

Analysis of Fatal Crash Data

Massachusetts: 2005-2009

A Summary of Motor Vehicle Fatal Crash and Fatality Data
from the Fatality Analysis Reporting System (FARS)



MASSACHUSETTS

ABOUT THIS REPORT

This document presents information describing the motor vehicle fatal crashes and fatalities that occurred in the State of Massachusetts in the years 2005-2009. It also provides selected fatal crash and fatality data for all of NHTSA's Region 1 and for the U.S. The purpose of this report is to supplement traffic safety performance measures available on the NHTSA Web site with additional information to provide a more in-depth profile of a State's traffic fatality characteristics and trends between 2005 and 2009.

This report presents primarily FARS data that are reflective of the standard core measures agreed upon by NHTSA and GHSA. The data are presented in two basic formats: basic data plus trend analyses covering a five-year period, and detailed data findings in seven emphasis program areas. It is intended that, with this information, States will be better able to understand their fatality problems in terms of crash types, contributing factors, demographic groups, times, and locations associated with fatalities and fatal crashes over these five years.

The material is organized into the following major sections:

- **Basic Data**
- **Fatalities**
- **Alcohol-Impaired Driving Fatalities and Alcohol-Impairment-Related Fatal Crashes and Fatalities**
- **Speeding-Related Fatal Crashes and Fatalities**
- **Motorcycle Fatal Crashes and Fatalities**
- **Occupant Restraint**
- **Pedestrian and Bicyclist Fatal Crashes and Fatalities**
- **Young and Older Drivers Fatal Crashes and Fatalities**

The majority of the tables and figures in the report are based on data from NHTSA's Fatality Analysis Reporting System (FARS). Data for 2005-2009 were obtained from the *final* and *auxiliary* FARS files for those years.

Data on vehicle miles of travel were obtained from FHWA's Highway Statistic as available at this link for years 2005 to 2008: <http://www.fhwa.dot.gov/policy/ohpi/qftravel.cfm>. For 2009, we used preliminary month-to-month data and manually got sums across month. Because of this, 2009 has no road type information.

Population data reflect the U.S. Census Bureau's Estimates found at <http://www.census.gov>, that were available in December 2010. These data sources are subject to revision over time, resulting in small differences when comparing statistics generated at different times. The main link to the Census data sources used is: <http://www.census.gov/popest/estbygeo.html>.

Other population data sources were accessed for National data¹; for data by County²; for data by State, county, age, race, and Hispanic origin³, and for data for Puerto Rico⁴. It was necessary to obtain geographic locator codes for converting county codes in FARS to county names⁵. Finally, helmet laws were imported from the table at: <http://www.iihs.org/laws/helmetusecurrent.aspx>. And, occupant restraint use summary data were extracted from the table in the following pdf: <http://www-nrd.nhtsa.dot.gov/Pubs/811324.pdf>

Small differences may arise in various tables and figures due to rounding. For example, monthly alcohol-impairment-related fatalities, based on NHTSA's multiple imputation method, may not sum exactly to the annual total due to rounding.

The CD accompanying the printed version of this report contains an electronic copy. Most of the pages are Microsoft Word documents while some are Excel documents. Most of the figures were produced using Excel and then transferred to Word pages. The Excel spreadsheets used to produce the figures are also contained on the CD.

¹ (NST_EST2009_ALLDATA.csv): <http://www.census.gov/popest/national/national.html>

² (CO-EST2009-ALLDATA.csv): <http://www.census.gov/popest/counties/counties.html>

³ (SC-EST2009-alldata6-ALL.csv): <http://www.census.gov/popest/xyzs/asrh/stasrh.html>

⁴ (PRM-EST2009-POPCHG2000-2009.csv): <http://www.census.gov/popest/municipios/municipios.html>

⁵ Source: (FRPP_GLC_UnitedXyzs.xls for U.S. and FRPP_GLC_OutlyingAreaTerritories.xls for Puerto Rico): <http://www.gsa.gov/portal/category/21420>

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KEY FACTS

MASSACHUSETTS 2005-2009

SUMMARY OF KEY FACTS

Fatalities

- Over the period 2005-2009, fatalities declined by 19.9% in Massachusetts, compared to 16.5% across the Region and 18% Nationwide (Table 29).
- Middlesex County (315 fatalities) accounted for 15.7% of all fatalities recorded in Massachusetts during this period (Table 30).

Alcohol-Impaired Driving Fatalities and Alcohol-Impaired-Related Fatal Crashes and Fatalities

- The percentage of total fatalities that involved alcohol-impaired driving in Massachusetts has fluctuated with regards to Region 1, but has generally been above that of the Nation as whole (Figure 23) for the years 2005-2009.
- The four counties with the most alcohol-impaired driving fatalities in this period were Middlesex (103), Worcester (99), Bristol (91), and Plymouth (74). The counties where alcohol-impaired driving fatalities made up the highest percentage of total fatalities were Nantucket (50%), Hampshire (41.7%), Bristol (37.4%), and Plymouth (35.9%) (Table 34).
- According to NHTSA's alcohol imputation data, 56% of all fatalities in Massachusetts during the years 2005 through 2009 involved no positive BAC recording at all. 7% of all fatalities involved a maximum BAC reading of 0.07%, and 37% of all fatalities involved a BAC reading of 0.08% or above. The maximum BAC could refer to any participant in the crash, not just the driver (Table 37).
- Over this period, 21.7% of drivers involved in fatal crashes in Massachusetts had a BAC of at least 0.08%. This percentage was slightly lower than that in Region 1, 21.9%, but higher than the U.S. as a whole, 20.1% (Table 38).

Speeding-Related Fatal Crashes and Fatalities

- Speeding-related fatalities in Massachusetts declined by 43% over this period, compared to declines of 19.4% and 18.7% in Region 1 and the U.S. as a whole, respectively (Tables 8, 9, and 10).
- Four counties, Middlesex (15%), Worcester (14.6%), Bristol (12.7%), and Hampden (9.7%) accounted for over half the speeding-related fatalities in Massachusetts for the years 2005 through 2009 (Table 39).
- During this period, the percentage of fatalities in Massachusetts that were speeding-related has consistently been below that of Region 1. Additionally, the percentage of fatalities in Massachusetts that were speeding-related has been declining since a high of 34% in 2006, to a low of 23% in 2009 (Figure 24).
- Over the five-year period, 20.6% of drivers in Massachusetts who were involved in a fatal crash had a previous (recorded within the last three years) speeding conviction.

This was higher than the percentage for Region 1(18.5%) or the U.S. as a whole (18.9%) (Table 44).

Motorcycle Fatal Crashes and Fatalities

- Massachusetts law requires a motorcycle helmet for all motorcycle riders. In Massachusetts, 85.2% of fatally-injured motorcyclists used a helmet, a higher percentage than in Region 1 (51.3%) or the U.S. as a whole (56.1%) over the five-year period (Table 48).
- Motorcyclist fatalities increased by 2.9% in Massachusetts over this period, compared to declines of 2.4% for Region 1 and 10.3% Nationwide (Tables 14, 15, and 16).
- Motorcyclists consistently made up a smaller percentage of total fatalities in Massachusetts than in Region 1 over this period. In 2009, the percentage for Massachusetts peaked at 16% and 17% for Region 1 (Figure 25).
- 62.9% of fatally injured motorcyclists in Massachusetts were between the age of 25 and 54, and 92% were males over the five-year period (Table 47).
- For the years 2005 through 2009, 35% of the fatally injured motorcycle operators in Massachusetts had a BAC of 0.01% or above, compared to 36.0% in Region 1 and 37.3% Nationwide (Table 49).
- Speed was a reported factor in 33.7% of the Massachusetts's motorcyclist fatalities, compared to 37.8% across the Region and 39.6% Nationwide over the five-year period (Table 49).
- In Massachusetts, 56.9% of motorcycle operators had a 'driver factor' reported in a fatal crash over the five-year period. The three most commonly reported driver factors for a motorcycle operator were driving too fast (31.2%), failure to keep in proper lane (23%), and operating vehicle in an erratic manner (14.1%) (Table 50).

Occupant Restraint

- Unbelted passenger vehicle occupant fatalities declined by 25.2% in Massachusetts during this period, compared to declines of 19.2% in the Region and 22.3% Nationwide (Tables 11, 12, and 13).
- Observed seat belt use in Massachusetts has been increasing, from a low of 65% in 2005 to a high of 74% in 2009. Still, it was consistently lower than observed seat belt use Nationwide (Figure 26) for the years 2005 through 2009.
- In 2009, the restraint use of fatally injured passenger vehicle occupants in Massachusetts was 27.9%, compared to 34.7% for the Region and 43.4% Nationwide. (Table 51).

Pedestrian and Bicyclist Fatal Crashes and Fatalities

- The ten cities with the most pedestrian fatalities accounted for 32.1% of all pedestrian fatalities in Massachusetts during the five-year period. The top cities were Boston (11.9%), Springfield (4%), and New Bedford, Quincy, and Worcester (each 2.4%) (Table 55).
- For the years 2005 through 2009, 36.7% of fatally-injured pedestrians in Massachusetts were 25 to 54 years of age, compared to 36.1% for the Region and 48.3% Nationwide (Table 56).

- During this period, males were 64.2% of the Massachusetts's pedestrian fatalities, compared to 63.9% for the Region and 69.7% Nationwide (Table 56).
- 47.1% of pedestrian fatalities in the 35-44 age group with a known BAC had a BAC $\geq 0.08\%$, the highest percentage for any age group in the State (Table 57).
- For the years 2005 through 2009, the number of bicyclist fatalities in Massachusetts ranged from a high of 11 in 2007 to a low of 5 in 2005 (Table 58).

Young and Older Age Groups

- Fatal crashes involving young drivers (16-20 years old) in Massachusetts decreased by 32.6%, compared to 31.3% across Region 1, and 25.8% across the U.S. (Table 59).
- The counties of Worcester (16.5%), Bristol (13.2%), Middlesex (12.7%), and Plymouth (11.8%) accounted for more than half of young driver-involved fatalities in Massachusetts during this period (Table 64).
- Young driver fatalities accounted for between 5.7% and 9.3% of all fatalities in Massachusetts, 6.9% to 9.6% across the Region, and 6.8% to 8% across the U.S. during the years 2005 through 2009 (Figure 27).
- For the years 2005 through 2009, 74.3% of young drivers reported a 'driver factor' in a fatal crash. The three most common driver factors were driving too fast (41.4%), failure to keep in lane (36.1%) and operating vehicle in an erratic, reckless manner (29.6%) (Table 61).
- In Massachusetts, 23.7% of young drivers involved in a fatal crash had a previous speeding conviction, while 27.5% had a previous crash recorded (Table 62).
- In Massachusetts, young drivers accounted for 43.5% of all fatalities in young driver-involved fatal crashes, while the passengers of young drivers made up 28.1% of total fatalities, and other road users were 28.4% during the five-year period (Table 63).
- Fatal crashes involving drivers age 65-74 increased by 16.5% over this period in Massachusetts, while fatalities of drivers ages 65-74 increased by 33.3%. The Region experienced a 3.3% increase in fatal crashes involving drivers ages 64-75, and a 12.8% increase in driver fatalities for this age group. Across the U.S. as a whole, fatal crashes involving drivers age 65-74 decreased by 6.1%, and fatalities of drivers ages 65-74 decreased 8.9% (Table 65).
- In Massachusetts, fatal crashes involving drivers ages 75 and older decreased by 21.6%, while fatalities of drivers ages 75 and older declined by 32.2%. Region 1 experienced a 22.7% decline in fatal crashes and a 25.5% decline in fatalities. Nationwide, fatal crashes involving drivers ages 75 and older declined by 11.5% and fatalities declined by 12.2% during this period (Table 66).

Detailed information regarding months, days, and times of greatest frequency of fatalities and fatal crashes for each category of fatal crashes can be found in the Emphasis Area sections.

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BASIC DATA AND TREND ANALYSES

Basic Data and Trend Analyses

ABOUT THIS SECTION

This Section contains basic information about the motor vehicle fatalities that occurred in Massachusetts from 2005 through 2009. It is organized according to the following nine topics:

- **Total Fatalities**
- **Alcohol-Impaired Driving (AID) Fatalities**
- **Speeding-related Fatalities**
- **Unbelted Passenger Vehicle Occupant Fatalities**
- **Motorcycle Rider Fatalities**
- **Pedestrian Fatalities**
- **Bicyclist Fatalities**
- **Fatalities Involving Young Drivers**
- **Fatalities Involving Older Drivers**

Each of these subsections includes a five-year data table for the State, showing the number of annual fatalities, along with fatality rates: deaths per 100 million miles of travel (VMT) and deaths per 100,000 population.⁶ The table also shows the percentage of total fatalities in the State accounted for by each category and the State's percentage of all such fatalities in the Region. Two additional tables contain similar data and trends for the Region and the Nation, respectively.

Graphs showing Massachusetts's trends are also provided in each section. For the first four categories, these graphs show five years of data for: 1) *number of fatalities*; 2) the *VMT-based fatality rate*; and 3) the *population-based fatality rate*. Each graph includes a linear trend line and a 3-year moving average line. Linear trends are projected out three years to show the expected outcomes if the existing trend were to continue beyond the last year for which data are available. For the final five categories, graphs are provided only for: 1) *number of deaths*; and 2) the *population death rate*. VMT data are either not available or not relevant for these categories.

Much of the data included in this report can also be found on the NHTSA Web site and are easily accessible for future updating. This can be done by logging on to the site at www.nhtsa.gov (or) by entering "NHTSA" on your browser and clicking on [Home: National Highway Traffic Safety Administration]. Once on the home page, click on the [DATA] tab; then on the [Customer Automated Tracking System (CATS)] section; and on the [State Traffic Safety Information (STSI)] tab. Finally, click on [Massachusetts] on the U.S. map that appears. Additional trend information can also be obtained by clicking on [FARS Data Tables] once you are into the [Customer Automated Tracking System]; then on [Trends]; then entering "Massachusetts" in the [State] data entry field. There are many other areas within which to obtain data and it is suggested that the user explore that system to become familiar with this valuable resource.

⁶ The VMT fatality rate is included only for the first four categories: Total, Alcohol Impaired; Speeding-related; and Unbelted occupant fatalities. VMT data are either unavailable or not relevant to the remaining five categories.

Total Fatalities

Table 1 shows basic data on Massachusetts fatalities from 2005 through 2009. It shows that annual motor vehicle fatalities in the State decreased from 441 in 2005 to 334 in 2009. This represents a decline of almost 20% in 2009 (from the average of the prior four years). During this period, the number of *vehicle miles traveled* (VMT) declined by 3.1%, while *population* increased by 1.6%. As a result of the combination of these changes, the *VMT-based fatality rate* (i.e., expressed as the number of deaths per 100 million miles traveled) *declined* by 17.3% and the *population-based fatality rate* (expressed as the number of deaths per 100,000 population) *declined* by 21.2%.

