007 to 2008 (blue columns) as compared to their percent contribution to the current total of vehicle occupant fatalities in 2008 (red columns). The younger age groups (24 and younger) accounted for a larger portion of the overall decline in 2008, while the older age groups (25 and older) accounted for a larger portion of the fatality population as it currently stands.

Figure 3: Percent Change in Motor Vehicle Crash Occupant Fatalities, 2007 to 2008, and Percent of Total Fatalities in 2008, by Age



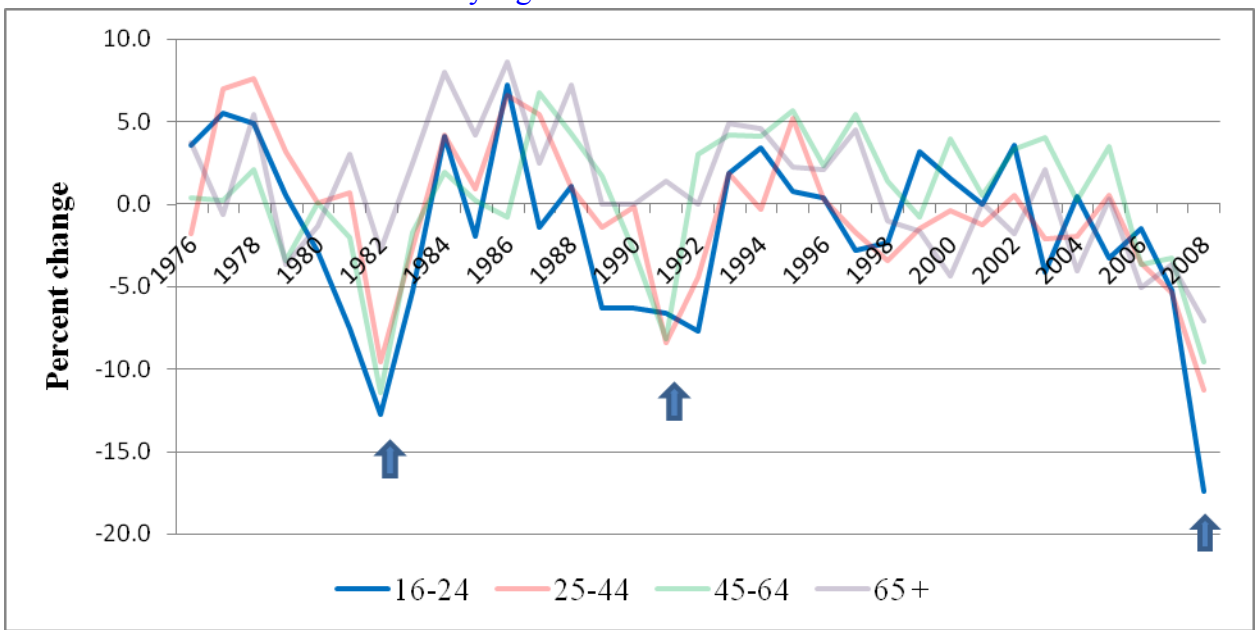
Source: NHTSA FARS 2007 Final and 2008 ARF

4.1. Joint Analysis of Fatal Crashes Involving Young Drivers (16 to 24 Years Old), Multiple-Vehicle Crashes and Crashes During the Weekend

Fatalities in Crashes Involving Young Drivers 16 to 24 Years Old

Figure 2 (see page 7) showed that there were 2,205 fewer fatalities in crashes involving a young driver (aged 16-24) in 2008, which is a 17.4 percent decline from 2007. Figure 4 (see below) shows the trend in the percentage change of these fatalities from 1975 to 2008. There have been two other periods of significant declines in traffic fatalities prior to 2008, one in the early 1980s and the other in the early 1990s. During the 1980s, the percentage decline in fatalities in crashes involving young drivers was much more significant than those in crashes involving drivers of older ages, similar to what we have seen in 2008. During the 1990s, while the percentage decline in fatalities in crashes involving young drivers was not the highest among the age groups, the decline was sustained over many years. It is important that both of these time periods coincided with periods of significant economic downturns, as is the case currently. However, in percentage terms, the decline seen in 2008 in fatalities in crashes involving young drivers has been much more significant than that seen in the past.

Figure 4: Percent Change in Motor Vehicle Crash Fatalities 1975 to 2008, By Age of Involved Drivers

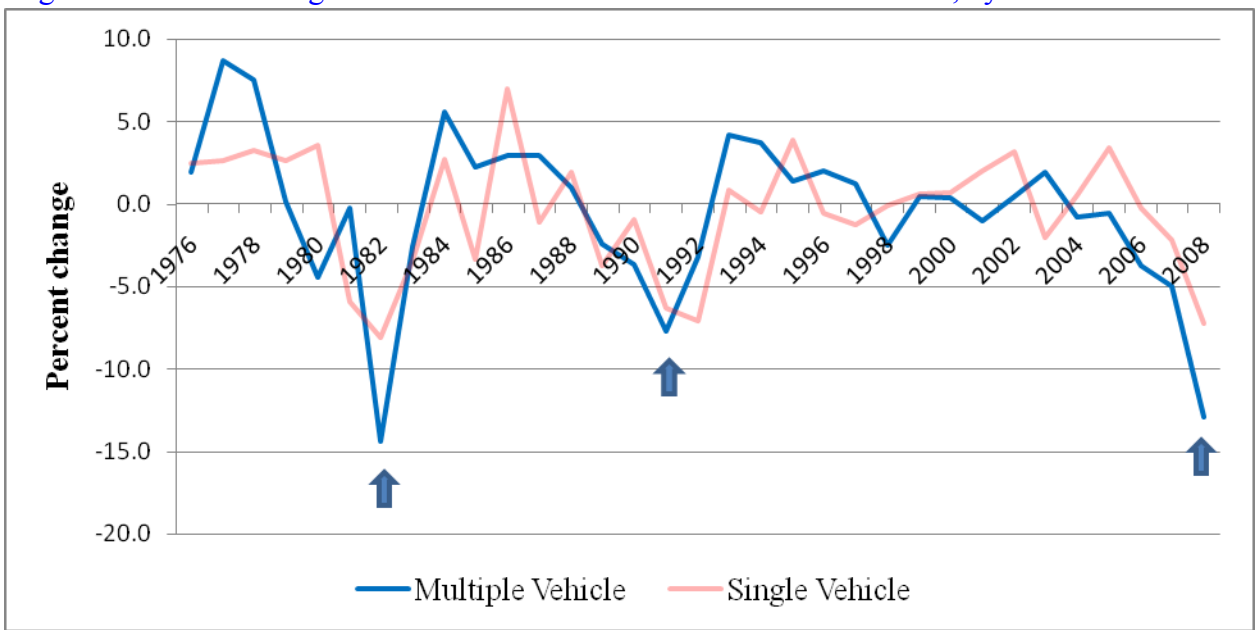


Source: NCSA FARS 1975-2007 Final and 2008 ARF

Fatalities in Multiple-Vehicle Crashes

Figure 2 (see page 7) also showed that there were 2,284 fewer fatalities in multiple-vehicle crashes in 2008, which is a 12.9 percent decline from 2007. Figure 5 (see below) shows the trend in the percentage change of these fatalities across time. As seen in the case of the long-term trend of fatalities in crashes involving young drivers, fatalities in multiple-vehicle crashes also saw significant declines during the early 1980s, the early 1990s and again in 2008. In contrast, the periods of increasing fatalities that occurred during the mid 1980s and mid 1990s saw the percentage increase in multiple-vehicle crashes outpace those of fatalities in single-vehicle crashes.

Figure 5: Percent Change in Motor Vehicle Crash Fatalities 1975 to 2008, by Vehicles Involved



Source: NCSA FARS 1975-2007 Final and 2008 ARF

The similar trends seen in Figures 4 and 5 raise the question of whether or not the changes are related. At the same time, we have seen significant declines in fatalities occurring during the weekend. Table 2 (see below) pulls these three areas together and presents a joint distribution of fatalities in crashes involving young (16-24 years) drivers of passenger vehicles with the day of the week (weekday versus weekend) and the type of the crash (single versus multiple-vehicle). This table reveals some situations where declines were much greater than the overall decline of 9.7 percent. While fatalities in crashes involving a young driver decreased by 17.4 percent, those in crashes that did not involve a young driver decreased by only 6.3 percent. Significant declines of close to 20 percent were recorded in multiple-vehicle crashes involving young drivers during both the weekdays and the weekend. Fatalities in crashes involving young drivers during the weekend decreased by about 19 percent while those in weekend crashes that did not involve a young driver decreased by only about 7 percent.

Table 2: Fatality Declines, by Day of Week, Crash Type, and Age of Passenger Vehicle Driver Involved, 2007-2008

Day of Week by Crash Type		Young Driver Involved (16-24 Years Old)				Total	
		Yes		No			
		2007 to 2008 Change		2007 to 2008 Change		2007 to 2008 Change	
		#	%	#	%	#	%
Weekday	Single-Vehicle Crash	-345	-11.7	-411	-4.4	-756	-6.1
	Multiple-Vehicle Crash	-735	-19.9	-514	-7.0	-1,249	-11.3
	Total	-1,080	-16.3	-925	-5.5	-2,005	-8.6
Weekend	Single-Vehicle Crash	-598	-18.0	-336	-4.3	-934	-8.3
	Multiple-Vehicle Crash	-540	-20.1	-500	-12.7	-1,040	-15.7
	Total	-1,138	-19.0	-836	-7.1	-1,974	-11.1
Total	Single-Vehicle Crash	-932	-14.9	-782	-4.5	-1,714	-7.3
	Multiple-Vehicle Crash	-1,273	-19.9	-1,011	-9.0	-2,284	-12.9
	Total	-2,205	-17.4	-1,793	-6.3	-3,998	-9.7

Source: NHTSA FARS 2007 Final and 2008 ARF
Changes that are larger than the average (-9.7) are highlighted. For long-term trends see Table A3 in the Appendix.