Table 1. Massachusetts Basic Data

	2005	2006	2007	2008	2009	2005-2009 % Change
Total Fatalities	441	429	434	364	334	-19.90%
VMT*	55,458	55,136	55,071	54,505	53,317	-3.13%
VMT Rate**	0.80	0.78	0.79	0.67	0.63	-17.31%
Population	6,453,031	6,466,399	6,499,275	6,543,595	6,593,587	1.59%
Pop. Rate***	6.83	6.63	6.68	5.56	5.07	-21.16%
Pct of Region Fatalities	36.33%	35.08%	36.87%	33.18%	33.98%	-4.04%
Pct of Region VMT	42.17%	41.87%	41.74%	42.14%	42.70%	1.72%
Pct of Region Population	45.36%	45.35%	45.46%	45.56%	45.69%	0.58%

* Vehicle Miles of Travel (millions)

** Rate per 100 million vehicle miles

*** Rate per 100,000 population

The data in Table 1 show that, in 2009, Massachusetts accounted for 45.7%% of the *population* in Region 1; 42.7% of the Region's VMT; and almost 34% of the Region's fatalities. These percentages did not change appreciably during this five-year period. A comparison of Massachusetts data with the Regional data (Table 2) and National data (Table 3) indicates that Massachusetts's *average* VMT-based fatality rate over these five years (0.73 per 100 million VMT) was lower than the average for Region 1 (0.88), both of which were lower than the average for the Nation (1.34).

Similarly, Massachusetts's average population-based fatality rate (6.15 per 100,000 residents) was lower than the Regional rate (7.96), both of which were lower than the National rate (13.18).

Table 2. Region 1 Basic Data

	2005	2006	2007	2008	2009	2005-2009 % Change
Total Fatalities	1,214	1,223	1,177	1,097	983	-16.54%
VMT*	131,500	131,669	131,948	129,340	124,854	-4.77%
VMT Rate**	0.92	0.93	0.89	0.85	0.79	-12.35%
Population	14,227,296	14,258,599	14,298,028	14,362,641	14,429,720	1.00%
Pop. Rate***	8.53	8.58	8.23	7.64	6.81	-17.36%

* Vehicle Miles of Travel (millions)
 ** Rate per 100 million vehicle miles
 *** Rate per 100,000 population

Table 2 (above) shows that total annual motor vehicle fatalities in Region 1 decreased by 16.5% in 2009, compared with the 2005-2008 average; while VMT-based and population-based fatality rates dropped by 12.4%% and 17.4%%, respectively. Looking Nationwide, Table 3 (below) shows that fatalities across the U.S. declined even more than in Region 1. Total deaths declined by 18%, while *VMT*-based and *population*-based fatality rates dropped by 12.5% and 19.9%, respectively.

Table 3. Nationwide Basic Data

	2005	2006	2007	2008	2009	2005-2009 % Change
Total Fatalities	43,510	42,708	41,259	37,423	33,807	-17.99%
VMT*	2,990	3,014	3,032	2,974	2,814	-6.27%
VMT Rate**	1.46	1.42	1.36	1.26	1.20	-12.51%
Population (thousands)	295,753	298,593	301,580	304,375	307,007	2.31%
Pop. Rate***	14.71	14.30	13.68	12.30	11.01	-19.85%

* Vehicle Miles of Travel (billions)
 ** Rate per 100 million vehicle miles
 *** Rate per 100,000 population

Figure 1 shows total deaths for each year, a three-year moving average, and the linear trend in total fatalities for Massachusetts. If the linear trend were to continue, total fatalities would decline to **317** in 2010, **289** in 2011, and **261** in 2012. Some caution is advisable, however, since some of the decline since 2007 may be associated with the economy in 2008 and 2009.

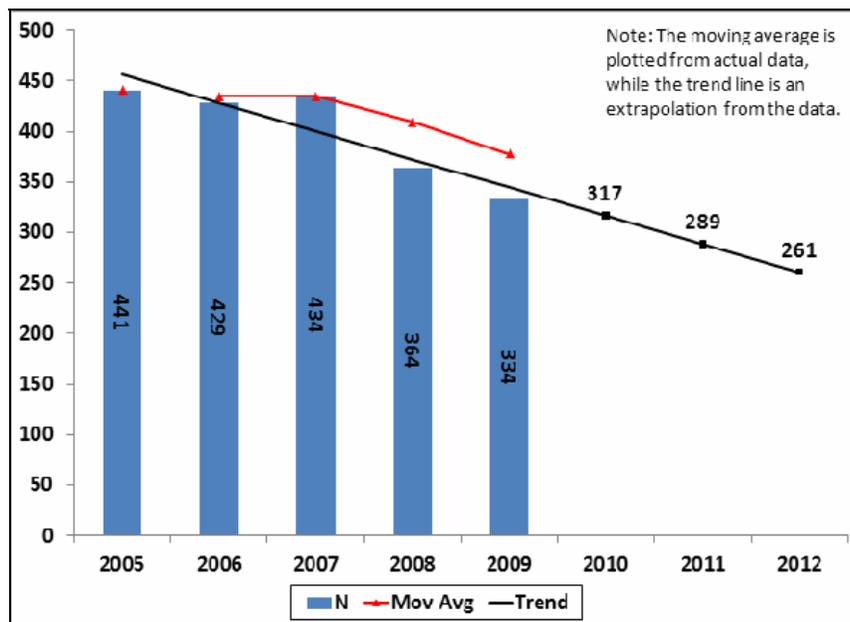


Figure 1. Massachusetts Total Fatalities

Figure 2 shows the trend in the *VMT*-based fatality rate for Massachusetts. If this trend were to continue, there would be **0.60** deaths per 100 million VMT in 2010, **0.55** in 2011, and **0.51** in

2012. The three-year moving average shows a modest decline throughout the five-year period. Again, some caution is advised in terms of these projections as trends *may* change in 2010.

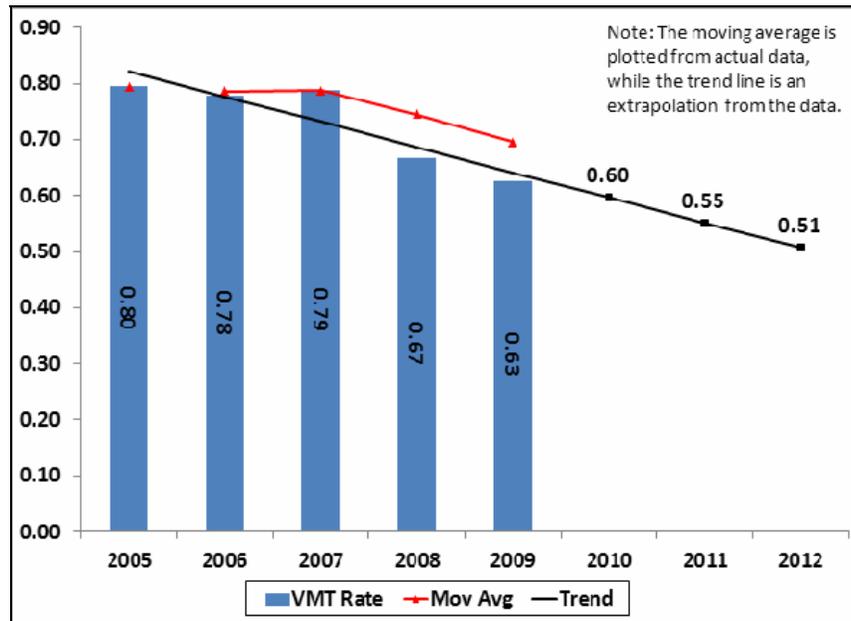


Figure 2. Massachusetts Total Fatalities, VMT Rate

Figure 3 shows the trend in the *population-based* fatality rate for Massachusetts. If this trend were to continue, there would be **4.77** deaths per 100,000 population in 2010, **4.31** in 2011, and **3.85** in 2012. The three-year moving average shows a modest decline throughout the five-year period. Again, some caution is advised in terms of these projections as trends *may* change in 2010.

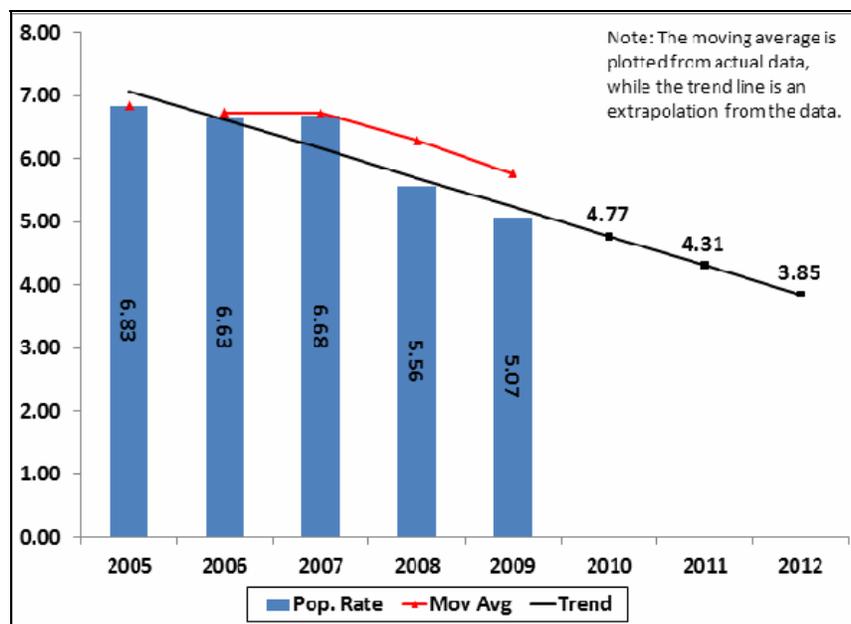


Figure 3. Massachusetts Total Fatalities, Population Rate

Alcohol-Impaired Driving Fatalities

There has recently been a shift from referring to *alcohol-related* crashes to *impaired driver* crashes (often not prefaced with the word *alcohol*). Under the prior practice, an *alcohol-related* crash referred to any crash in which an *active participant* (driver or non-occupant, such as a pedestrian) had a *BAC of 0.01* or greater. An *impaired driver crash* refers to any crash in which at least *one of the drivers* (including a motorcycle operator) involved in the crash had a *BAC of 0.08* or greater. Alcohol use by a non-occupant, such as a pedestrian, is omitted in this designation. In contrast, when we focus on crashes involving *any participant* (including a pedestrian) with a *BAC ≥ 0.08* , we designate such crashes as *impairment-related*. An *impairment-related fatality* is one that results from an *impairment-related* crash.

Table 4. Massachusetts Alcohol-Impaired Driving Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	148	144	155	120	108	-23.81%
VMT Rate*	0.27	0.26	0.28	0.22	0.20	-21.34%
Pop. Rate**	2.29	2.23	2.38	1.83	1.64	-25.00%
Pct of Total	33.56%	33.57%	35.71%	32.97%	32.34%	-4.88%
Pct of Region	35.92%	35.12%	37.80%	35.61%	31.76%	-12.10%

* Rate per 100 million miles of travel

** Rate per 100,000 population

Between 2005 and 2009, Massachusetts's alcohol-impaired driving fatalities averaged about 135 per year. By 2009, such deaths had declined to 108, a 23.8% decline (from an average of 142 in the prior four years). Similarly, the 2009 alcohol-impaired *VMT rate* (0.20 deaths per 100 million VMT) represented a 21.3% decline from the previous four-year average (0.26). There was less than the drop in the *population-based* fatality rate. It declined by 25%, from a four-year average of 2.18 (2005-2008) to 1.64 (2009).

Historically, the impaired *percent of total deaths* has been a key index of this problem. This proportion decreased in 2009, 4.9%, compared to the average of the previous four years. Table 4 also indicates that Massachusetts's *proportion of the Region's impaired deaths* declined by 12.1% in 2009, compared with the average of the previous four years.

Table 5. Region 1 Alcohol-Impaired Driving Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	412	410	410	337	340	-13.32%
VMT Rate*	0.31	0.31	0.31	0.26	0.27	-8.97%
Pop. Rate**	2.90	2.88	2.87	2.35	2.36	-14.18%
Pct of Total	33.94%	33.52%	34.83%	30.72%	34.59%	3.85%

* Rate per 100 million miles of travel

** Rate per 100,000 population

Table 5 provides impaired fatality and rate data for the entire Region, and Table 6 provides such data for the Nation. Over the entire five-year period, the average *VMT rate* in Massachusetts (0.25 deaths per 100 million VMT) was below both the rate for Region 1 (0.29 deaths per 100 million VMT) and across the U.S. (0.42 deaths), while the *population-based* rate followed a similar pattern with Massachusetts (2.07 deaths per 100,000 residents) lower than both the Region and Nationwide rates (2.67 and 4.16, respectively).

With regard to change, Table 5 shows that impaired driving fatalities decreased by 13.3% in Region 1 between 2005 and 2009, while VMT-based and population-based fatality rates dropped by 9% and 14.2%, respectively. These Regional declines were not as great as those found in Massachusetts (Table 4). Nationwide, Table 6 indicates that alcohol-impaired deaths declined by 16.3%, while VMT-based and population-based fatality rates dropped by 10.8% and 18.2%, respectively. These National declines were less than the declines in Massachusetts.

In 2009, the *impaired driving percentage of total fatalities* declined in Massachusetts (4.9%), but increased across the Region (3.9%) and across the U.S. (2.0%). Here again, these changes in 2009 are relative to the average from 2005 through 2008.

Table 6. Nationwide Alcohol-Impaired Driving Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	13,582	13,491	13,041	11,711	10,839	-16.34%
VMT Rate*	0.45	0.45	0.43	0.39	0.39	-10.75%
Pop. Rate**	4.59	4.52	4.32	3.85	3.53	-18.23%
Pct of Total	31.22%	31.59%	31.61%	31.29%	32.06%	2.01%

* Rate per 100 million miles of travel

** Rate per 100,000 population

Figure 4 shows the trend in Massachusetts's *impaired driving fatalities*. If this trend were to continue, there would be **104** such fatalities in 2010, **93** in 2011, and **83** in 2012. However, with an improving economy after 2009, fatalities and impaired driving fatalities *may* increase in 2010 or 2011. The three-year moving average (red line) also shows a decline.