4.2. Joint Analysis of Drivers Involved in Injury Crashes by Crash Type and Day of the Week

Table 3 depicts the changes from 2007 to 2008 in the estimated number of drivers of passenger vehicles involved in injury crashes (crashes that resulted in one or more non-fatal injuries). These estimates were generated from the National Automotive Sampling System's General Estimates System (GES) and changes that were statistically significant are shown in red. As seen in Table 4, there were about 57,000 fewer 16- to 24-year-old drivers involved in injury crashes in 2008, a 7.3-percent decline from 2007. This decline was statistically significant (α=.05). In comparison, drivers 25 and older involved in injury crashes declined by about 4.6 percent. This decline was also statistically significant. There were also statistically significant declines across both age groups in drivers involved in injury crashes during the weekend, although the magnitude of the decline was greater for the younger drivers (13.6% versus 8.3% decline). Declines were seen across both age groups in drivers involved in multiple-vehicle injury crashes, although the decline among the younger drivers was not statistically significant.

Table 3: Estimated Number of Drivers Involved in Injury-Only Crashes, By Day of Week, Crash Type, and Age of Driver, 2007-2008

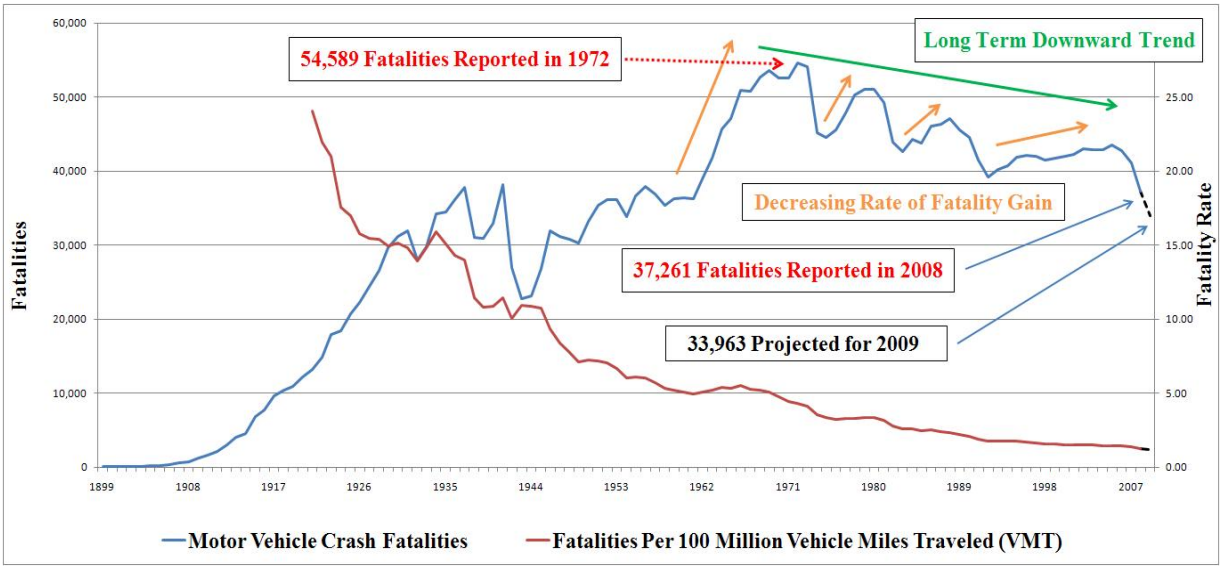
Day of Week by Crash Type		Driver Age				Total	
		16-24		25+			
		2007 to 2008 Change		2007 to 2008 Change		2007 to 2008 Change	
		Num	%	Num	%	Num	%
Weekday	Single-Vehicle Crash	-7,300	-7.5	18,948	9.5	11,648	3.9
	Multiple-Vehicle Crash	-14,638	-3.5	-65,268	-5.0	-79,906	-4.6
	Total	-21,937	-4.2	-46,319	-3.1	-68,256	-3.4
Weekend	Single-Vehicle Crash	-12,053	-15.6	-10,904	-9.4	-22,957	-11.8
	Multiple-Vehicle Crash	-22,846	-12.7	-37,190	-8.1	-60,036	-9.4
	Total	-34,899	-13.6	-48,094	-8.3	-82,993	-10.0
Total	Single-Vehicle Crash	-19,353	-11.1	8,044	2.5	-11,309	-2.3
	Multiple-Vehicle Crash	-37,484	-6.2	-102,458	-5.8	-139,942	-5.9
	Total	-56,837	-7.3	-94,414	-4.6	-151,251	-5.3

Source: NHTSA NASS GES 2007-2008
Statistically significant changes (α=.05) are highlighted

4.3. Long-Term Trends in Overall Fatalities

Figure 6 (see next page) examines the decline in fatalities seen in 2008 in a historical context. The Federal Government maintains a record of motor vehicle traffic crash fatalities going back to 1899. This timeline shows that 1972 was the peak year for reported deaths, with 54,589 people killed. Since this time the United States has experienced a long-term decline in motor vehicle crash fatalities that has led to the current number reported in 2008, with a further reduction being projected for 2009. As can be clearly seen in Figure 6, since 1972, the long-term trend of fatalities has moved through three complete peak-to-peak cycles, with 2005 being the last peak year.

Figure 6: Motor Vehicle Crash Fatalities and Fatality Rates
(Per 100 Million Vehicle Miles Traveled) 1899-2009*



Source: 1899-1974 – NCHS, HEW and State Accident Summaries; NHTSA FARS 1975-2007 Final and 2008 ARF; *2009 is an estimate; FHWA. See Appendix for underlying time series data.

Table 4 further examines the trend of fatalities since the 1972 peak. In this table we can see the number of fatalities lost or gained in each cycle of the long-term trend. The key observation here is that the magnitude of each peak since 1972 has progressively got smaller and the period of each successive peak-to-peak cycle have steadily grown (7, 9, and 17 years respectively).

Table 4: Motor Vehicle Traffic Fatalities – Peak/Trough Years, 1972-2009

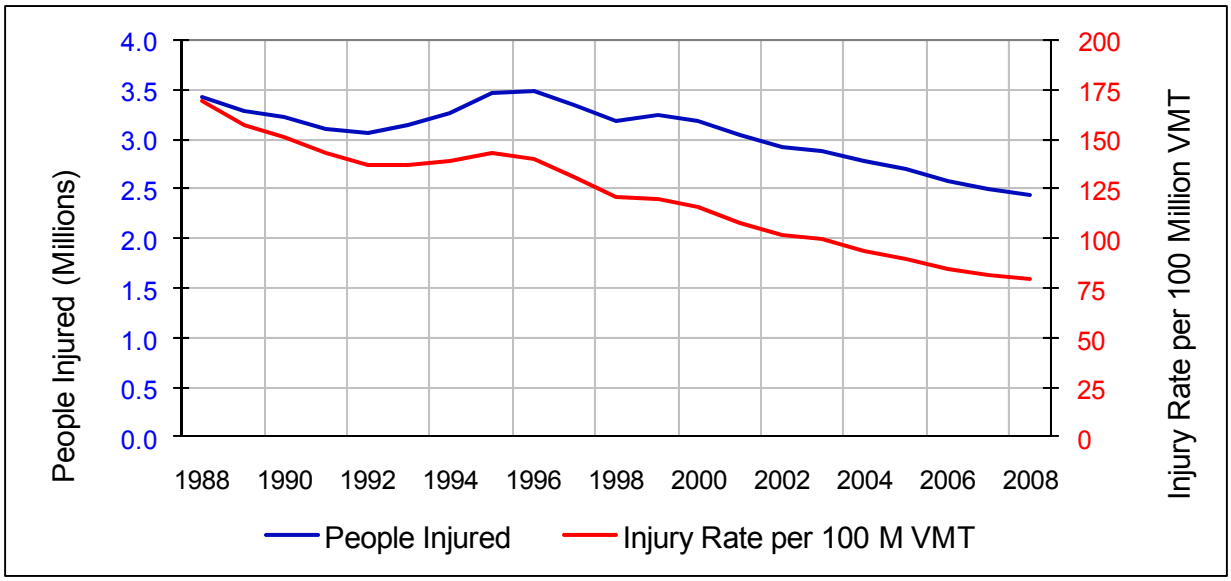
Year	Fatalities	Peak or Trough Year	Length in Years to Reach Peak or Trough	Loss or Gain of Fatalities Since Previous Peak or Trough
1972	54,589	*Peak	-	-
1975	44,525	Trough	3	-10,064 [-18.4%]
1979	51,093	Peak	4	+6,568 [+14.8%]
1983	42,589	Trough	4	-8,504 [-16.6%]
1988	47,087	Peak	5	+4,498 [+10.6%]
1992	39,250	Trough	4	-7,837 [-16.6%]
2005	43,510	Peak	13	+4,260 [+10.8%]
2008	37,261	Trough	3	-6,249 [-14.4%]
**2009*	*33,963*	*Trough*	*4*	*-9,547[-21.9%]*

Source: NHTSA FARS. *Highest year recorded for fatalities, **Estimate for 2009. Will be lowest year since 1954.