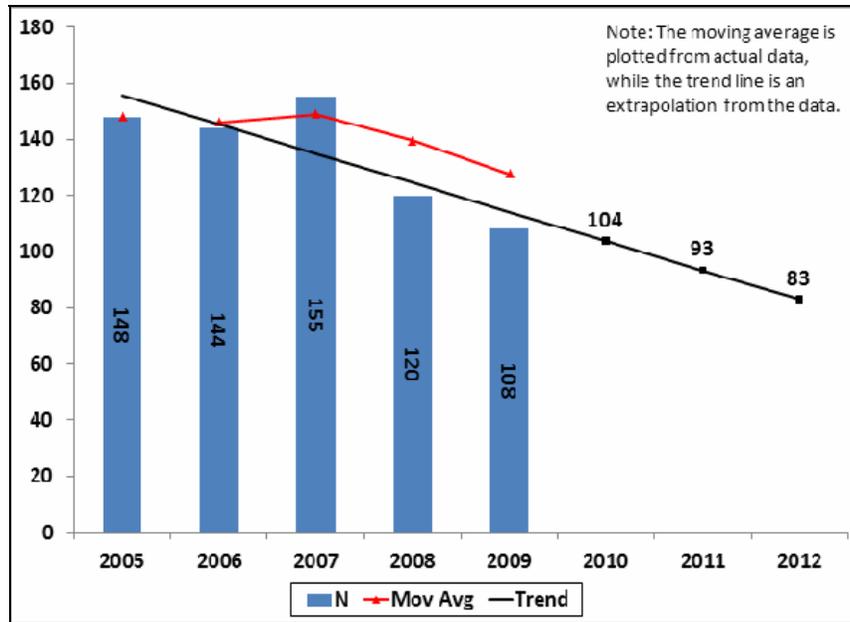


Figure 4. Massachusetts Alcohol-Impaired Driving Fatalities

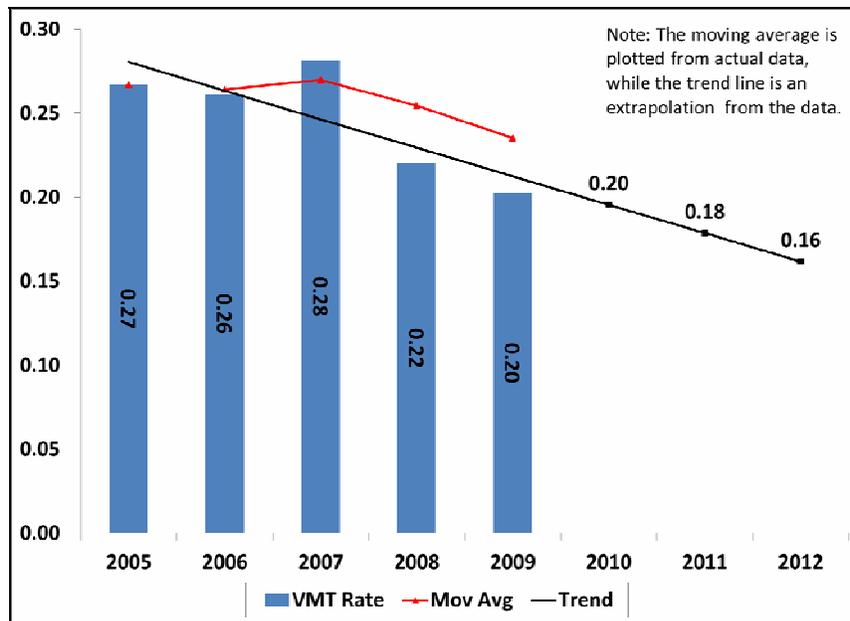


Figure 5. Massachusetts Alcohol-Impaired Driving Fatalities, VMT Rate

The trends in impaired driving death *rates* show declines, particularly since 2007. The linear trend line shown in Figure 5 projects the Massachusetts's *VMT-based fatality rate* to **0.20** deaths (per 100 million VMT) in 2010, **0.18** in 2011, and **0.16** in 2012.

The *population-based rate* shown in Figure 6 also shows a downward trend, projecting to **1.56** deaths (per 100,000 residents) in 2010, **1.39** in 2011, and **1.22** in 2012. Again, these trends (particularly for the population-based rate) may not continue as there *could* be an increase in fatalities associated with changes in the economy.

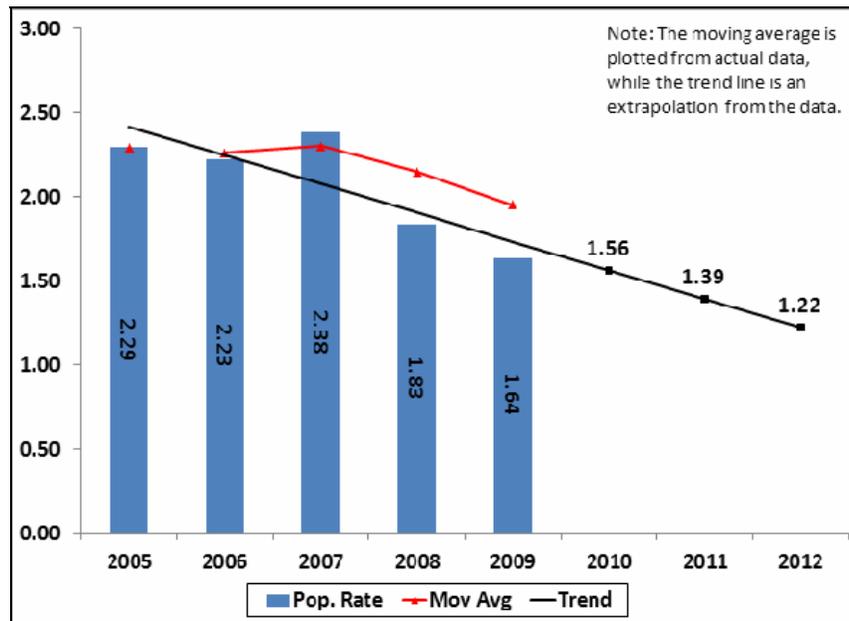


Figure 6. Massachusetts Alcohol-Impaired Driving Fatalities, Population Rate

BAC reporting rates for Massachusetts, the U.S., and the “Best States(s)” are presented in Table 7. Massachusetts had an average 2% rate of *BAC reporting for surviving drivers* over the five-year period. On the other hand, the State had a *relatively high rate of reporting for fatally-injured drivers*, averaging about 64% over the five-year period.

Across the Nation, BACs were reported for an average of 26% of surviving drivers and 71% of fatally-injured drivers. By comparison, the best States(s) provided BACs for 81% of surviving drivers and 98% of fatally-injured drivers. Clearly, there is a large range of testing and reporting.

Among *all drivers involved* in fatal crashes (i.e., fatally injured and surviving), the average percentage with reported BACs was 32% in Massachusetts, 47% across the Nation, and 86% among the best State(s). This also represents a very large range where, in the best States, a BAC is available for well over twice the proportion of involved drivers as in Massachusetts.

Finally, in 2009, there was a sharp decline in Massachusetts’s percentage of *killed* drivers for which there was a reported BAC. Such data were available for 44% of killed drivers in 2009, compared with an average of 68% across the prior four years. This resulted in a sharp decline in Massachusetts’s percentage of *all drivers (killed and surviving)* for which there was a reported BAC for in 2009 as well. Such data were available for 22% of all drivers in 2009, compared with an average of 35% across the prior four years. It must be considered that the 2009 dataset is not complete.

Table 7. BAC Reporting Rates for Drivers and Motorcycle Operators

		2005	2006	2007	2008	2009
Surviving Drivers and Operators						
Total	MA	312	284	293	224	225
	U.S.	31,729	30,498	29,449	26,162	23,431
Total with BAC Reported	MA	2	7	5	9	2
	U.S.	7,415	7,482	7,631	7,656	6,372
% with BAC Reported	MA	1%	2%	2%	4%	1%
	U.S.	23%	25%	26%	29%	27%
	Best State*	77%	81%	82%	81%	86%
Killed Drivers and Operators						
Total	MA	286	284	277	218	212
	U.S.	27,491	27,348	26,570	24,254	21,797
Total with BAC Reported	MA	158	196	210	165	94
	U.S.	18,773	18,911	19,434	18,415	15,505
% with BAC Reported	MA	55%	69%	76%	76%	44%
	U.S.	68%	69%	73%	76%	71%
	Best State*	98%	99%	100%	99%	97%
All Drivers and Operators						
Total	MA	598	568	570	442	437
	U.S.	59,220	57,846	56,019	50,416	45,228
Total with BAC Reported	MA	160	203	215	174	96
	U.S.	26,188	26,393	27,065	26,071	21,877
% with BAC Reported	MA	27%	36%	38%	39%	22%
	U.S.	44%	46%	48%	52%	48%
	Best State*	84%	85%	84%	85%	90%

* Best State: highest percents could be in different States

Speeding-Related Fatalities

A speeding-related fatality is defined as one that occurred in a crash where a driver was charged with a speeding-related offense or where an officer indicated that racing, driving too fast for conditions, or exceeding the posted speed limit was a contributing factor.⁷

Table 8 shows that there were 145 speeding-related fatalities in Massachusetts in 2005; increasing slightly to 148 in 2006; then declining sharply to 76 by 2009, almost 43% lower in 2009 than the average for the prior four years. The VMT-based rate also experienced a similar decline after 2006; the 2009 level (0.14 per 100 million VMT) represented a 41.1% decline over the average of the past four years. The population-based rate showed a similar increase during the first two years, from 2005 (2.25 deaths per 100,000 population) to 2006 (2.29), then gradually declined

⁷ In this section, we use speeding-related and speed-related interchangeably.

from 2007 (2.20) through 2009 (1.15); 43.9% lower than the average of the prior four years. In 2005, 32.9% of all fatalities in the Massachusetts were speeding-related. This proportion decreased to 22.8% in 2009.

Speed-related death rates were lower in Massachusetts than across the Region, and the Region's speed-related death rates were lower than the U.S. as a whole.

Table 8. Massachusetts Speeding-Related Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	145	148	143	97	76	-42.96%
VMT Rate*	0.26	0.27	0.26	0.18	0.14	-41.12%
Pop. Rate**	2.25	2.29	2.20	1.48	1.15	-43.86%
Pct of Total	32.88%	34.50%	32.95%	26.65%	22.75%	-28.79%
Pct of Region	31.80%	34.26%	34.71%	29.13%	23.10%	-29.23%

* Rate per 100 million miles of travel

** Rate per 100,000 population

Table 9 indicates that, between 2005 and 2009, *speeding-related fatalities* decreased by 19.4% across Region 1.

Across the U.S., such *fatalities* declined by 18.7% in 2009, compared with the prior 4-year average. Both the *VMT and population-based rates* declined Nationally, with the population-based rate declining by 21% and the VMT rate by 13%.

The *speeding-related percentage of total deaths* remained relatively unchanged at 31.6% throughout the five-year period (see Table 10).

Table 9. Region 1 Speeding-Related Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	456	432	412	333	329	-19.41%
VMT Rate*	0.35	0.33	0.31	0.26	0.26	-15.37%
Pop. Rate**	3.21	3.03	2.88	2.32	2.28	-20.21%
Pct of Total	37.56%	35.32%	35.00%	30.36%	33.47%	-3.45%

* Rate per 100 million miles of travel

** Rate per 100,000 population

Table 10. Nationwide Speeding-Related Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	13,583	13,609	13,140	11,767	10,591	-18.69%
VMT Rate*	0.45	0.45	0.43	0.40	0.38	-13.25%
Pop. Rate**	4.59	4.56	4.36	3.87	3.45	-20.52%
Pct of Total	31.22%	31.87%	31.85%	31.44%	31.33%	-0.84%

* Rate per 100 million miles of travel

** Rate per 100,000 population

Figure 7 shows the trend in Massachusetts’s speeding-related fatalities. If the trend were to continue, the number of these fatalities would be **65** in 2010, **46** in 2011, and **27** in 2012. This linear trend should be viewed with some caution. Not only is it possible that an upturn will accompany an improvement in the economy, but the lowest number of speed-related deaths and the lowest rates of such deaths were found in 2008 and 2009; however, the three year-moving average has also been declining throughout this period.

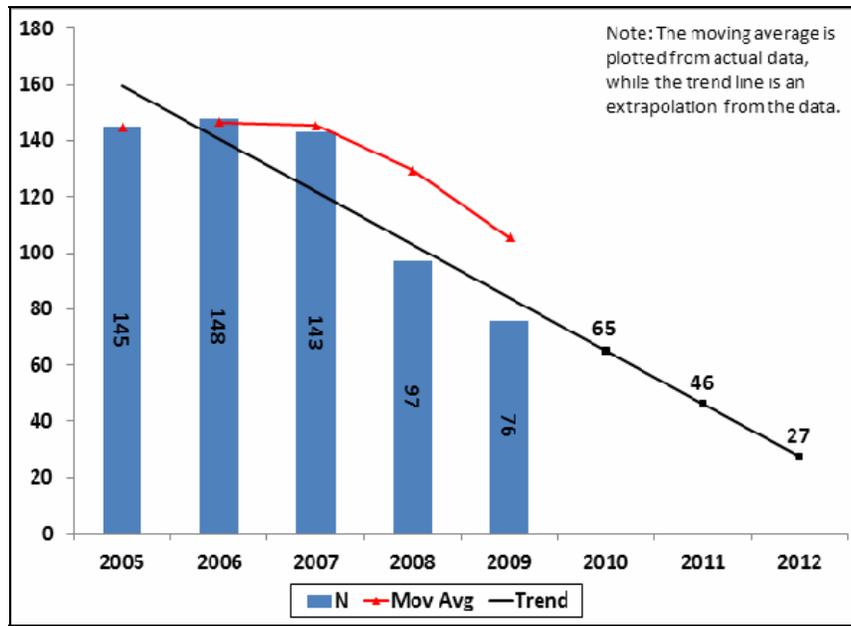


Figure 7. Massachusetts Speeding-Related Fatalities

Based on the linear trend line shown in Figure 8, the VMT-based rate of speeding-related deaths has been declining as well; if this trend were to continue, the number of speeding-related deaths per 100 million VMT would be **0.12** in 2010, **0.09** in 2011 and **0.06** in 2012.

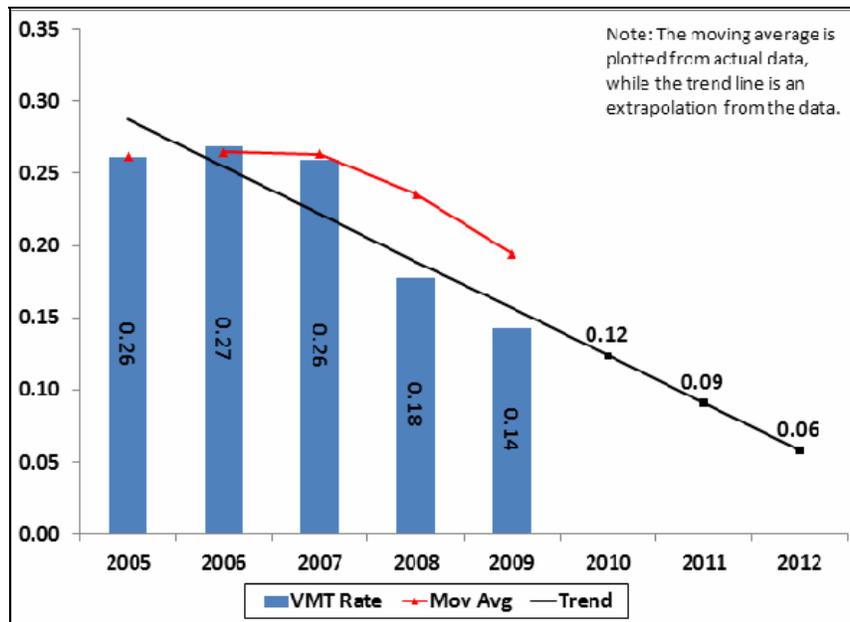


Figure 8. Massachusetts Speeding-Related Fatalities, VMT Rate

Figure 9 shows that the population-based rate has undergone a decline similar to the VMT rate. Here the linear trend projects **0.98** deaths (per 100,000 population) in 2010, **0.68** in 2011, and **0.38** in 2012. Again, this trend should be viewed with some caution.

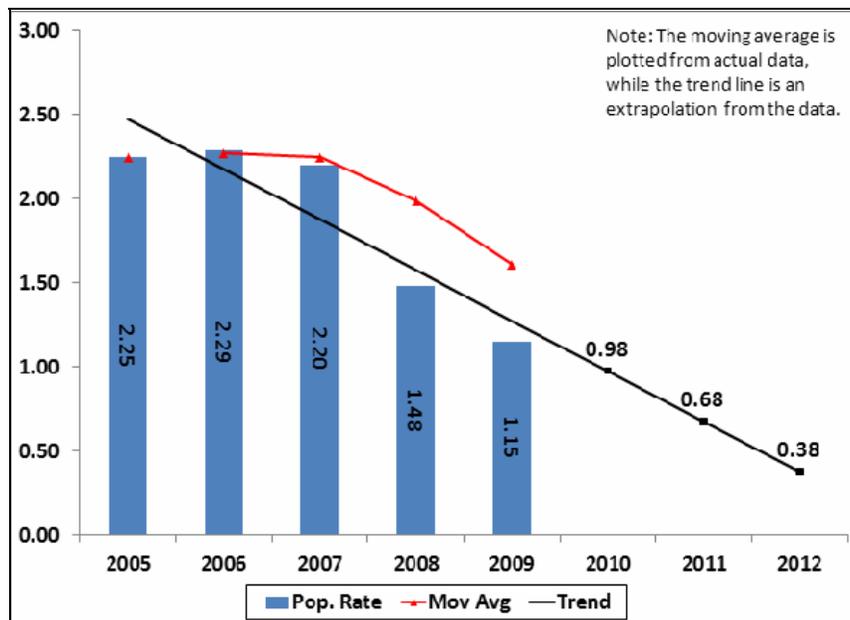


Figure 9. Massachusetts Speeding-Related Fatalities, Population Rate

Unbelted Passenger Vehicle Occupant Fatalities

Table 11 shows the numbers and rates of *unbelted passenger vehicle occupants* (i.e. occupants of passenger cars, light trucks, and vans) killed in Massachusetts, from 2005 through 2009. There were 25.2% fewer *unbelted fatalities* in 2009 (112) than the average of the prior four years.

In 2009, the *VMT-based and population-based fatality rates* declined by 22.8% and 26.4%, respectively, compared with the averages of the previous four-year period. Massachusetts's fatality rates were lower than the Regional rates and the National rates for all five years.

During this period, *observed safety belt use* rose from 64.8% in 2005 to 73.6% in 2009 and the 2009 rate was 10.2% greater than the average of the prior four years (78.9%).

Unbelted fatalities represented 38.8% of all deaths in 2005. By 2009 this percentage had declined to 33.5%, a decrease of 6.6% compared with the prior four-year average.

Table 11. Massachusetts Unbelted Passenger Vehicle Occupant Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	171	158	148	122	112	-25.21%
VMT Rate*	0.31	0.29	0.27	0.22	0.21	-22.79%
Pop. Rate**	2.65	2.44	2.28	1.86	1.70	-26.38%
Pct of Total	38.78%	36.83%	34.10%	33.52%	33.53%	-6.62%
Pct of Region	37.42%	36.24%	36.19%	32.88%	33.14%	-7.45%
Observed Belt Use	64.8%	66.9%	68.7%	66.8%	73.6%	10.18%

* Rate per 100 million miles of travel

** Rate per 100,000 population

Table 12 shows similar data for *Region 1*. These data indicate that, between 2005 and 2009, unrestrained occupant *fatalities* decreased by 19.2% across the Region, accounting for 37.6% of all Regional deaths in 2005 and 34.4% in 2009. The 2009 level represented a decline of 3.2% in this proportion, compared with the average of the prior four years.

Table 12. Region 1 Unbelted Passenger Vehicle Occupant Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	457	436	409	371	338	-19.19%
VMT Rate*	0.35	0.33	0.31	0.29	0.27	-15.14%
Pop. Rate**	3.21	3.06	2.86	2.58	2.34	-19.99%
Pct of Total	37.64%	35.65%	34.75%	33.82%	34.38%	-3.18%

* Rate per 100 million miles of travel

** Rate per 100,000 population

Table 13 shows that the number of unbelted occupant deaths declined *Nationally*, from 16,247 in 2005 to 11,511 in 2009. The 2009 level was 22.3% lower than in the average of the four prior

years. Unbelted fatalities accounted for 37% of all deaths in 2005 and 34% in 2009. The 2009 proportion was 5.2% lower than the proportion for the prior four years.

Table 13. Nationwide Unbelted Passenger Vehicle Occupant Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	16,247	15,635	14,446	12,925	11,511	-22.29%
VMT Rate*	0.54	0.52	0.48	0.43	0.41	-17.09%
Pop. Rate**	5.49	5.24	4.79	4.25	3.75	-24.05%
Pct of Total	37.34%	36.61%	35.01%	34.54%	34.05%	-5.24%

* Rate per 100 million miles of travel

** Rate per 100,000 population

The five-year trends in the *numbers* and *rates* of *unbelted occupant* fatalities in Massachusetts are shown in Figures 10-12. With regard to fatalities, the linear trend projects **96** such deaths in 2010, **81** in 2011, and **65** in 2012. The three-year moving average shows a downward trend at this time as well. It is likely that at least some of the declines in 2008 and 2009 were associated with factors other than seat belt use. If these factors change, unbelted fatalities and the linear trends will change.

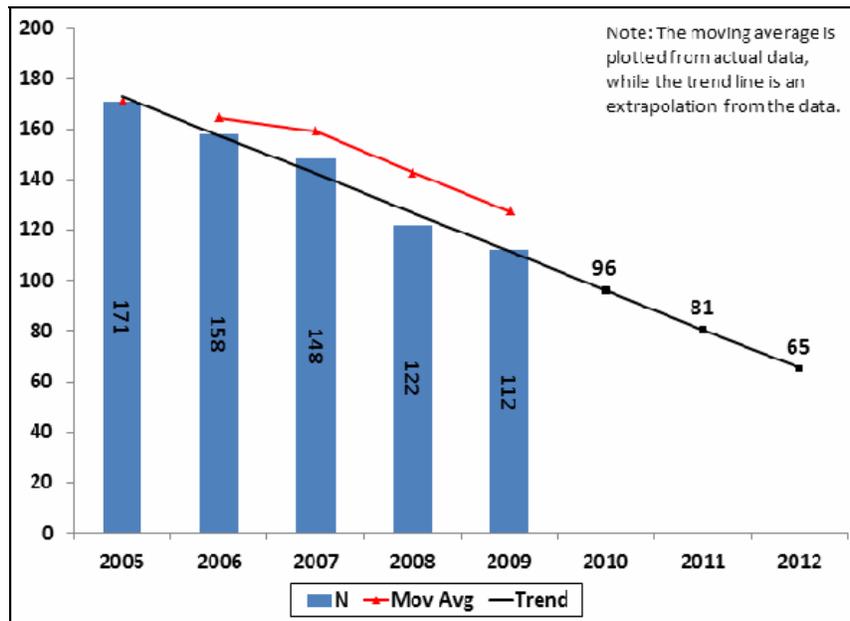


Figure 10. Massachusetts Unbelted Passenger Vehicle Occupant Fatalities

Figure 11 shows the *VMT-based* fatality rate for unbelted fatalities in Massachusetts. If the linear trend were to continue, the unbelted death rate would be **0.18** (deaths per 100 million VMT) in 2010, **0.16** in 2011, and **0.13** in 2012.

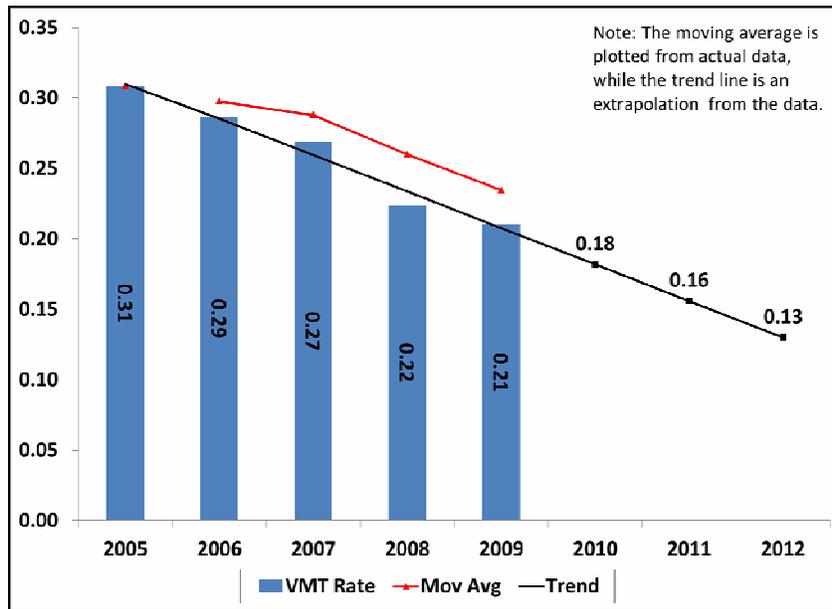


Figure 11. Massachusetts Unbelted Passenger Vehicle Occupant Fatalities, VMT Rate

Figure 12 shows the *population-based* fatality rate for unbelted fatalities. If this linear trend were to continue, the unbelted death rate in Massachusetts would be **1.44** (deaths per 100,000 residents) in 2010, **1.19** in 2011, and **0.95** in 2012.

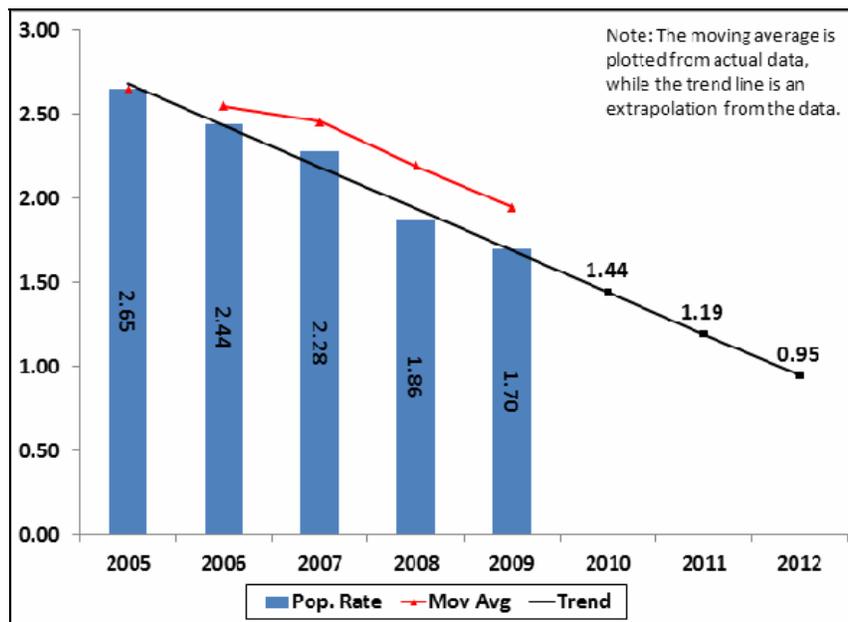


Figure 12. Massachusetts Unbelted Passenger Vehicle Occupant Fatalities, Population Rate

Motorcycle Rider Fatalities

Motorcycle riders include both operators and passengers of a motorcycle. The term “motorcyclist” also includes both the operator and the passenger.

Table 14 shows that, from 2005 through 2009, the *number of motorcyclist deaths* in Massachusetts “spiked” in 2007 (from 50 to 62), then dropped in 2008, then rose again in 2009 to 54, only slightly fewer than the number of fatalities in 2005. The 2009 number of fatalities (54) was a slight increase over the average of the previous four years (2.9%). The 2009 number of fatalities (54) was a 3.6% decrease compared to the number of fatalities in 2005 (56).

Similarly, the *population-based death rate* “spiked” in 2007 (0.95 per 100,000 residents) but was modestly lower in 2009 (0.82) than in 2005 (0.87). Compared with the prior four years, the 2009 rate represented a 1.3% increase. The average rate in Massachusetts (2005-2009) was 0.81 per 100,000 residents, lower than across the Region (1.22) and across the Nation (1.62).

As a percentage of total deaths in Massachusetts, motorcyclists accounted for 12.7% in 2005, and increased to 16.2% by 2009, with a low of 11.5% in 2008. Over all five years, Massachusetts accounted for 30.3% of all motorcyclist deaths in the Region.

Unhelmeted motorcyclists accounted for 4 of Massachusetts’s motorcyclist fatalities in 2005 and 6 in 2009. The 2009 level represented an 84.6% decrease over the prior four-year average, with the understanding that, with so few fatalities of this type recorded, small changes may result in large fluctuations. As a percentage of all motorcyclist deaths in the Massachusetts, unhelmeted motorcyclists accounted for 7.1% in 2005 and 11.1% in 2009. The 2009 percentage was 79.5% higher than the average over the prior four years.