4.4. Long-Term Trends in Nonfatal Injuries

The estimated number of people injured in motor vehicle traffic crashes has been on a steady declining trend since 1999. In fact, people injured have dropped an estimated 27.5 percent since reaching a near-term high in 1999. The rate of people injured has also fallen from 120 per 100 million VMT in 1999 to 80 per 100 million VMT in 2008. These trends are shown in Figure 7 below. A NHTSA report has also corroborated this significant downward trend in people injured with data from other sources (Starnes, 2008).

Figure 7: Long-Term Trends in People Injured and the Injury Rate Per 100 Million VMT, 1988-2008



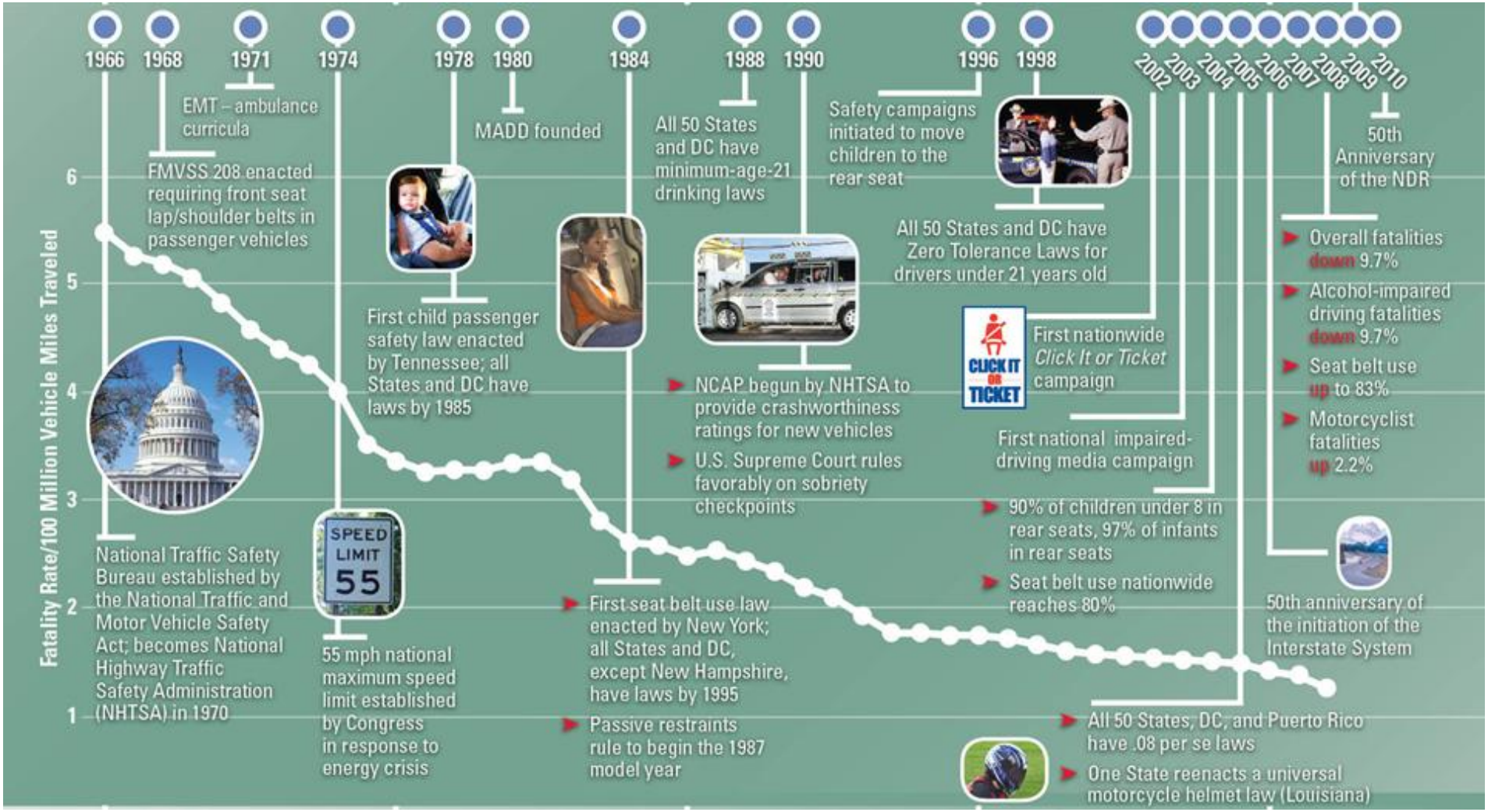
Source: NHTSA GES 1988-2008.

4.5. Lives Saved by NHTSA Programs and Vehicle Improvements

Increasing numbers of people killed in motor vehicle traffic crashes during the 1960s led to the establishment of the National Highway Traffic Safety Administration (NHTSA) in 1970. Since this time, numerous occupant/vehicle and road safety laws have been enacted. Figure 8 presents a timeline of NHTSA activities since its founding.

Behavioral programs and vehicle improvements have also continued to save a significant number of lives each year. In 2008, an estimated 244 lives were saved by the use of child restraints, 13,250 lives of people 5 and older were saved by seat belts, 2,546 lives of people 13 and older were saved by air bags, 1,829 lives were saved by the use of motorcycle helmets, and 714 lives were saved by minimum-drinking-age laws (NHTSA, 2009). Significant life-saving vehicle technologies like electronic stability control (ESC) have begun to penetrate the vehicle fleet. NHTSA estimates ESC would save 5,300 to 9,600 lives and prevent 156,000 to 238,000 injuries in all types of crashes annually once all light vehicles on the road are equipped with ESC (NHTSA, 2007).

Figure 8: Behavioral and Vehicle Improvement Milestones and Fatality Rates per 100 Million VMT, 1966 – 2009*



Source: 1966-1974 – NCHS, HEW and State Accident Summaries; NHTSA FARS 1975-2007 Final and 2008 ARF; *2009 is an estimate; FHWA. See Appendix for underlying time series data.

5. Effect of Downturn in the U.S. Economy

As discussed in the previous section, the large decline in fatalities seen since the early 1970s occurred at a time when significant vehicle and occupant safety regulations and programs were being enacted by NHTSA and the States. In addition to the continued effect of these safety countermeasures, the large drop in fatalities in 2008 and 2009 has coincided with a recession in the U.S. economy. According to data released by the Bureau of Labor Statistics the United States entered a period of economic recession in December 2007. As we can see in Figure 9, this recession saw the unemployment rate as reported by the BLS more than doubling, from 4.7 percent of the working population in November 2007 up to 10.2 percent by October 2009.

Figure 9: U.S. Unemployment Rate, 2007-2009

Source: BLS 2007-2009

Analysis of the FARS crash data shows that the previous two largest drops in fatalities also occurred during times of recession. Table 5 presents key statistics for the three most recent U.S. economic recessions.

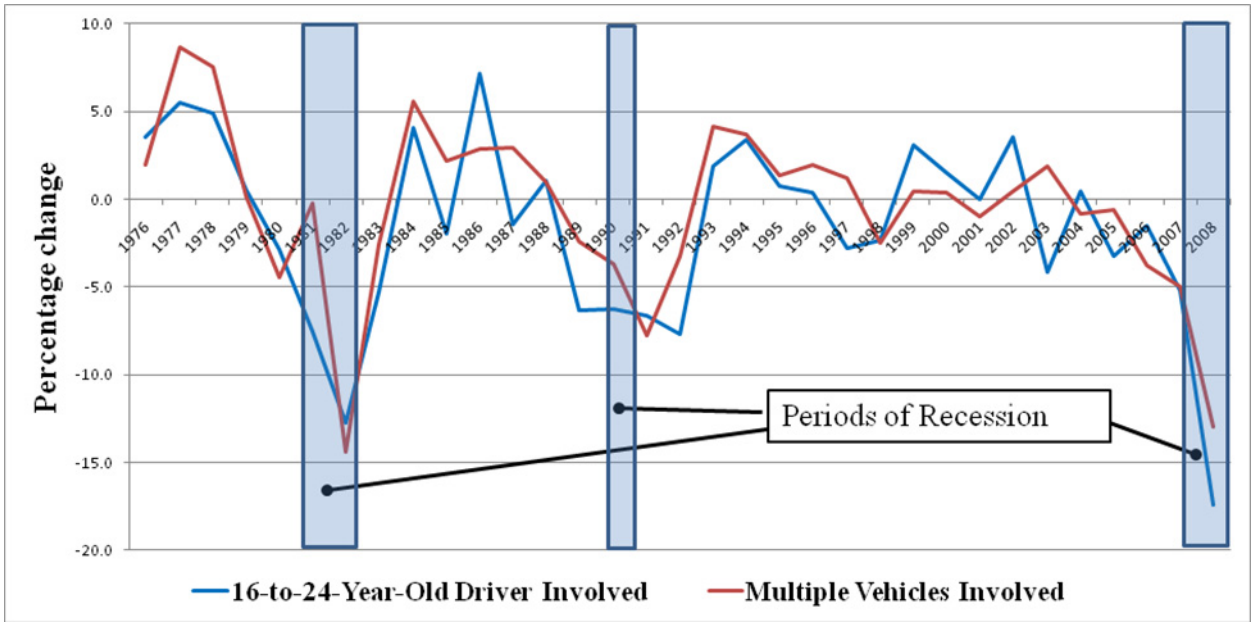
Table 5: Recent U.S. Economic Recessions

Recession Period	Length of Recession	Point of Peak Unemployment
July 1981 to November 1982	16 Months	November 1982 (10.8 Percent)
July 1990 to March 1991	8 Months	June 1992 (7.8 Percent)
December 2007 to Present		October 2009 (10.2 Percent)

Source: BLS 1981-2010

In particular, the fatality drops in these time periods were especially similar when looking at crashes involving young drivers of passenger vehicles and crashes involving more than one vehicle (see Figure 10 below).