Table 14. Massachusetts Motorcycle Rider Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	56	50	62	42	54	2.86%
Pop. Rate*	0.87	0.77	0.95	0.64	0.82	1.25%
Pct of Total	12.70%	11.66%	14.29%	11.54%	16.17%	28.42%
Pct of Region	30.11%	28.25%	36.26%	25.15%	31.58%	5.41%
Unhelmeted Fatalities	4	5	3	1	6	84.62%
Pct Unhelmeted Fatalities	7.1%	10.0%	4.8%	2.4%	11.1%	79.49%

* Rate per 100,000 population

Table 15 provides similar data for Region 1. As is shown in the Table, Region 1 experienced a steady decline in the number of motorcyclist fatalities through 2008, followed by a small increase, from 167 in 2008 to 171 in 2009. The Regional number of motorcyclist deaths in 2009 (171) represented a 2.4% decline over the average of the prior four years (compared with the 2.9% increase in Massachusetts). The population-based fatality rate in Region 1 declined by 3.4% (compared to a 1.3% increase in Massachusetts).

Table 15. Region 1 Motorcycle Rider Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	186	177	171	167	171	-2.43%
Pop. Rate*	1.31	1.24	1.20	1.16	1.19	-3.41%
Pct of Total	15.32%	14.47%	14.53%	15.22%	17.40%	16.86%
Unhelmeted Fatalities	80	87	72	77	79	0.00%
Pct Unhelmeted Fatalities	43.0%	49.2%	42.1%	46.1%	46.2%	2.45%

* Rate per 100,000 population

Nationwide, Table 16 shows that the *number of motorcyclist fatalities* and the *population-based fatality rate* declined by 10.3% and 12.3%, respectively, as compared to the increases in Massachusetts (2.9% and 1.3%, respectively). The *motorcyclist percent of total deaths* increased by about 9.4% in 2009, compared with the prior four-year average. Finally, while the *number of unhelmeted deaths* declined by 6% Nationally, the *unhelmeted percent of total motorcyclist deaths* increased by 4.8%, indicating that unhelmeted fatalities did not decline as much as helmeted fatalities.

Table 16. Nationwide Motorcycle Rider Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	4,576	4,837	5,174	5,312	4,462	-10.31%
Pop. Rate*	1.55	1.62	1.72	1.75	1.45	-12.33%
Pct of Total	10.52%	11.33%	12.54%	14.19%	13.20%	9.37%
Unhelmeted Fatalities	1,898	1,973	2,103	2,160	1,911	-6.02%
Pct Unhelmeted Fatalities	41.48%	40.79%	40.65%	40.66%	42.83%	4.78%

* Rate per 100,000 population

The next two figures show annual and projected motorcycle *fatalities* and *population-based fatality rates* for Massachusetts. Figure 13 shows the 2007 “spike” in fatalities. Overall, the linear trend line shows a slight downward direction, with a projection of **49** deaths in 2010, **48** in 2011, and **47** in 2012. The three-year moving average (red line), however, shows a slight increase through 2009.

Two counterbalancing forces are likely to affect this trend. First, the influence of the sharp 2007 spike will diminish over time. Second, an improving economy may result in increases in motorcyclist deaths, possibly as soon as 2010.

Figure 14 shows a slightly descending linear trend in the population-based fatality rate among motorcyclists in Massachusetts. If this trend were to continue, there would be approximately **0.74** such deaths per 100,000 residents in 2010, **0.72** deaths in 2011, and **0.70** in 2012. Again, the three-year moving average shows a slight increase through the year 2009.

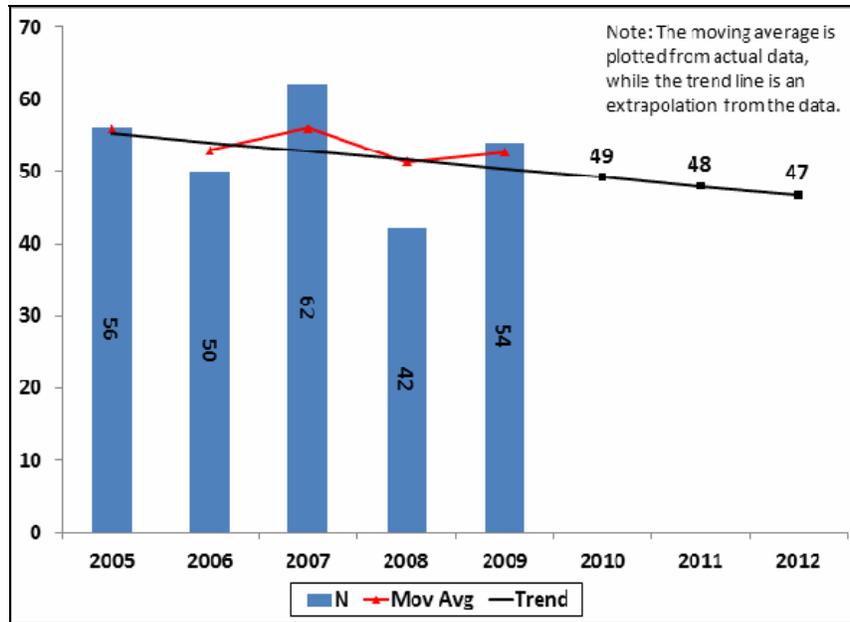


Figure 13. Massachusetts Motorcycle Rider Fatalities

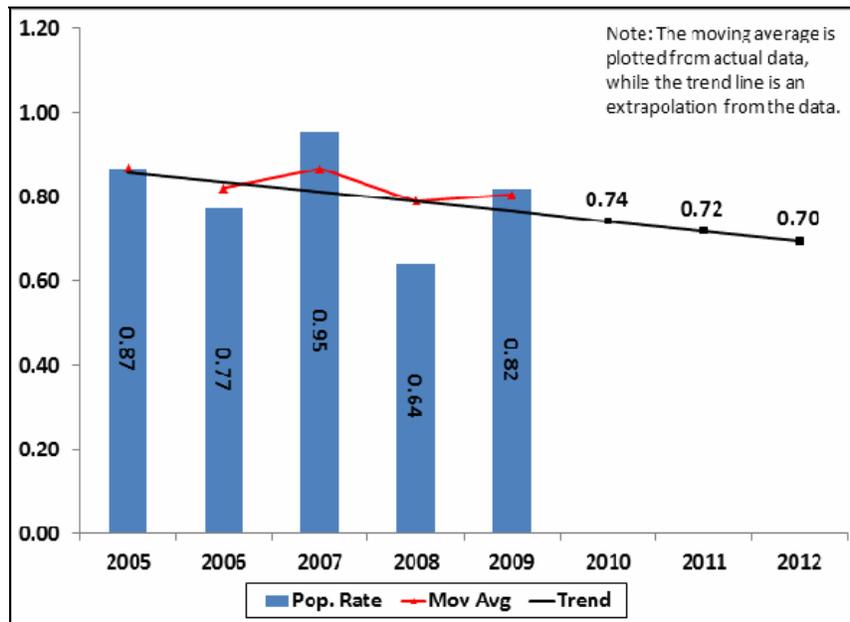


Figure 14. Massachusetts Motorcycle Rider Fatalities, Population Rate

Pedestrian Fatalities

Table 17 shows the *number* and *rate* of pedestrian deaths in Massachusetts. Overall, the 2009 total (48) was 36.8% lower than the 2005 level (76) and 31.2% lower than the four-year average from 2005 through 2008 (70).

Through the years 2005 to 2008 shown in Table 17, pedestrians accounted for an average of just over 16% of all traffic-related deaths in Massachusetts, with a sudden jump to 20.9% in 2008. Pedestrians were 14.4% of all fatalities in 2009; a 14.1% decrease from the average of the previous four years.

Massachusetts accounted for nearly 48.2% of all pedestrian deaths across the Region. This percentage declined, from a high of 54% in 2005 to a low of 42% in 2009.

The State's *population-based fatality rate* declined by 32.3% in 2009 (0.73 deaths per 100,000 population), compared with the average of the prior four years (1.07). On average, over all five years covered in Table 17, Massachusetts's population-based death rate for pedestrians (1.00) was higher than across the Region (0.95) but lower than across the Nation (1.52).

Table 17. Massachusetts Pedestrian Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	76	61	66	76	48	-31.18%
Pop. Rate*	1.18	0.94	1.02	1.16	0.73	-32.26%
Pct of Total	17.23%	14.22%	15.21%	20.88%	14.37%	-14.08%
Pct of Region	53.90%	46.92%	47.83%	49.03%	42.11%	-14.88%

* Rate per 100,000 population

Table 18 shows that pedestrian fatalities in the Region declined by over 19% in 2009 (114 deaths), compared with the average of the prior four years (141 deaths per year). The Regional fatality rate (per 100,000 residents) declined by almost 20% in 2009 (0.79), compared with the four years prior (0.99). Over all five years, pedestrians accounted for an average of 141 deaths per year for a population-based fatality rate of 0.95; lower than across the U.S. (1.52), and Massachusetts (1.00). Finally, over this period, pedestrians accounted for about 12% of all deaths across Region 1, 12% across the U.S., and 16% in Massachusetts.

Table 18. Region 1 Pedestrian Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	141	130	138	155	114	-19.15%
Pop. Rate*	0.99	0.91	0.97	1.08	0.79	-19.95%
Pct of Total	11.61%	10.63%	11.72%	14.13%	11.60%	-3.13%

* Rate per 100,000 population

Table 19 shows that pedestrians accounted for an average of 4,578 deaths per year Nationwide, about 12% of all fatalities (2005-2009). In spite of a 13% decline in the number of pedestrian

deaths in 2009, there was a slight (6.2%) increase in the percentage of all deaths accounted for by pedestrians.

Table 19. Nationwide Pedestrian Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	4,892	4,795	4,699	4,414	4,092	-12.94%
Pop. Rate*	1.65	1.61	1.56	1.45	1.33	-14.90%
Pct of Total	11.24%	11.23%	11.39%	11.79%	12.10%	6.17%

* Rate per 100,000 population

The trends in the *numbers* and *rates* of pedestrian fatalities in Massachusetts are shown in Figures 15 and 16, respectively. If the linear trend for the *number* of pedestrian deaths were to continue (Figure 15), there would be **53** such deaths in 2010, **49** in 2011, and **45** in 2012. The three-year moving average is also trending downward at this time, albeit not as steeply as the trend line.

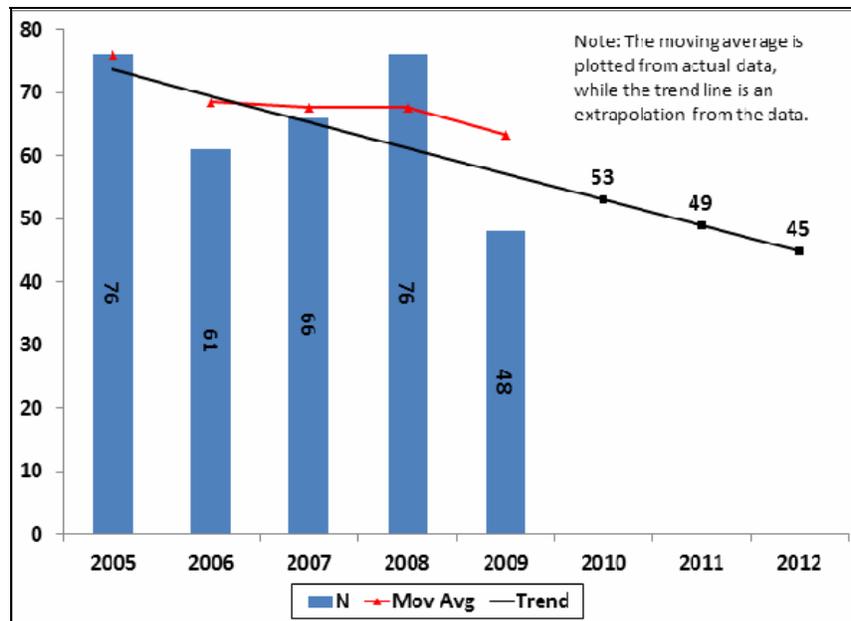


Figure 15. Massachusetts Pedestrian Fatalities

Figure 16 shows a slight downward trend for the *population-based fatality rate* as well. The population rate projects to **0.80** per 100,000 residents in 2010, **0.73** in 2011, and **0.66** in 2012. In addition, the three-year moving average is trending downward at this time, but, again, not as steeply.

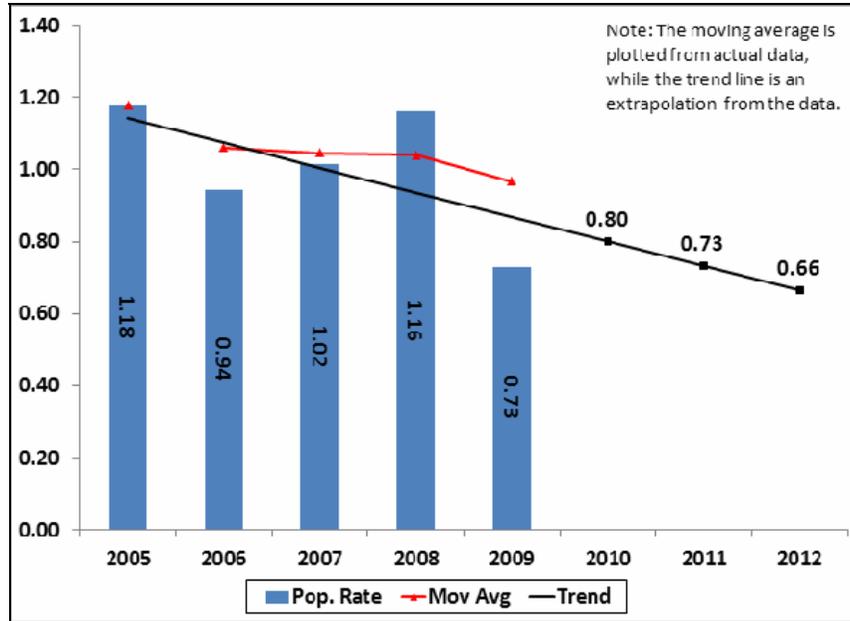


Figure 16. Massachusetts Pedestrian Fatalities, Population Rate

Bicyclist Fatalities

Table 20 provides data on bicyclist fatalities in Massachusetts for the period 2005-2009. Tables 21 and 22 provide data for Region 1 and the U.S., respectively. Over the past five years, bicyclist fatalities accounted for almost 2% of all fatalities in Massachusetts; 1.5% across the Region; and 1.8% across the U.S.