Figure 10: Percentage Change in Fatal Multiple Vehicle Crashes and Percentage Change in Fatal Crashes Involving Young Drivers, 1975 to 2008



Source: NCSA FARS 1975-2007 Final and 2008 ARF, BLS

The current unemployment rate among 16- to 24-year-olds is at a rate far greater (about twice) than the national average. It could be hypothesized that this likely affected not only the ability of the people of this age group to own and maintain motor vehicles but also the way that the people in this age group are likely to operate motor vehicles. Not only is the exposure risk reduced in context of travelling to a place of employment but it is likely that this age group has significantly reduced much of its discretionary leisure travel.

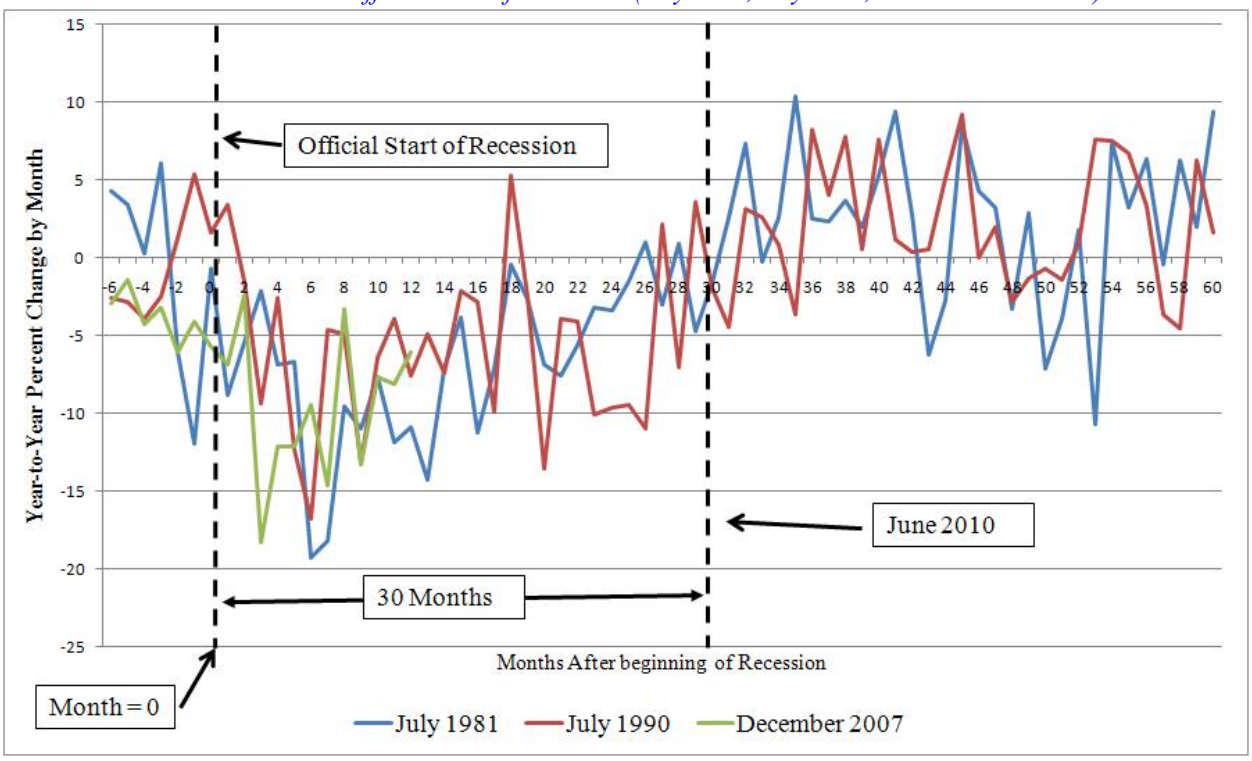
The drop in multiple-vehicle crashes may be explained in a few ways. The VMT dropped by about 1.9 percent in 2008 and it is possible that not only has driving dropped due to increased unemployment but that also, because of the economic situation, that people have cut back on discretionary travel. It is plausible that this has reduced road congestion to some degree and that this has subsequently led to a lower probability of multiple-vehicle crashes occurring.

5.1. Past Economic Recoveries and Increasing Fatalities

When looking at motor vehicle crash fatalities during the last two recessionary periods we see some similar patterns emerge. Figure 11 overlays year-to-year changes, by month, for the 1981 and 1990 recessions. We can see that the month-to-month fatality declines began to taper off at around 30 months from the official beginning of the recession. For the current recession, which officially began in December 2007, the 30th month will be June 2010.

Figure 11: Overlay of the Year-to-Year Percentage Change in Fatalities by Month.

Note: Month=0 is Official Start of Recession (July 1981, July 1990, and December 2007)



Source: NCSA FARS, BLS

5.2. Fatality Reductions and Unemployment Changes by Metro Areas

Examining the fatality data with unemployment rates reported by the BLS showed that the extent of declines in fatalities was greater in many areas that had unemployment rates that were higher than the national average. The national unemployment rate steadily increased from late 2007 through late 2009 but has recently held steady through early 2010.

Data from BLS also tracks the unemployment rates for Metropolitan Statistical Areas (MSAs). MSAs were categorized into top, middle, and bottom third of MSAs by the change in the unemployment rate, as seen in Table 6 below. MSAs in the bottom third, those with the highest increase in unemployment rates between 2007 and 2008, also had the largest percentage decline (-12.4%) in fatalities, followed by MSAs in the middle third (-8.7%). MSAs in the top third, those with the lowest increase in the unemployment rates, had the smaller decline in fatalities (-8.2%).

Table 6: Percentage Change in Fatalities by Metropolitan Statistical Area Unemployment Rate Category 2007-2008

MSA Unemployment Rate Change (2007-2008)	Year		Change	% Change
	2007	2008		
Top Third (under 0.8 percentage points)	5,842	5,365	-477	-8.2%
Middle Third (0.8 – 1.3 percentage points)	8,612	7,867	-745	-8.7%
Bottom Third (over 1.3 percentage points)	13,448	11,781	-1,667	-12.4%
Source: Bureau of Labor Statistics Local Area Unemployment				

There were significant disparities in the extent of the decline within States among the major Metropolitan Statistical Areas (MSAs) and with the rest of the State. MSAs are clusters of counties around major urban populated cities that have heavy commuting and economic ties between them. Fatality changes in MSAs can be due to a complex combination of changes in the local economy (unemployment, foreclosure rate, etc.), changes in traffic volume going through the MSA or even specific traffic campaigns or countermeasures within the MSA. The tables below are merely meant to point out that conclusions about fatality changes for a State should be interpreted in the context that there can be significant spatial differences within that State. For example, as shown in Table 7 below, while fatalities in Arizona declined by about 12.5 percent in 2008, those within the Phoenix MSA declined by about 32 percent as compared to fatalities within the Tucson MSA declined by about 10 percent. Fatality changes by MSAs have only been provided for a few States that contain large MSAs. A comprehensive listing of fatality changes for all the MSAs has been provided in the Appendix in Table A2.

Table 7: Percentage Change in Fatalities, by Metropolitan Statistical Area
Arizona, 2007-2008

MSA	Year		Change	% Change
	2007	2008		
Arizona	1,071	937	-134	-12.5%
Phoenix-Mesa-Scottsdale	542	371	-171	-31.5%
Tucson	128	115	-13	-10.2%
Prescott	59	27	-32	-54.2%
Flagstaff	54	21	-33	-61.1%

Source: Fatality Analysis Reporting System (FARS) 2007 Final and 2008 ARF

Nevada: As shown in Table 8, while Nevada recorded a decline of about 13 percent statewide, fatalities within the Las Vegas MSA declined by about 19 percent and those within the Reno-Sparks MSA were down by about 27 percent. The metro areas of Las Vegas and Reno were adversely affected by the downturn in the economy during 2008.

Table 8: Percentage Change in Fatalities, by Metropolitan Statistical Area
Nevada, 2007-2008

MSA	Year		Change	% Change
	2007	2008		
Nevada	373	324	-49	-13.1%
Las Vegas-Paradise	249	202	-47	-18.9%
Reno-Sparks	45	33	-12	-26.7%

Source: FARS 2007 Final and 2008 ARF

California: As shown in Table 9, while California recorded a decline of about 14 percent, fatalities within the Los Angeles MSA declined by only about 9 percent and those within the other major MSAs were down by more significant amounts.

Table 9: Percentage Change in Fatalities, by Metropolitan Statistical Area
California, 2007-2008

MSA	Year		Change	% Change
	2007	2008		
California	3,995	3,434	-561	-14.0%
Los Angeles-Long Beach	959	871	-88	-9.2%
Riverside-San Bernardino	682	546	-136	-19.9%
San Francisco-Oakland	264	220	-44	-16.7%
Sacramento	234	169	-65	-27.8%
Fresno	161	139	-22	-13.7%
Bakersfield	155	112	-43	-27.7%

Source: FARS) 2007 Final and 2008 ARF

Florida: As shown in Table 10, while Florida recorded a decline of about 7 percent, fatalities within the Miami-Fort Lauderdale MSA declined by about 9 percent, those within the Tampa-St. Petersburg MSA declined by only about 3 percent and those within the Orlando and Deltona-Daytona Beach MSA registered increases.

Table 10: Percentage Change in Fatalities, by Metropolitan Statistical Area
Florida, 2007-2008

MSA	Year		Change	% Change
	2007	2008		
Florida	3,213	2,978	-235	-7.3%
Miami-Fort Lauderdale-Miami Beach	697	637	-60	-8.6%
Tampa-St. Petersburg-Clearwater	408	396	-12	-2.9%
Orlando	303	310	7	+2.3%
Jacksonville	243	192	-51	-21.0%
Lakeland	90	126	36	+40.0%
Deltona-Daytona Beach-Ormond Beach	97	103	6	+6.2%

Source: FARS 2007 Final and 2008 ARF

Illinois: As shown in Table 11, while Illinois recorded a decline of about 16.4 percent, fatalities within the Chicago-Joliet-Naperville MSA declined by only about 12.4 percent and those within the other major MSAs were down by more significant amounts.

Table 11: Percent Change in Fatalities, by Metropolitan Statistical Area (MSA)
Illinois, 2007-2008

MSA	Year		Change	% Change
	2007	2008		
Illinois	1,248	1,043	-205	-16.4%
Chicago-Joliet-Naperville	678	594	-84	-12.4%
Peoria	42	36	-6	-14.3%
Rockford	40	27	-13	-32.5%

Source: FARS 2007 Final and 2008 ARF

North Carolina: As shown in Table 12, while North Carolina recorded a decline of about 14.6 percent, fatalities within the Charlotte-Gastonia MSA declined by about 20.9 percent and those within the Raleigh-Cary MSA declined by only about 12.6 percent.

Table 12: Percent Change in Fatalities, by Metropolitan Statistical Area (MSA)
North Carolina, 2007-2008

MSA	Year		Change	% Change
	2007	2008		
North Carolina	1,676	1,433	-243	-14.5%
Charlotte-Gastonia	215	170	-45	-20.9%
Raleigh-Cary	135	118	-17	-12.6%
Fayetteville	70	44	-26	-37.1%
Wilmington	69	60	-9	-13.0%

Source: FARS 2007 Final and 2008 ARF

South Carolina: As shown in Table 13, while South Carolina recorded a decline of about 14.6 percent, fatalities within the Columbia MSA declined by only about 7.0 percent and those within the other MSAs had much more significant percentage declines.

Table 13: Percent Change in Fatalities, by Metropolitan Statistical Area (MSA)
South Carolina, 2007-2008

MSA	Year		Change	% Change
	2007	2008		
South Carolina	1,077	920	-157	-14.6%
Columbia	142	132	-10	-7.0%
Greenville	130	101	-29	-22.3%
Myrtle Beach-Conway	88	46	-42	-47.7%
Anderson	49	27	-22	-44.9%

Source: FARS 2007 Final and 2008 ARF

Tennessee: As shown in Table 14, while Tennessee recorded a decline of about 14.5 percent, fatalities within the Nashville-Davidson-Murfreesboro MSA increased marginally by only about 0.4 percent and those within the other MSAs such as Memphis, Knoxville, and Chattanooga had much more significant percentage declines.

Table 14: Percent Change in Fatalities, by Metropolitan Statistical Area (MSA)
Tennessee, 2007-2008

MSA	Year		Change	% Change
	2007	2008		
Tennessee	1,211	1,035	-176	-14.5%
Nashville-Davidson-Murfreesboro	229	230	1	0.4%
Memphis	222	192	-30	-13.5%
Knoxville, TN	123	93	-30	-24.4%
Chattanooga, TN-GA	80	86	6	7.5%

Source: FARS 2007 Final and 2008 ARF

Texas: As shown in Table 15, while Texas recorded a decline of about 2.4 percent, fatalities within the Houston-Baytown-Sugar Land MSA declined by about 6.6 percent and those within the Dallas-Fort Worth-Arlington MSA declined by about 15.3 percent. However, both the San Antonio and Austin MSAs registered increases.

Table 15: Percent Change in Fatalities, by Metropolitan Statistical Area (MSA)
Texas, 2007-2008

MSA	Year		Change	% Change
	2007	2008		
Texas	3,466	3,382	-84	-2.4%
Houston-Baytown-Sugar Land	606	566	-40	-6.6%
Dallas-Fort Worth-Arlington	626	530	-96	-15.3%
San Antonio	203	219	16	7.9%
Austin-Round Rock	182	194	12	6.6%

Source: FARS 2007 Final and 2008 ARF

Virginia: As shown in Table 16, while Virginia recorded a decline of about 19.8 percent, fatalities within the Washington-Arlington-Alexandria MSA declined by about 21.0 percent and those within the Richmond MSA declined by about 29.1 percent.

Table 16: Percent Change in Fatalities, by Metropolitan Statistical Area (MSA)
Virginia, 2007-2008

MSA	Year		Change	% Change
	2007	2008		
Virginia	1,027	824	-203	-19.8%
Washington-Arlington-Alexandria	463	366	-97	-21.0%
Richmond	179	127	-52	-29.1%

Source: FARS 2007 Final and 2008 ARF

Wisconsin: As shown in Table 17, while Wisconsin recorded a decline of about 20.0 percent, fatalities within the Madison MSA declined by about 39.0 percent and those within the Milwaukee-Waukesha MSA declined by about 20.2 percent.

Table 17: Percent Change in Fatalities, by Metropolitan Statistical Area (MSA)
Wisconsin, 2007-2008

MSA	Year		Change	% Change
	2007	2008		
Wisconsin	756	605	-151	-20.0%
Milwaukee-Waukesha	109	87	-22	-20.2%
Madison	82	50	-32	-39.0%
Greenbay	38	18	-20	-52.6%

Source: FARS 2007 Final and 2008 ARF

6. Fatality Declines in Urban, Rural, and Suburban Areas

Law enforcement and those planning on conducting crackdowns and enforcement campaigns are always interested in the rural/urban split of traffic fatalities. Programs and campaigns for rural areas are usually different from those for the urban areas. Table 18 below depicts the changes in traffic fatalities from 2007 to 2008 by whether they occurred in rural or urban areas. Fatalities in urban areas declined by about 10.7 percent while those in rural areas declined by about 10.1 percent. Also, in 2008, about 56 percent (20,905/37,261) of all traffic fatalities occurred in rural areas.

Also shown in Table 18 are fatalities in an area that covers all urban areas as well as suburban areas that are in close proximity (2.5 miles around urban boundaries) to the urban areas. These suburban areas are actually rural areas that are close to the urban areas. An arbitrary distance of 2.5 miles outward of the urban boundary was chosen to represent the suburban areas. The fatalities and fatality changes present a different scenario with the redefined areas. Fatalities in the urban/suburban areas declined by 9.6 percent while those in the outlying rural areas declined by about 11.7 percent in 2008.

Table 18: Percent Change in Fatalities, by Roadway Function Class, 2007-2008

MSA	Year		Change	% Change
	2007	2008		
Urban	17,908	15,893	-1,925	-10.7%
Rural	23,254	20,905	-2,349	-10.1%
Urban + 2.5-Mile Buffer (Suburban)	25,298	22,873	-2,425	-9.6%
Rural - 2.5-Mile Buffer (Rural)	15,864	14,015	-1,849	-11.7%

Source: Fatality Analysis Reporting System (FARS) 2007 Final and 2008 ARF

Also in 2008, more than 60 percent (22,873 out of 37,261) of motor vehicle traffic fatalities occurred within urban/suburban areas, as shown in Table 18. This distribution has already been analyzed and published in a separate report on geo-spatial analysis of rural motor vehicle traffic crashes (Subramanian, 2009).

7. Conclusions

Fatalities in motor vehicle traffic crashes reached 43,510 in 2005. This is the highest number of fatalities during the 15-year period from 1991-2005. Since this recent peak, the number of reported fatalities has declined every year, down to 37,261 in 2008. In 2008 in particular, fatalities in motor vehicle traffic crashes declined by 9.7 percent, reaching the lowest level since 1961. Fatalities are also projected to decline approximately another 9 percent in 2009.

NHTSA administered behavioral and vehicle safety programs, both in the crashworthiness and crash avoidance areas, and through the issuing of Federal Motor Vehicle Safety Standards has contributed tremendously to the long-term downward trend seen in motor vehicle traffic crash fatalities. In addition to the continued effect of these safety countermeasures, the large drop in fatalities in 2008 and 2009 has coincided with a recession in the U.S. economy.

Examination of the 2007 and 2008 FARS data shows that the fatality declines were driven by significant reductions in fatalities in crashes involving younger drivers 16 to 24 years old. Also, there were significant reductions in the number of children 15 and younger killed in traffic crashes. The reductions in fatalities in crashes involving younger drivers manifest significantly in corresponding reductions in multiple-vehicle crashes and those occurring during the weekend.

In 2008, there were an estimated 57,000 fewer young drivers 16 to 24 years old involved in injury crashes, about a 7.3-percent decline from 2007. This decline was statistically significant (α=.05). In comparison, drivers 25 and older involved in injury crashes declined by about 4.6 percent. This decline was also statistically significant. There were significant declines across both age groups in drivers involved in injury crashes during the weekend, although the magnitude of the decline was greater for the younger drivers (13.6%decline versus 8.3% decline). Declines were seen across both age groups in drivers involved in multiple-vehicle injury crashes, although the decline among the younger drivers was not statistically significant.

The Bureau of Labor Statistics has reported on the younger workforce in the United States having significantly higher rates of unemployment as compared to older age groups. It seems reasonable to suggest that this has probably had a big impact in the travel, both discretionary and non-discretionary, among young drivers.

Fatality declines mirror the change in unemployment rates in the MSAs. MSAs were put into three categories based on the percent change in the rate of unemployment, with the bottom third representing the MSAs that had the largest percent increase in the rate of unemployment. Fatalities declined by about 12.4 percent in MSAs that were in the bottom third from 2007 to 2008. The corresponding change for MSAs in the middle third and upper third were 8.7 percent and 8.2 percent, respectively.