With regard to change, the number of bicyclist fatalities in Massachusetts has decreased by 25% in 2009 (6 deaths), compared with the average of the prior four years (8 deaths per year). However, the number of bicyclist fatalities increased in 2007, and, while there was a slight decline in 2008, the 2008 number still represented an increase over the number of fatalities recorded in 2005 and 2006. Across the Region, bicycle deaths declined by 58.4% in 2009 (8 deaths), compared with the prior four-year average (19 deaths per year).

Over the five year period, Massachusetts's *population-based fatality rate* (0.12 deaths per 100,000 population) was the same as the Regional rate (0.12) and well below the U.S. rate (0.24).

With regard to change in this rate, 2009 represented a 26.2% decline over the average of the prior four years in Massachusetts, compared with declines of 58.9% Region-wide and 17.3% Nationwide.

Table 20. Massachusetts Bicyclist Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change

Fatalities	5	6	11	10	6	-25.00%
Pop. Rate*	0.08	0.09	0.17	0.15	0.09	-26.17%
Pct of Total	1.13%	1.40%	2.53%	2.75%	1.80%	-6.36%
Pct of Region	33.33%	33.33%	52.38%	43.48%	75.00%	80.47%

* Rate per 100,000 population

Table 21. Region 1 Bicyclist Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	15	18	21	23	8	-58.44%
Pop. Rate*	0.11	0.13	0.15	0.16	0.06	-58.85%
Pct of Total	1.24%	1.47%	1.78%	2.10%	0.81%	-50.21%

* Rate per 100,000 population

Table 22. Nationwide Bicyclist Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	786	772	701	718	630	-15.35%
Pop. Rate*	0.27	0.26	0.23	0.24	0.21	-17.26%
Pct of Total	1.81%	1.81%	1.70%	1.92%	1.86%	3.22%

* Rate per 100,000 population

Figure 17 and Figure 18 show trends in the *numbers* and *rates* of bicyclist fatalities in Massachusetts. Figure 17 suggests that, if the linear trend were to continue, the number of these fatalities would be **9** in 2010, **10** in 2011, and **11** in 2012. The three-year moving average currently shows an increasing trend, although it declines slightly between 2008 and 2009. These trends are most likely due to the sharp increase in fatalities in 2007 and 2008.

Figure 18 shows the trend for the population-based rate. It also shows an increase, projecting to **0.14** (deaths per 100,000 population) in 2010, **0.15** in 2011, and **0.16** in 2012. Here again, the moving average shows a slight decline in 2009, after increasing since 2006. These trends are most likely due to the sharp increase in fatalities in 2007 and 2008.

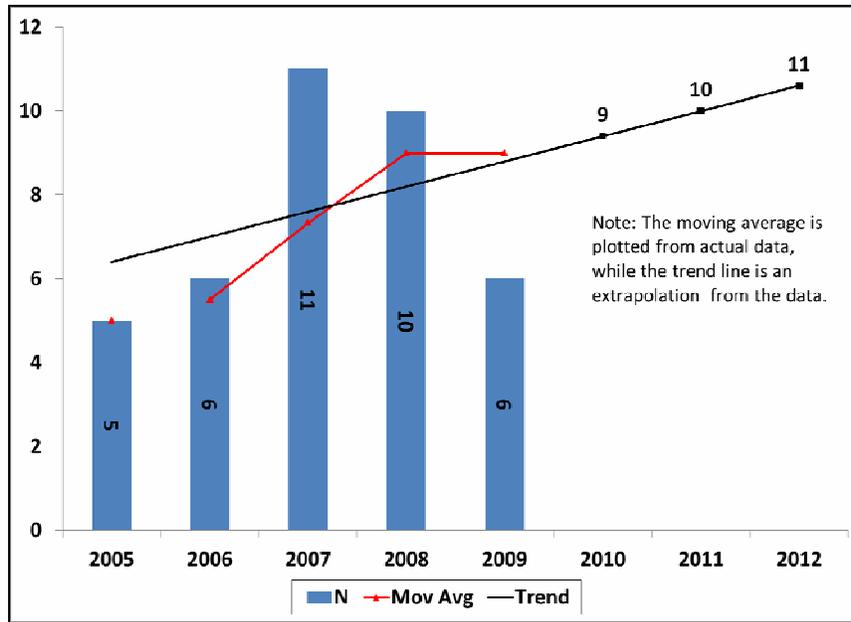


Figure 17. Massachusetts Bicyclist Fatalities

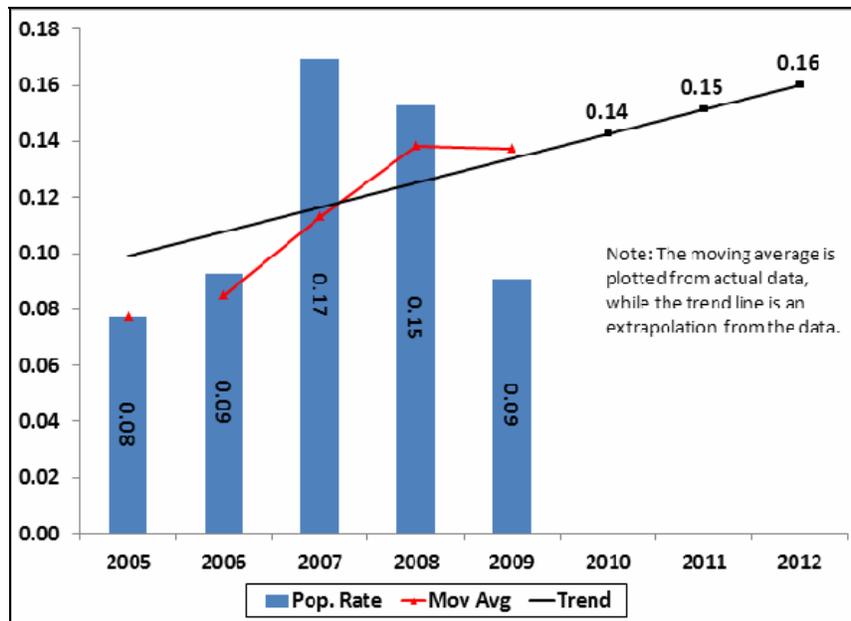


Figure 18. Massachusetts Bicyclist Fatalities, Population Rate

Fatalities Involving Young Drivers

Tables 23-25 indicate the number of fatalities (all ages) resulting from Massachusetts crashes involving a driver between 16 and 20 years of age. In 2005, there were 92 such fatalities, declining to 49 in 2009, a 47% decline. Compared with the prior four-year average, however, the 2009 level represented a smaller 38% decline.

The population-based fatality rate decreased from 1.43 deaths per 100,000 residents in 2005 to 0.74 in 2009, a 48.3% decline. Compared with the prior four-year average, the 2009 level represented a smaller 38.6% decline. Over the entire five-year period, the average population-based death rate in Massachusetts was 1.12 deaths per 100,000 residents, lower than across the Region (1.43), both of which were lower than across the U.S. (2.35).

In 2005, 20.9% of all fatalities in the Massachusetts involved young drivers, declining to 14.7% in 2009 (-30%). Compared with the prior four years, the 2009 level represented a 22.1% decline.

Young driver-involved fatalities in Massachusetts represented 38% of all such deaths across the Region in 2005, declining to 34% in 2009. Compared with the prior four years, the 2009 level represented a 6.2% decline.

Finally, the young driver-involved *proportion of total deaths* declined by 22%, reflecting the fact that these deaths declined more (-38%) than did total deaths (-20%) (Table 1).

Table 23. Massachusetts Young Driver-Involved Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	92	74	81	67	49	-37.58%
Pop. Rate*	1.43	1.14	1.25	1.02	0.74	-38.55%
Pct of Total	20.86%	17.25%	18.66%	18.41%	14.67%	-22.07%
Pct of Region	37.70%	31.49%	36.16%	38.29%	33.56%	-6.16%

* Rate per 100,000 population

Young driver-involved deaths decreased Region-wide, from 244 in 2005 to 146 in 2009 (-40%). Compared with the prior four-year average (220 fatalities per year), the 2009 level represented a 33% decline. Over the same five-year period, the Regional, population-based, fatality rate decreased by 41% compared with 2005; 34% compared with the prior four-year average. The most significant declines were in 2008 and 2009 (Table 24).

Table 24. Region 1 Young Driver-Involved Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	244	235	224	175	146	-33.49%
Pop. Rate*	1.72	1.65	1.57	1.22	1.01	-34.14%
Pct of Total	20.10%	19.22%	19.03%	15.95%	14.85%	-20.31%

* Rate per 100,000 population

Young driver-related fatalities accounted for 20.1% of all Region 1 motor vehicle deaths in 2005 and 14.9% in 2009 (-26.1% compared with 2005; -20.3% compared with the average percentage from 2005 through 2008). Again, the largest declines, compared to 2005, were in 2008 and 2009 (Table 24).

Table 25. Nationwide Young Driver-Involved Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	8,053	8,009	7,552	6,311	5,518	-26.24%
Pop. Rate*	2.72	2.68	2.50	2.07	1.80	-27.91%
Pct of Total	18.51%	18.75%	18.30%	16.86%	16.32%	-10.06%

* Rate per 100,000 population

Nationwide, young driver-involved *fatalities* decreased by 32% from 2005 to 2009. Using the prior four years as a comparison, Table 25 shows that the decline was 26.2%. There was a decline in every year after 2005, but the largest declines were in 2008 and 2009.

The *population-based fatality rate* decreased by 34% Nationally, from 2005 to 2009. Table 25 shows a smaller (28%) decline in 2009 when compared with the average of the previous four years. The largest declines were in 2008 and 2009.

Young driver-involved deaths, on average, accounted for about *18% of all deaths* across the U.S. from 2005 through 2009, declining from 18.5% in 2005 to 16.3% in 2009.

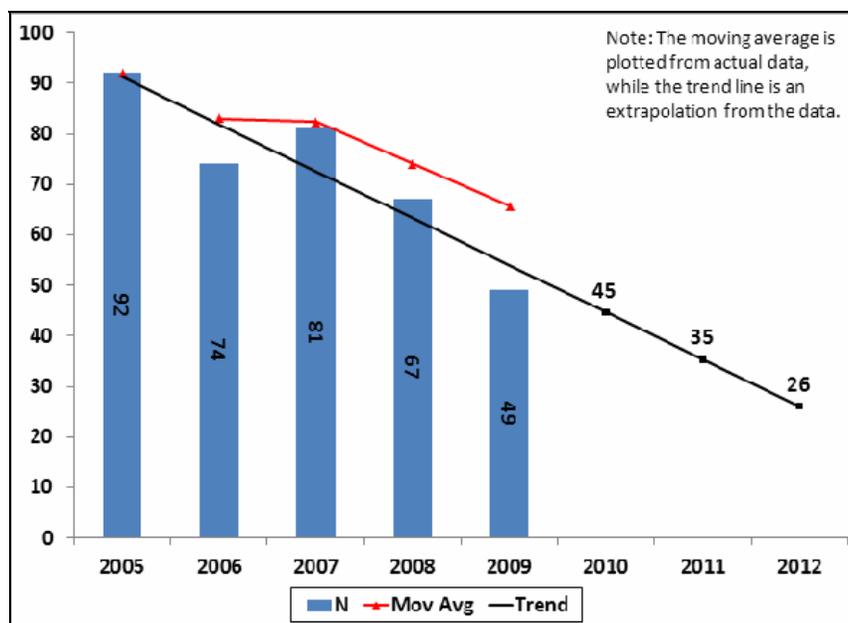


Figure 19. Massachusetts Young Driver-Involved Fatalities

Figure 19 (above) shows the downward trend in Massachusetts’s young driver-involved fatalities. If this trend continues, the number of such fatalities would be **45** in 2010, **35** in 2011, and **26** in 2012. Again, this downward trend may diminish or even reverse, in the near future. Figure 20 (below) shows a similar trend in the population-based fatality rate. The rate projects to **0.67** per 100,000 residents in 2010, **0.52** in 2011, and **0.37** in 2012.

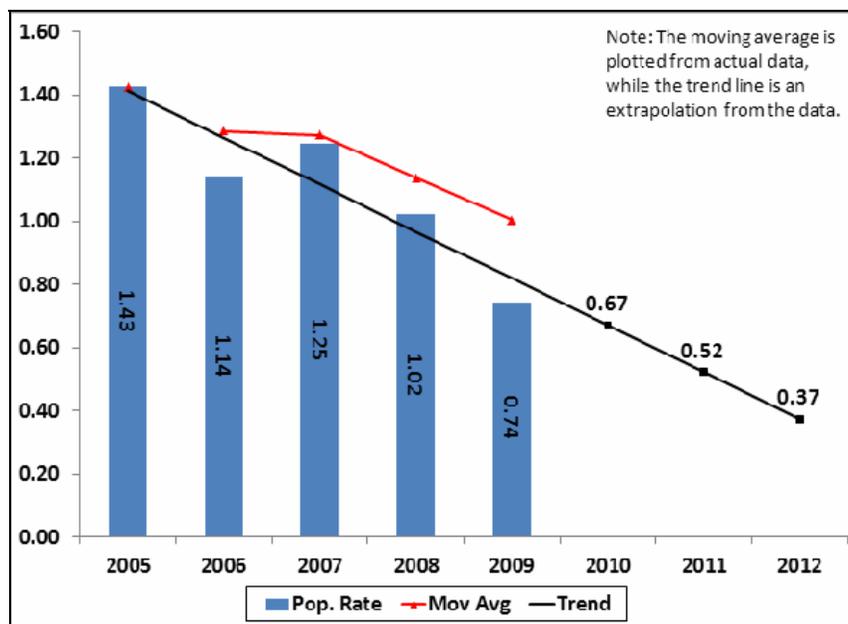


Figure 20. Massachusetts Young Driver-Involved Fatalities, Population Rate

Fatalities Involving Older Drivers (Ages 65 and Above)

Tables 26, 27, and 28 show the numbers and rates of fatalities in crashes involving drivers ages 65 and above in Massachusetts, across Region 1, and across the Nation, respectively.

Table 26 shows that there were 71 *older driver-involved deaths* in Massachusetts in 2005, declining to 62 in 2009. Similar to the trend in younger driver-involved deaths, there was an increase in 2007 followed by a decline in 2007. The change, as measured from 2005 to 2009 (-13%) was greater than that when comparing 2009 with the average of the prior four years (-3.1%).

Massachusetts's *population-based fatality rate* decreased from 1.10 (deaths per 100,000 population) in 2005 to 0.94 deaths in 2009 (-14.5%). The decline in 2009 compared with the prior four-year average (0.99) was -4.6%.