There were also big disparities in fatality reductions among MSAs within a State. This was probably a reflection of the varying degrees to which the recent recession has affected various urban areas within a State.

In conclusion, the significant decline in fatalities in 2008 was driven by large decreases in crashes involving young drivers, multiple-vehicle crashes, and crashes occurring during weekends. Areas that experienced greater increases in unemployment rates also recorded higher

decreases in fatalities. When areas are redefined to include buffer zones, fatalities in rural areas declined more significantly than the fatalities in the urban and suburban areas.

Fatalities are projected to continue their significant decline into 2009. The crash data will be available for analysis in August of 2010 and at this time a similar analysis will be performed to see if current trends have continued.

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Appendix:

Table A1: MOTOR VEHICLE TRAFFIC FATALITIES AND FATALITY RATES 1899-2009							
Year	Total Fatalities	Vehicle Miles Traveled (VMT) Millions	Fatality Rate per 100 Million VMT	Year	Total Fatalities	Vehicle Miles Traveled (VMT) Millions	Fatality Rate per 100 Million VMT
1899	26			1954	33,890	561,963	6.03
1900	36			1955	36,688	605,646	6.06
1901	54			1956	37,965	627,843	6.05
1902	79			1957	36,932	647,004	5.71
1903	117			1958	35,331	664,653	5.32
1904	172			1959	36,223	700,480	5.17
1905	252			1960	36,399	718,762	5.06
1906	338			1961	36,285	737,421	4.92
1907	581			1962	38,980	766,734	5.08
1908	751			1963	41,723	805,249	5.18
1909	1,174			1964	45,645	846,298	5.39
1910	1,599			1965	47,089	887,812	5.30
1911	2,043			1966	50,894	925,899	5.50
1912	2,968			1967	50,724	964,005	5.26
1913	4,079			1968	52,725	1,015,869	5.19
1914	4,468			1969	53,543	1,061,791	5.04
1915	6,779			1970	52,627	1,109,724	4.74
1916	7,766			1971	52,542	1,178,811	4.46
1917	9,630			1972	54,589	1,259,786	4.33
1918	10,390			1973	54,052	1,313,110	4.12
1919	10,896			1974	45,196	1,280,544	3.53
1920	12,155			1975	44,525	1,327,664	3.35
1921	13,253	55,027	24.08	1976	45,523	1,402,380	3.25
1922	14,859	67,697	21.95	1977	47,878	1,467,027	3.26
1923	17,870	84,995	21.02	1978	50,331	1,544,704	3.26
1924	18,400	104,838	17.55	1979	51,093	1,529,133	3.34
1925	20,771	122,346	16.98	1980	51,091	1,527,295	3.35
1926	22,194	140,735	15.77	1981	49,301	1,555,308	3.17
1927	24,470	158,453	15.44	1982	43,945	1,595,010	2.76
1928	26,557	172,856	15.36	1983	42,589	1,652,788	2.58
1929	29,592	197,720	14.97	1984	44,257	1,720,269	2.57
1930	31,204	206,320	15.12	1985	43,825	1,774,826	2.47
1931	31,963	216,151	14.79	1986	46,087	1,834,872	2.51
1932	27,979	200,517	13.95	1987	46,390	1,921,204	2.41
1933	29,746	200,642	14.83	1988	47,087	2,025,962	2.32
1934	34,240	215,563	15.88	1989	45,582	2,096,487	2.17
1935	34,494	228,568	15.09	1990	44,599	2,144,362	2.08
1936	36,126	252,128	14.33	1991	41,508	2,172,050	1.91
1937	37,819	270,110	14.00	1992	39,250	2,247,151	1.75
1938	31,083	271,177	11.46	1993	40,150	2,296,378	1.75
1939	30,895	285,402	10.83	1994	40,716	2,357,588	1.73
1940	32,914	302,188	10.89	1995	41,817	2,422,696	1.73
1941	38,142	333,612	11.43	1996	42,065	2,485,848	1.69
1942	27,007	268,224	10.07	1997	42,013	2,561,695	1.64
1943	22,727	208,192	10.92	1998	41,501	2,631,522	1.58
1944	23,165	212,713	10.89	1999	41,717	2,691,056	1.55
1945	26,785	250,173	10.71	2000	41,945	2,746,925	1.53
1946	31,874	340,880	9.35	2001	42,196	2,797,287	1.51
1947	31,193	370,894	8.41	2002	43,005	2,855,508	1.51
1948	30,775	397,957	7.73	2003	42,884	2,890,450	1.48
1949	30,246	424,461	7.13	2004	42,836	2,964,788	1.44
1950	33,186	458,246	7.24	2005	43,510	2,989,430	1.46
1951	35,309	491,093	7.19	2006	42,708	3,014,371	1.42
1952	36,088	513,581	7.03	2007	41,259	3,032,399	1.36
1953	36,190	544,433	6.65	2008	37,261	2,973,509	1.25
1954	33,890	561,963	6.03	*2009*	*33,963*	*2,932,374*	*1.16*

DEATHS: Traffic Fatalities That Occur Within 30 Days of the Crash

1899-1974 - National Center for Health Statistics, HEW, and State Accident Summaries (Adjusted to 30-Day Traffic Deaths by NHTSA)

1975-2008 - National Highway Traffic Safety Administration, Fatality Analysis Reporting System (FARS), 2009 Projections

Vehicle Miles Traveled (VMT) - Federal Highway Administration - Not Available for Years 1899 - 1920

Table A2: Fatalities, Fatality Changes and Percentage Change in Fatalities, 2007-2008, by MSAs									
Metropolitan Statistical Area (MSA)	2007	2008	Diff	%	Metropolitan Statistical Area (MSA)	2007	2008	Diff	%
Anniston-Oxford, AL	23	24	1	4.3%	Pensacola-Ferry Pass-Brent, FL	86	74	-12	-14.0%
Auburn-Opelika, AL	21	27	6	28.6%	Port St. Lucie-Fort Pierce, FL	54	57	3	5.6%
Birmingham-Hoover, AL	221	195	-26	-11.8%	Punta Gorda, FL	28	23	-5	-17.9%
Decatur, AL	33	28	-5	-15.2%	Sarasota-Bradenton-Venice, FL	105	88	-17	-16.2%
Dothan, AL	41	17	-24	-58.5%	Tallahassee, FL	43	73	30	69.8%
Florence-Muscle Shoals, AL	22	20	-2	-9.1%	Tampa-St. Petersburg-Clearwater, FL	408	396	-12	-2.9%
Gadsden, AL	25	20	-5	-20.0%	Vero Beach, FL	20	20	0	0.0%
Huntsville, AL	56	61	5	8.9%	Albany, GA	21	30	9	42.9%
Mobile, AL	104	80	-24	-23.1%	Athens-Clarke County, GA	28	27	-1	-3.6%
Montgomery, AL	81	85	4	4.9%	Atlanta-Sandy Springs-Marietta, GA	634	576	-58	-9.1%
Tuscaloosa, AL	67	51	-16	-23.9%	Brunswick, GA	27	25	-2	-7.4%
Anchorage, AK	36	33	-3	-8.3%	Dalton, GA	31	20	-11	-35.5%
Fairbanks, AK	19	2	-17	-89.5%	Gainesville, GA	24	26	2	8.3%
Hot Springs, AK	32	18	-14	-43.8%	Hinesville-Fort Stewart, GA	11	12	1	9.1%
Jonesboro, AK	28	26	-2	-7.1%	Macon, GA	41	61	20	48.8%
Little Rock-North Little Rock	113	122	9	8.0%	Rome, GA	26	10	-16	-61.5%
Pine Bluff	28	22	-6	-21.4%	Savannah, GA	44	50	6	13.6%
Fayetteville-Springdale-Rogers, AR-MO	73	53	-20	-27.4%	Valdosta, GA	21	23	2	9.5%
Fort Smith, AR-OK	47	64	17	36.2%	Warner Robins, GA	11	10	-1	-9.1%
Flagstaff, AZ	54	21	-33	-61.1%	Columbus, GA-AL	42	54	12	28.6%
Phoenix-Mesa-Scottsdale, AZ	542	371	-171	-31.5%	Augusta-Richmond County, GA-SC	114	110	-4	-3.5%
Prescott, AZ	59	27	-32	-54.2%	Honolulu, HI	59	40	-19	-32.2%
Tucson, AZ	128	115	-13	-10.2%	Ames, IA	12		-12	-100.0%
Yuma, AZ	30	25	-5	-16.7%	Cedar Rapids, IA	19	20	1	5.3%
Bakersfield, CA	155	112	-43	-27.7%	Des Moines, IA	49	48	-1	-2.0%
Chico, CA	38	32	-6	-15.8%	Dubuque, IA	9	7	-2	-22.2%
El Centro, CA	42	45	3	7.1%	Iowa City, IA	13	18	5	38.5%
Fresno, CA	161	139	-22	-13.7%	Waterloo-Cedar Falls, IA	18	14	-4	-22.2%
Hanford-Corcoran, CA	34	34	0	0.0%	Davenport-Moline-Rock Island, IA-IL	42	27	-15	-35.7%
Los Angeles-Long Beach-Santa Ana, CA	959	871	-88	-9.2%	Sioux City, IA-NE-SD	16	22	6	37.5%
Madera, CA	47	35	-12	-25.5%	Boise City-Nampa, ID	55	54	-1	-1.8%
Merced, CA	46	55	9	19.6%	Coeur d'Alene, ID	17	25	8	47.1%
Modesto, CA	82	56	-26	-31.7%	Idaho Falls, ID	15	10	-5	-33.3%
Napa, CA	15	19	4	26.7%	Pocatello, ID	8	9	1	12.5%
Oxnard-Thousand Oaks-Ventura, CA	74	75	1	1.4%	Lewiston, ID-WA	7	9	2	28.6%
Redding, CA	25	21	-4	-16.0%	Bloomington-Normal, IL	21	13	-8	-38.1%
Riverside-San Bernardino-Ontario, CA	682	546	-136	-19.9%	Champaign-Urbana, IL	21	28	7	33.3%
Sacramento--Arden-Arcade--Roseville, CA	234	169	-65	-27.8%	Danville, IL	12	13	1	8.3%
Salinas, CA	48	49	1	2.1%	Decatur, IL	11	10	-1	-9.1%
San Diego-Carlsbad-San Marcos, CA	292	263	-29	-9.9%	Kankakee-Bradley, IL	17	15	-2	-11.8%
San Francisco-Oakland-Fremont, CA	264	220	-44	-16.7%	Peoria, IL	42	36	-6	-14.3%
San Jose-Sunnyvale-Santa Clara, CA	107	109	2	1.9%	Rockford, IL	40	27	-13	-32.5%
San Luis Obispo-Paso Robles, CA	52	30	-22	-42.3%	Springfield, IL	28	19	-9	-32.1%
Santa Barbara-Santa Maria-Goleta, CA	51	36	-15	-29.4%	Chicago-Naperville-Joliet, IL-IN-WI	678	594	-84	-12.4%
Santa Cruz-Watsonville, CA	27	29	2	7.4%	Anderson, IN	20	12	-8	-40.0%
Santa Rosa-Petaluma, CA	51	38	-13	-25.5%	Bloomington, IN	22	23	1	4.5%
Stockton, CA	111	87	-24	-21.6%	Columbus, IN	19	11	-8	-42.1%
Vallejo-Fairfield, CA	50	35	-15	-30.0%	Elkhart-Goshen, IN	46	29	-17	-37.0%
Visalia-Porterville, CA	96	77	-19	-19.8%	Fort Wayne, IN	42	33	-9	-21.4%
Yuba City, CA	23	29	6	26.1%	Indianapolis, IN	184	175	-9	-4.9%
Boulder, CO	16	23	7	43.8%	Kokomo, IN	12	13	1	8.3%
Colorado Springs, CO	40	49	9	22.5%	Lafayette, IN	26	27	1	3.8%
Denver-Aurora, CO	184	203	19	10.3%	Michigan City-La Porte, IN	23	24	1	4.3%
Fort Collins-Loveland, CO	24	19	-5	-20.8%	Muncie, IN	27	7	-20	-74.1%
Grand Junction, CO	29	14	-15	-51.7%	Terre Haute, IN	28	32	4	14.3%
Greeley, CO	49	52	3	6.1%	Evansville, IN-KY	52	40	-12	-23.1%
Pueblo, CO	23	26	3	13.0%	South Bend-Mishawaka, IN-MI	24	36	12	50.0%
Bridgeport-Stamford-Norwalk, CT	49	37	-12	-24.5%	Lawrence, KS	5	14	9	180.0%
Hartford-West Hartford-East Hartford, CT	94	77	-17	-18.1%	Topeka, KS	27	26	-1	-3.7%
New Haven-Milford, CT	72	67	-5	-6.9%	Wichita, KS	69	62	-7	-10.1%
Norwich-New London, CT	35	14	-21	-60.0%	Bowling Green, KY	14	27	13	92.9%
Washington-Arlington-Alexandria, DC-VA-MD	463	366	-97	-21.0%	Elizabethtown, KY	21	24	3	14.3%
Dover, DE	21	28	7	33.3%	Lexington-Fayette, KY	56	71	15	26.8%
Cape Coral-Fort Myers, FL	93	70	-23	-24.7%	Owensboro, KY	21	9	-12	-57.1%
Deltona-Daytona Beach-Ormond Beach, FL	97	103	6	6.2%	Louisville, KY-IN	172	164	-8	-4.7%
Fort Walton Beach-Crestview-Destin, FL	22	24	2	9.1%	Alexandria, LA	31	24	-7	-22.6%
Gainesville	54	51	-3	-5.6%	Baton Rouge, LA	175	161	-14	-8.0%
Jacksonville, FL	243	192	-51	-21.0%	Houma-Bayou Cane-Thibodaux, LA	62	63	1	1.6%
Lakeland, FL	90	126	36	40.0%	Lafayette, LA	56	47	-9	-16.1%
Miami-Fort Lauderdale-Miami Beach, FL	697	637	-60	-8.6%	Lake Charles, LA	48	51	3	6.3%
Naples-Marco Island, FL	47	32	-15	-31.9%	Monroe, LA	28	32	4	14.3%
Ocala, FL	57	78	21	36.8%	New Orleans-Metairie-Kenner, LA	174	145	-29	-16.7%
Orlando, FL	303	310	7	2.3%	Shreveport-Bossier City, LA	83	63	-20	-24.1%
Palm Bay-Melbourne-Titusville, FL	96	77	-19	-19.8%	Barnstable Town, MA	30	17	-13	-43.3%

Metropolitan Statistical Area (MSA)	2007	2008	Diff	%	Metropolitan Statistical Area (MSA)	2007	2008	Diff	%
Panama City-Lynn Haven, FL	28	21	-7	-25.0%	Pittsfield, MA	10	14	4	40.0%
Springfield, MA	58	44	-14	-24.1%	Binghamton, NY	20	4	-16	-80.0%
Worcester, MA	65	57	-8	-12.3%	Buffalo-Niagara Falls, NY	53	67	14	26.4%
Boston-Cambridge-Quincy, MA-NH	256	227	-29	-11.3%	Elmira, NY	6	6	0	0.0%
Baltimore-Towson, MD	245	238	-7	-2.9%	Glens Falls, NY	17	20	3	17.6%
Salisbury, MD	19	17	-2	-10.5%	Ithaca, NY	7	8	1	14.3%
Cumberland, MD-WV	11	12	1	9.1%	Kingston, NY	26	21	-5	-19.2%
Hagerstown-Martinsburg, MD-WV	47	42	-5	-10.6%	Poughkeepsie-Newburgh-Middletown, NY	57	54	-3	-5.3%
Bangor, ME	18	17	-1	-5.6%	Rochester, NY	80	67	-13	-16.3%
Lewiston-Auburn, ME	11	9	-2	-18.2%	Syracuse, NY	48	43	-5	-10.4%
Portland-South Portland-Biddeford, ME	58	47	-11	-19.0%	Utica-Rome, NY	18	28	10	55.6%
Ann Arbor, MI	30	31	1	3.3%	New York-Northern New Jersey-Long Island, NY	953	913	-40	-4.2%
Battle Creek, MI	21	20	-1	-4.8%	Akron, OH	70	48	-22	-31.4%
Bay City, MI	10	6	-4	-40.0%	Canton-Massillon, OH	41	29	-12	-29.3%
Detroit-Warren-Livonia, MI	344	300	-44	-12.8%	Cleveland-Elyria-Mentor, OH	139	170	31	22.3%
Flint, MI	58	43	-15	-25.9%	Columbus, OH	163	174	11	6.7%
Grand Rapids-Wyoming, MI	94	79	-15	-16.0%	Dayton, OH	86	74	-12	-14.0%
Holland-Grand Haven, MI	20	23	3	15.0%	Lima, OH	14	11	-3	-21.4%
Jackson, MI	24	17	-7	-29.2%	Mansfield, OH	14	16	2	14.3%
Kalamazoo-Portage, MI	51	45	-6	-11.8%	Sandusky, OH	1	11	10	1000.0%
Lansing-East Lansing, MI	42	41	-1	-2.4%	Springfield, OH	25	25	0	0.0%
Monroe, MI	25	22	-3	-12.0%	Toledo, OH	101	72	-29	-28.7%
Muskegon-Norton Shores, MI	26	18	-8	-30.8%	Cincinnati-Middletown, OH-KY-IN	197	192	-5	-2.5%
Niles-Benton Harbor, MI	26	24	-2	-7.7%	Youngstown-Warren-Boardman, OH-PA	66	76	10	15.2%
Saginaw-Saginaw Township North, MI	26	26	0	0.0%	Lawton, OK	25	15	-10	-40.0%
Rochester, MN	18	12	-6	-33.3%	Oklahoma City, OK	158	151	-7	-4.4%
St. Cloud, MN	13	15	2	15.4%	Tulsa, OK	139	136	-3	-2.2%
Duluth, MN-WI	34	30	-4	-11.8%	Bend, OR	13	18	5	38.5%
Minneapolis-St. Paul-Bloomington, MN-WI	242	192	-50	-20.7%	Corvallis, OR	7	10	3	42.9%
Columbia, MO	30	22	-8	-26.7%	Eugene-Springfield, OR	43	33	-10	-23.3%
Jefferson City, MO	25	20	-5	-20.0%	Medford, OR	16	25	9	56.3%
Joplin, MO	37	36	-1	-2.7%	Salem, OR	40	39	-1	-2.5%
Springfield, MO	53	53	0	0.0%	Portland-Vancouver-Beaverton, OR-WA	174	127	-47	-27.0%
St. Louis, MO-IL	349	308	-41	-11.7%	Altoona, PA	10	15	5	50.0%
Kansas City, MO-KS	216	223	7	3.2%	Erie, PA	27	39	12	44.4%
St. Joseph, MO-KS	16	25	9	56.3%	Harrisburg-Carlisle, PA	76	75	-1	-1.3%
Gulfport-Biloxi, MS	73	56	-17	-23.3%	Johnstown, PA	14	20	6	42.9%
Hattiesburg, MS	50	32	-18	-36.0%	Lancaster, PA	64	66	2	3.1%
Jackson, MS	146	108	-38	-26.0%	Lebanon, PA	19	22	3	15.8%
Pascagoula, MS	42	31	-11	-26.2%	Pittsburgh, PA	245	242	-3	-1.2%
Billings, MT	17	25	8	47.1%	Reading, PA	48	63	15	31.3%
Great Falls, MT	13	7	-6	-46.2%	Scranton--Wilkes-Barre, PA	77	63	-14	-18.2%
Missoula, MT	23	20	-3	-13.0%	State College, PA	19	20	1	5.3%
Asheville, NC	61	38	-23	-37.7%	Williamsport, PA	20	13	-7	-35.0%
Burlington, NC	17	13	-4	-23.5%	York-Hanover, PA	54	52	-2	-3.7%
Durham, NC	63	53	-10	-15.9%	Allentown-Bethlehem-Easton, PA-NJ	80	86	6	7.5%
Fayetteville, NC	70	44	-26	-37.1%	Philadelphia-Camden-Wilmington, PA-NJ-DE	550	454	-96	-17.5%
Goldsboro, NC	22	25	3	13.6%	Providence-New Bedford-Fall River, RI-MA	122	101	-21	-17.2%
Greensboro-High Point, NC	119	105	-14	-11.8%	Anderson, SC	49	27	-22	-44.9%
Greenville, NC	30	36	6	20.0%	Charleston-North Charleston, SC	119	125	6	5.0%
Hickory-Lenoir-Morganton, NC	65	55	-10	-15.4%	Columbia, SC	142	132	-10	-7.0%
Jacksonville, NC	33	31	-2	-6.1%	Florence, SC	50	66	16	32.0%
Raleigh-Cary, NC	135	118	-17	-12.6%	Greenville, SC	130	101	-29	-22.3%
Rocky Mount, NC	37	32	-5	-13.5%	Myrtle Beach-Conway-North Myrtle Beach, SC	88	46	-42	-47.7%
Wilmington, NC	69	60	-9	-13.0%	Spartanburg, SC	57	49	-8	-14.0%
Winston-Salem, NC	60	63	3	5.0%	Sumter, SC	21	27	6	28.6%
Charlotte-Gastonia-Concord, NC-SC	215	170	-45	-20.9%	Rapid City, SD	25	18	-7	-28.0%
Bismarck, ND	12	8	-4	-33.3%	Sioux Falls, SD	15	18	3	20.0%
Fargo, ND-MN	13	9	-4	-30.8%	Cleveland, TN	23	14	-9	-39.1%
Grand Forks, ND-MN	11	13	2	18.2%	Jackson, TN	29	25	-4	-13.8%
Lincoln, NE	28	19	-9	-32.1%	Johnson City, TN	43	20	-23	-53.5%
Omaha-Council Bluffs, NE-IA	79	68	-11	-13.9%	Knoxville, TN	123	93	-30	-24.4%
Manchester-Nashua, NH	29	24	-5	-17.2%	Morristown, TN	27	32	5	18.5%
Atlantic City, NJ	54	31	-23	-42.6%	Nashville-Davidson--Murfreesboro, TN	229	230	1	0.4%
Ocean City, NJ	18	11	-7	-38.9%	Chattanooga, TN-GA	80	86	6	7.5%
Trenton-Ewing, NJ	27	22	-5	-18.5%	Clarksville, TN-KY	45	30	-15	-33.3%
Vineland-Millville-Bridgeton, NJ	23	23	0	0.0%	Memphis, TN-MS-AR	222	192	-30	-13.5%
Albuquerque, NM	102	98	-4	-3.9%	Kingsport-Bristol-Bristol, TN	42	37	-5	-11.9%
Farmington, NM	40	28	-12	-30.0%	Abilene, TX	32	39	7	21.9%
Las Cruces, NM	25	10	-15	-60.0%	Amarillo, TX	39	37	-2	-5.1%
Santa Fe, NM	21	15	-6	-28.6%	Austin-Round Rock, TX	182	194	12	6.6%
Carson City, NV	1	5	4	400%	Beaumont-Port Arthur, TX	91	96	5	5.5%
Las Vegas-Paradise, NV	249	202	-47	-18.9%	Brownsville-Harlingen, TX	37	34	-3	-8.1%
Reno-Sparks, NV	45	33	-12	-26.7%	College Station-Bryan, TX	53	40	-13	-24.5%