On average over the five-year period, Massachusetts's older driver-involved population death rate (0.98 deaths per 100,000 population) has been lower than across the Region (1.36), both of which were lower than across the Nation (2.0).

Table 26 shows that the *older driver proportion of all fatalities* in the Massachusetts experienced a substantial increase in 2009 (18.6% in 2009 as compared to 14.6% in 2008). Reflecting this rise, the 2009 percentage was 15% greater than in 2005 and it represented a 21% change from the average of the prior four years.

Massachusetts's older driver-involved deaths accounted for an average of 33% of such deaths across the Region over all five years, increasing slightly from about 34% in 2005 to 35% in

2009; the 2009 percentage represented a 9.7% increase over the average of the previous four years.

Table 26. Massachusetts Older Driver-Involved Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	71	62	70	53	62	-3.13%
Pop. Rate*	1.10	0.96	1.08	0.81	0.94	-4.64%
Pct of Total	16.10%	14.45%	16.13%	14.56%	18.56%	20.95%
Pct of Region	34.47%	30.10%	34.65%	28.96%	35.23%	9.67%

* Rate per 100,000 population

Across the Region, Table 27 shows that the *number* of older driver-involved deaths continually decreased after 2006, going from 206 to 176 by 2009. The 2009 level represented a 15% decline from 2005, greater than the 11.7% decline found when comparing 2009 with the prior four-year average.

The Regional *population-based fatality rate* declined from 1.45 in 2005 to 1.22 by 2009. The 2009 level represented a decrease of 12.5% from the average of the previous four years (1.4). Overall, older driver-involved deaths *accounted for about 17% of total deaths* across the Region.

Table 27. Region 1 Older Driver-Involved Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	206	206	202	183	176	-11.67%
Pop. Rate*	1.45	1.44	1.41	1.27	1.22	-12.54%
Pct of Total	16.97%	16.84%	17.16%	16.68%	17.90%	5.83%

* Rate per 100,000 population

Nationwide, Table 28 shows that the *number of* older driver-involved deaths declined steadily from 2005 through 2009, with no increase from 2008 to 2009. The 2009 level (5,593) was 15.9% lower than in 2005 (6,647) and 10.4% lower than the average of the prior four years (6,244).

The U.S. *population-based fatality rate* also decreased every year, from 2.25 in 2005 to 1.82 in 2009, representing a decline of nearly 19% from 2005; 12.4% from the average of 2005-2008.

Over five years, older driver-involved deaths accounted for about *15% of all deaths* across the Nation; first *decreasing* from 2005 to 2006; then *increasing* each year thereafter.

Table 28. Nationwide Older Driver-Involved Fatalities

	2005	2006	2007	2008	2009	2005-2009 % Change
Fatalities	6,647	6,334	6,169	5,825	5,593	-10.42%
Pop. Rate*	2.25	2.12	2.05	1.91	1.82	-12.44%
Pct of Total	15.28%	14.83%	14.95%	15.57%	16.54%	9.23%

* Rate per 100,000 population

Figure 21 shows a steady downward trend in Massachusetts's older driver-involved fatalities. If this trend were to continue, the number of such fatalities would be **56** in 2010, **53** in 2011, and **50** in 2012. The three-year moving average shows a leveling out through 2008 and 2009.

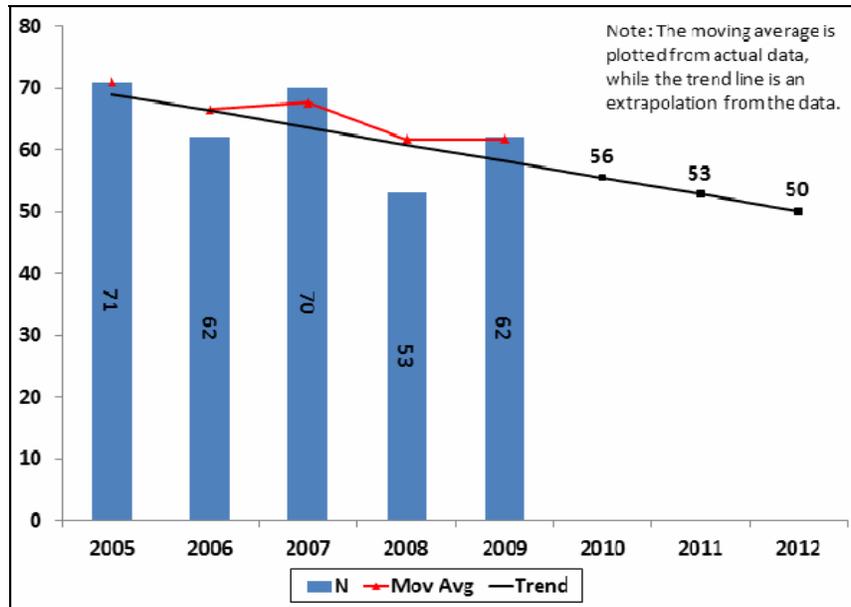


Figure 21. Massachusetts Older Driver-Involved Fatalities

Figure 22 (below) shows a steady downward trend in Massachusetts's older driver-involved population-based fatality rate. If this trend were to continue, there would be **0.84** fatalities per 100,000 population in 2010, **0.79** in 2011, and **0.74** in 2012. Again, the three-year moving average suggests a leveling out through 2008 and 2009.

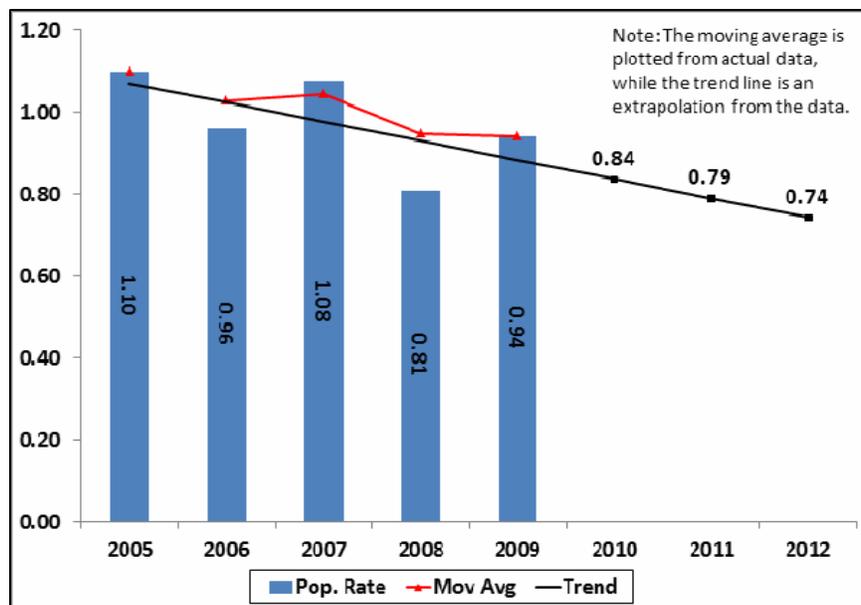


Figure 22. Massachusetts Older Driver-Involved Fatalities, Population Rate

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EMPHASIS AREA DATA PROFILES

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I. FATALITIES

II.

FATALITIES – KEY FINDINGS

In the period 2005-2009:

- Overall fatalities decreased by 19.9% in the Massachusetts, compared to 16.5% in the Region and 18% Nationwide. Massachusetts saw the largest decreases in pedestrian (31.2%) and bicyclist (25%) fatalities. The only category in which the 2009 number represented an increase over the average of the previous four years for Massachusetts was motorcyclist fatalities, which saw a 2.9% increase (Table 29).
- Four counties (Plymouth, Worcester, Bristol, and Middlesex) accounted for 52.4% of all fatalities in Massachusetts. For the years 2005 through 2009, Plymouth County accounted for 10.3% of all fatalities in Massachusetts, Worcester accounted for 14.3%, Bristol accounted for 12.1%, and Middlesex accounted for 15.7% (Table 30).
- The three counties that averaged the highest population-based fatality rates between 2005 and 2009 were Berkshire (11.2 fatalities per 100,000 population), Franklin (9.7 per 100,000 population), and Barnstable (9.5 per 100,000 population) (Table 31).
- Persons age 25-34 constituted a plurality (15.4%) of fatalities in Massachusetts for the years between 2005 and 2009. The same holds true for Region 1 and the U.S. as a whole, where they constituted 14.7% and 16.7% of fatalities, respectively. However, persons age 21-24 had the highest population-based fatality rate, with 69.5 fatalities per 100,000 population in Massachusetts. Males constituted 70.1% of fatalities in Massachusetts, compared to 70.2% in Region 1 and 70.4% in the U.S. as a whole (Table 32).
- Seventy-four percent of Massachusetts's fatalities were racially White over the five-year period, compared to 85.9% of the population in 2009. Blacks represented 5.4% of fatalities over this period and 7.1% of Massachusetts's 2009 population (Table 33).

Table 29. Fatalities by Person Type

	2005	2006	2007	2008	2009	Total 2005-2009	Percent Change 2005-2009
Total Fatalities							
Massachusetts	441	429	434	364	334	2,002	-19.90%
Region	1,214	1,223	1,177	1,097	983	5,694	-16.54%
U.S.	43,510	42,708	41,259	37,423	33,807	198,707	-17.99%
Driver Fatalities*							
Massachusetts	286	284	277	218	212	1,277	-20.38%
Region	807	850	787	726	663	3,833	-16.34%
U.S.	27,491	27,348	26,570	24,254	21,797	127,460	-17.48%
Passenger Fatalities*							
Massachusetts	70	74	77	56	67	344	-3.25%
Region	243	219	222	185	196	1,065	-9.78%
U.S.	10,069	9,507	9,036	7,775	7,074	43,461	-22.24%
Motorcyclist Fatalities							
Massachusetts	56	50	62	42	54	264	2.86%
Region	186	177	171	167	171	872	-2.43%
U.S.	4,576	4,837	5,174	5,312	4,462	24,361	-10.31%
Pedestrian Fatalities							
Massachusetts	76	61	66	76	48	327	-31.18%
Region	141	130	138	155	114	678	-19.15%
U.S.	4,892	4,795	4,699	4,414	4,092	22,892	-12.94%
Bicyclist Fatalities							
Massachusetts	5	6	11	10	6	38	-25.00%
Region	15	18	21	23	8	85	-58.44%
U.S.	786	772	701	718	630	3,607	-15.35%

* Driver and passenger fatalities include all vehicle types, thus motorcyclists are duplicated in this table

Table 30. Fatalities by County

County	2005	2006	2007	2008	2009	Total 2005-2009	
						N	%
Barnstable	24	21	30	17	14	106	5.3%
Berkshire	15	19	10	14	15	73	3.6%
Bristol	60	51	52	43	37	243	12.1%
Dukes	2	2	0	1	1	6	0.3%
Essex	46	35	40	29	36	186	9.3%
Franklin	8	9	10	7	1	35	1.7%
Hampden	43	28	38	29	31	169	8.4%
Hampshire	12	9	10	8	9	48	2.4%

Middlesex	69	63	61	56	66	315	15.7%
Nantucket	0	1	1	0	0	2	0.1%
Norfolk	31	48	37	27	36	179	8.9%
Plymouth	46	45	42	48	25	206	10.3%
Suffolk	26	31	39	29	21	146	7.3%
Worcester	58	67	64	56	42	287	14.3%
Total	440	429	434	364	334	2,001	100.0%

Counties with the highest number of fatalities are highlighted.

Table 31. Fatality Rates by County

County	2005	2006	2007	2008	2009
Barnstable	10.67	9.40	13.50	7.67	6.33
Berkshire	11.43	14.56	7.68	10.80	11.60
Bristol	11.02	9.38	9.55	7.88	6.76
Dukes	12.89	12.91	0.00	6.34	6.26
Essex	6.30	4.79	5.46	3.93	4.85
Franklin	11.12	12.54	13.93	9.74	1.39
Hampden	9.23	6.00	8.12	6.18	6.58
Hampshire	7.79	5.82	6.44	5.14	5.77
Middlesex	4.71	4.29	4.13	3.76	4.39
Nantucket	0.00	9.26	9.04	0.00	0.00
Norfolk	4.76	7.35	5.64	4.08	5.40
Plymouth	9.42	9.20	8.55	9.71	5.02
Suffolk	3.65	4.33	5.35	3.90	2.79
Worcester	7.37	8.46	8.04	7.01	5.23
Total	6.82	6.63	6.68	5.56	5.07

Highlighted counties are top counties from previous table.

Table 32. Fatalities by Age Group and Gender: Totals 2005-2009

Age Group	Fatalities by Age					Fatalities by Age and Gender					
	Massachusetts			Region	U.S.	Massachusetts				Region % Males	U.S. % Males
	(N=2,002)	%	Pop. Rate* Per 100k	(N=5,694)	(N=198,708)	Females		Males			
					N	%	N	%			
<5	7	0.3%	1.81	0.4%	1.3%	3	42.9%	4	57.1%	54.2%	53.8%
5-9	13	0.6%	3.32	0.7%	1.2%	1	7.7%	12	92.3%	72.5%	55.3%
10-15	38	1.9%	7.88	1.9%	2.4%	16	42.1%	22	57.9%	56.1%	58.7%
16-20	280	14.0%	58.48	14.0%	12.7%	98	35.0%	182	65.0%	69.8%	68.5%
21-24	252	12.6%	69.50	11.6%	10.6%	62	24.6%	190	75.4%	76.1%	77.3%
25-34	309	15.4%	36.12	14.7%	16.7%	66	21.4%	243	78.6%	77.6%	76.2%
35-44	233	11.6%	25.01	13.1%	14.8%	61	26.2%	172	73.8%	72.4%	73.1%
45-54	286	14.3%	27.82	14.6%	15.0%	73	25.5%	213	74.5%	76.7%	72.8%
55-64	222	11.1%	28.37	11.1%	10.2%	60	27.0%	162	73.0%	68.9%	70.2%
65-74	137	6.8%	30.41	6.6%	6.5%	54	39.4%	83	60.6%	62.3%	63.6%
75+	221	11.0%	49.78	11.2%	8.3%	103	46.6%	118	53.4%	52.8%	57.0%
Unknown	4	0.2%	n/a	0.1%	0.2%	1	25.0%	3	75.0%	75.0%	72.3%
Total	2,002	100.0%	30.36	100.0%	100.0%	598	29.9%	1,404	70.1%	70.2%	70.4%

Highlighting is to help reader identify cells with higher numbers/percentages/population rates
 *Population rate based on 2009 census data

As seen in Table 32, above, the age groups in Massachusetts with the greatest number of fatalities per 100,000 population are those ages 16-24 and those ages 75 and older. Age groups 25-34, 45-54, and 16-20 made up the greatest number of total fatalities, although, with the exception of those 16-20, their population-based fatality rates were lower. In Region 1, the greatest percentages of fatalities were in the 25-34, 45-54, and 16-20 age groups, in order of decreasing fatalities. Nationwide, the greatest number of fatalities was in the age group 25-34, followed by 45-54, and then 35-44.