Metropolitan Statistical Area (MSA)	2007	2008	Diff	%	Metropolitan Statistical Area (MSA)	2007	2008	Diff	%
Albany-Schenectady-Troy, NY	53	48	-5	-9.4%	Corpus Christi, TX	38	39	1	2.6%
Dallas-Fort Worth-Arlington, TX	626	530	-96	-15.3%	Burlington-South Burlington, VT	16	10	-6	-37.5%
El Paso, TX	56	63	7	12.5%	Bellingham, WA	16	21	5	31.3%
Houston-Baytown-Sugar Land, TX	606	566	-40	-6.6%	Bremerton-Silverdale, WA	21	18	-3	-14.3%
Killeen-Temple-Fort Hood, TX	41	50	9	22.0%	Kennewick-Richland-Pasco, WA	18	15	-3	-16.7%
Laredo, TX	25	24	-1	-4.0%	Longview, WA	10	12	2	20.0%
Longview, TX	78	67	-11	-14.1%	Mount Vernon-Anacortes, WA	10	20	10	100.0%
Lubbock, TX	21	44	23	110%	Olympia, WA	20	26	6	30.0%
McAllen-Edinburg-Pharr, TX	68	74	6	8.8%	Seattle-Tacoma-Bellevue, WA	189	199	10	5.3%
Midland, TX	25	26	1	4.0%	Spokane, WA	33	22	-11	-33.3%
Odessa, TX	25	29	4	16.0%	Wenatchee, WA	11	12	1	9.1%
San Angelo, TX	12	10	-2	-16.7%	Yakima, WA	41	24	-17	-41.5%
San Antonio, TX	203	219	16	7.9%	Appleton, WI	22	19	-3	-13.6%
Sherman-Denison, TX	24	43	19	79.2%	Eau Claire, WI	19	21	2	10.5%
Tyler, TX	41	41	0	0.0%	Fond du Lac, WI	20	8	-12	-60.0%
Victoria, TX	19	15	-4	-21.1%	Green Bay, WI	38	18	-20	-52.6%
Waco, TX	22	44	22	100%	Janesville, WI	32	17	-15	-46.9%
Wichita Falls, TX	31	27	-4	-12.9%	Madison, WI	82	50	-32	-39.0%
Texarkana, TX	30	18	-12	-40.0%	Milwaukee-Waukesha-West Allis, WI	109	87	-22	-20.2%
Ogden-Clearfield, UT	44	31	-13	-29.5%	Oshkosh-Neenah, WI	15	13	-2	-13.3%
Provo-Orem, UT	32	47	15	46.9%	Racine, WI	19	18	-1	-5.3%
Salt Lake City, UT	71	91	20	28.2%	Sheboygan, WI	13	11	-2	-15.4%
St. George, UT	22	18	-4	-18.2%	Wausau, WI	24	17	-7	-29.2%
Logan, UT-ID	11	5	-6	-54.5%	La Crosse, WI	6	5	-1	-16.7%
Blacksburg-Christiansburg-Radford, VA	16	14	-2	-12.5%	Charleston, WV	76	52	-24	-31.6%
Charlottesville, VA	36	24	-12	-33.3%	Morgantown, WV	23	32	9	39.1%
Danville, VA	14	10	-4	-28.6%	Huntington-Ashland, WV-KY-OH	60	42	-18	-30.0%
Harrisonburg, VA	8	11	3	37.5%	Parkersburg-Marietta, WV-OH	17	16	-1	-5.9%
Lynchburg, VA	25	17	-8	-32.0%	Weirton-Steubenville, WV-OH	13	13	0	0.0%
Richmond, VA	179	127	-52	-29.1%	Wheeling, WV-OH	13	25	12	92.3%
Roanoke, VA	32	21	-11	-34.4%	Casper, WY	12	16	4	33.3%
Virginia Beach-Norfolk-Newport News, VA-NC	146	133	-13	-8.9%	Cheyenne, WY	7	3	-4	-57.1%
Winchester, VA-WV	17	8	-9	-52.9%					

Table A3: Year-to-Year Fatality Changes by Age of Passenger Vehicle Driver Involved, 1976-2008				
Year	Age of Driver Involved			
	16-24	25-44	45-64	65 +
1976	668	-300	36	148
1977	1,075	1,163	19	-27
1978	1,007	1,360	192	223
1979	106	608	-321	-159
1980	-624	15	3	-57
1981	-1,596	142	-186	123
1982	-2,479	-1,914	-1,010	-118
1983	-896	-471	-135	103
1984	658	743	151	338
1985	-332	172	20	190
1986	1,182	1,225	-62	409
1987	-249	1,078	526	126
1988	180	216	353	382
1989	-1,112	-286	150	0
1990	-1,034	-38	-255	-3
1991	-1,019	-1,734	-702	79
1992	-1,104	-845	237	-2
1993	245	344	338	282
1994	462	-61	345	274
1995	105	965	497	142
1996	56	62	212	132
1997	-397	-338	519	295
1998	-321	-645	137	-73
1999	419	-272	-77	-111
2000	206	-64	401	-292
2001	-5	-226	57	6
2002	497	99	348	-116
2003	-598	-374	441	130
2004	65	-343	22	-261
2005	-456	100	392	19
2006	-201	-619	-431	-311
2007	-695	-901	-371	-213
2008	-2,205	-1,786	-1,048	-400

DOT HS 811 346
June 2010

U.S. Department
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