Table 33. Fatalities by Race and Hispanic Origin

Race/Hispanic	Massachusetts					Total 2005-2009		
	2005	2006	2007	2008	2009	MA %	Region %	U.S. %
White	333	326	351	284	184	73.8%	79.6%	58.0%
Black	23	32	23	18	13	5.4%	4.7%	10.5%
Other	26	22	13	12	10	4.1%	3.4%	6.1%
Hispanic	35	36	32	23	10	6.8%	4.5%	10.9%
Total Race Known	417	416	419	337	217	90.2%	92.2%	85.6%

*Percentages based on total fatalities.

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**II. ALCOHOL-IMPAIRED DRIVING
FATALITIES AND ALCOHOL-
IMPAIRMENT-RELATED FATAL CRASHES
AND FATALITIES**

ALCOHOL-IMPAIRED DRIVING FATALITIES AND ALCOHOL-IMPAIRMENT-RELATED FATAL CRASHES AND FATALITIES – KEY FINDINGS

In the period 2005-2009:

- The percentage of Massachusetts's fatalities that were related to alcohol-impaired driving has been consistently been above that of the U.S. as a whole. In 2007, alcohol-impaired driving fatalities accounted for 36% of all fatalities in Massachusetts, the highest percentage recorded for the years 2005-2009; in 2009, alcohol-impaired driving fatalities accounted for 32% of all fatalities in Massachusetts, the lowest percentage for this period (Figure 23).
- The four counties with the most alcohol-impaired driving fatalities were Middlesex (103), Worcester (99), Bristol (91), and Plymouth (74). The counties with the highest percentage of alcohol-impaired driving fatalities were Nantucket (50%), Hampshire (41.7%), Bristol (37.4%), and Plymouth (35.9%).
- In 2009, the alcohol-impaired driving population-based fatality rate by county declined by 24.9% as compared to the average of the previous four years. The four counties with the highest alcohol-impaired population-based fatality rates in 2009 were Dukes (6.26 fatalities per 100,000 population), Berkshire (5.41), Hampshire (3.20), and Barnstable (2.26) (Table 35).
- In Massachusetts, 72.6% percent of alcohol-impairment-related crashes occurred between 6 p.m. and 3 a.m.; 65.6% occurred on Friday, Saturday, and Sunday. The same pattern holds true for Region 1 and the U.S. as a whole. 73.2% of alcohol-impairment-related crashes in Region 1 occurred between 6 p.m. and 3 a.m. and 64.4% occurred on Friday, Saturday, and Sunday. For the U.S. as a whole, 68.4% of alcohol-impairment related crashes occurred between 6 p.m. and 3 a.m. and 63.1% occurred on Friday, Saturday, and Sunday (Table 36).
- For the years 2005 through 2009, 37% of Massachusetts's fatalities were associated with a blood alcohol concentration of 0.08% or greater. This was above the percentage in Region 1 (33%) and the U.S. as a whole (35%) (Table 37).
- NHTSA's alcohol imputation data estimate BACs where no test results are available. These data show that, for the years 2005 through 2009, 21.7% of *drivers* involved in fatal crashes in Massachusetts had a BAC of at least 0.08. This percentage was lower than that of Region 1, 21.9%, but higher than the U.S. as a whole, 20.1% (Table 38).

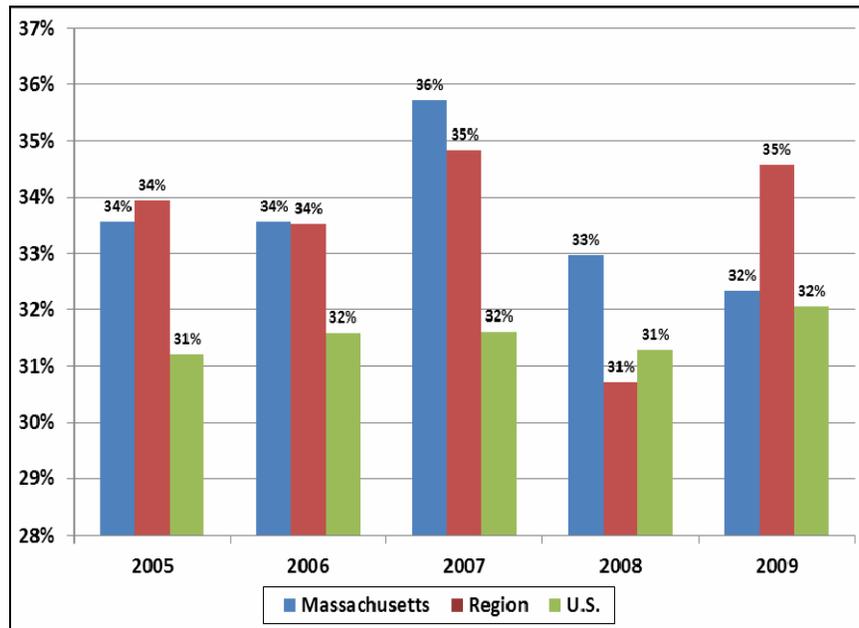


Figure 22. Alcohol-Impaired Driving Fatalities as Percent of Total Fatalities

As shown in Figure 23, above, the percentage of fatalities in Massachusetts and Region 1 that were alcohol-impaired has been above that of the U.S. as a whole; the exception being 2008, where alcohol-impaired fatalities in both Region 1 and the Nation represented 31% of total fatalities.⁸ In 2007, 36% of all fatalities in Massachusetts were alcohol-impaired driving fatalities, the highest for this five-year time period.

Table 34. Alcohol-Impaired Driving Fatalities by County

County	Alcohol-Impaired Driving (A-I) Fatalities*					Total A-I Fatalities	Total Fatalities	% A-I
	2005	2006	2007	2008	2009			
Barnstable	7	4	13	5	5	34	106	32.1%
Berkshire	2	6	1	6	7	22	73	30.1%
Bristol	20	21	23	15	12	91	243	37.4%
Dukes	0	0	0	1	1	2	6	33.3%
Essex	12	8	19	9	13	61	186	32.8%
Franklin	3	2	1	0	0	6	35	17.1%
Hampden	11	8	15	10	13	57	169	33.7%
Hampshire	3	5	4	3	5	20	48	41.7%
Middlesex	28	20	22	14	19	103	315	32.7%
Nantucket	0	0	1	0	0	1	2	50.0%

⁸ For this report, *alcohol-impairment-related* fatalities include those resulting from when a driver, passenger, motorcycle operator, pedestrian, or bicyclist was impaired (BAC \geq 0.08), while *alcohol-impaired driving* fatalities refer only to those resulting from impaired (BAC \geq 0.08) drivers/motorcycle operators.

Norfolk	14	20	6	11	12	63	179	35.2%
Plymouth	17	14	18	19	6	74	206	35.9%
Suffolk	9	7	12	6	7	41	146	28.1%
Worcester	21	28	20	22	8	99	287	34.5%
Totals	147	143	155	121	108	674	2,001	33.7%

*Based on NHTSA's alcohol imputation data. Rounding may cause the sum of sub-categories to differ slightly from total values. Counties with the highest number of alcohol-impaired driving fatalities are highlighted.

Table 34, above, shows the alcohol-impaired driving fatalities by county for Massachusetts. The four counties with the most alcohol-impaired driving fatalities (Middlesex, Worcester, Bristol, and Plymouth) have all experienced declines in the number of alcohol-impaired driving fatalities in 2009 as compared to the average of the previous four years. Middlesex experienced a decline of 9.5%, Worcester a decline of 64.8%, Bristol a decline of 39.2%, and Plymouth a decline of 64.7%.

Table 35. Alcohol-Impaired Driving Fatalities by County: Rate per 100,000 Population

County	2005	2006	2007	2008	2009
Barnstable	3.11	1.79	5.85	2.26	2.26
Berkshire	1.52	4.60	0.77	4.63	5.41
Bristol	3.67	3.86	4.22	2.75	2.19
Dukes	0.00	0.00	0.00	6.34	6.26
Essex	1.64	1.09	2.59	1.22	1.75
Franklin	4.17	2.79	1.39	0.00	0.00
Hampden	2.36	1.71	3.21	2.13	2.76
Hampshire	1.95	3.23	2.58	1.93	3.20
Middlesex	1.91	1.36	1.49	0.94	1.26
Nantucket	0.00	0.00	9.04	0.00	0.00
Norfolk	2.15	3.06	0.91	1.66	1.80
Plymouth	3.48	2.86	3.66	3.84	1.20
Suffolk	1.26	0.98	1.65	0.81	0.93
Worcester	2.67	3.53	2.51	2.75	1.00
Total	2.28	2.21	2.38	1.85	1.64

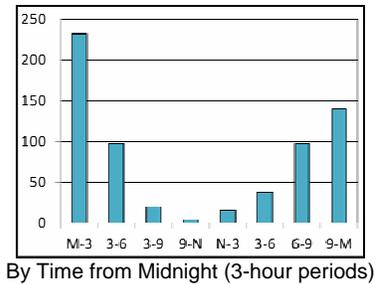
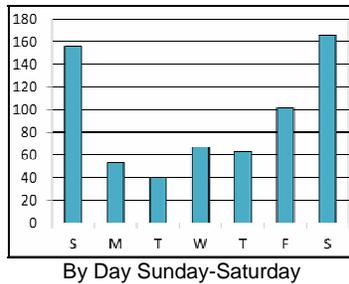
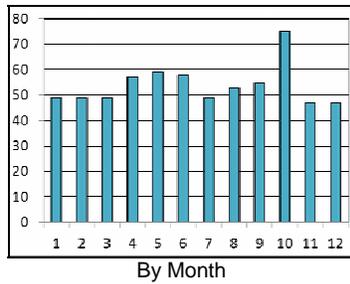
Highlighted counties are top counties from previous table.

It should be noted that the counties' population-based fatality rates can vary drastically from year to year and thus should be considered with caution.

**Table 36. Alcohol-Impairment-Related* Fatal Crashes by Month, Day of Week, and Time of Day:
Totals 2005-2009**

	Massachusetts		Region	U.S.
	(N=647)		(N=1,852)	(N=63,070)
	N	%	%	%
MONTH				
January	49	7.6%	6.4%	7.2%
February	49	7.6%	6.4%	7.1%
March	49	7.6%	7.9%	8.0%
April	57	8.8%	8.5%	8.3%
May	59	9.1%	8.5%	8.6%
June	58	9.0%	9.2%	8.6%
July	49	7.6%	10.2%	9.1%
August	53	8.2%	9.1%	9.3%
September	55	8.5%	9.4%	8.8%
October	75	11.6%	9.6%	8.9%
November	47	7.3%	7.6%	8.3%
December	47	7.3%	7.1%	7.8%
DAY OF WEEK				
Sunday	156	24.1%	22.9%	22.6%
Monday	53	8.2%	7.6%	9.1%
Tuesday	40	6.2%	7.9%	8.2%
Wednesday	67	10.4%	9.1%	9.1%
Thursday	63	9.7%	10.9%	10.4%
Friday	102	15.8%	16.4%	15.3%
Saturday	166	25.7%	25.1%	25.2%
Unknown	0	0.0%	0.0%	0.0%
TIME OF DAY				
Midnight-3am	232	35.9%	33.0%	28.2%
3am-6am	98	15.1%	11.3%	13.6%
6am-9am	20	3.1%	2.7%	3.3%
9am-Noon	4	0.6%	1.3%	1.9%
Noon-3pm	16	2.5%	3.0%	3.4%
3pm-6pm	38	5.9%	7.7%	8.1%
6pm-9pm	98	15.1%	16.8%	17.1%
9pm-Midnight	140	21.6%	23.4%	23.1%
Unknown	1	0.2%	0.7%	1.3%

*Data based on drivers, passengers, motorcycle operators, pedestrians and bicyclists with BAC 0.08% or above involved in fatal crashes



As can be seen in Table 36 (above) the three months with the greatest number of alcohol-impaired-related fatal crashes were October (75 crashes, 11.6% of total), May (59, 9.1%), and June (58, 9.0%). In Region 1, the three months with the most impairment-related fatal crashes were July (10.2%), October (9.6%), and September (9.4%). Nationwide, the three months with the most impairment-related fatal crashes were August (9.3%), July (9.1%), and October (8.9%).

Alcohol-impaired-related fatal crashes were much more common on the weekends or Friday than at other times of the week, for Massachusetts, Region 1, and the U.S. as a whole. In Massachusetts, 25.7% of alcohol-impaired-related fatal crashes occurred on a Saturday, 24.1% occurred on a Sunday, and 15.8% occurred on a Friday. In Region 1, 25.1% of such crashes occurred on a Saturday, 22.9% on a Sunday, and 16.4% on a Friday. Nationwide, 25.2% of such crashes occurred on a Saturday, 22.6% on a Sunday, and 15.3% on a Friday.

Alcohol-impaired-related fatal crashes were much more common after 6 p.m. and before 6 a.m. for Massachusetts, Region 1, and the U.S. as a whole. In Massachusetts, 35.9% of alcohol-impaired-related fatal crashes occurred between midnight and 3 a.m., 21.6% occurred between 9 p.m. and midnight, and 15.1% occurred between 6 p.m. and 9 p.m. as well as between 3 a.m. and 6 a.m. In Region 1, 33% of such crashes occurred between midnight and 3 a.m., 23.4% occurred between 9 p.m. and midnight, and 16.8% occurred between 6 p.m. and 9 p.m. Nationwide, 28.2% of such crashes occurred between midnight and 3 a.m., 23.1% occurred between 9 p.m. and midnight, and 17.1% occurred between 6 p.m. and 9 p.m.

Table 37. Fatalities by the Highest BAC in the Crash*

BAC	2005	2006	2007	2008	2009	MA	Region	U.S.
	(N=441)	(N=429)	(N=434)	(N=364)	(N=334)	(N=2,002)	(N=5,694)	(N=198,707)
0.00%	58%	57%	53%	55%	58%	56%	57%	59%
0.01 - 0.07%	5%	7%	9%	8%	7%	7%	6%	6%
0.08+%	37%	37%	38%	37%	35%	37%	36%	35%

*Data based on drivers, passengers, motorcycle operators, pedestrians, and bicyclists
Based on NHTSA's alcohol imputation data. Rounding may cause the sum of sub-categories to differ slightly from total values

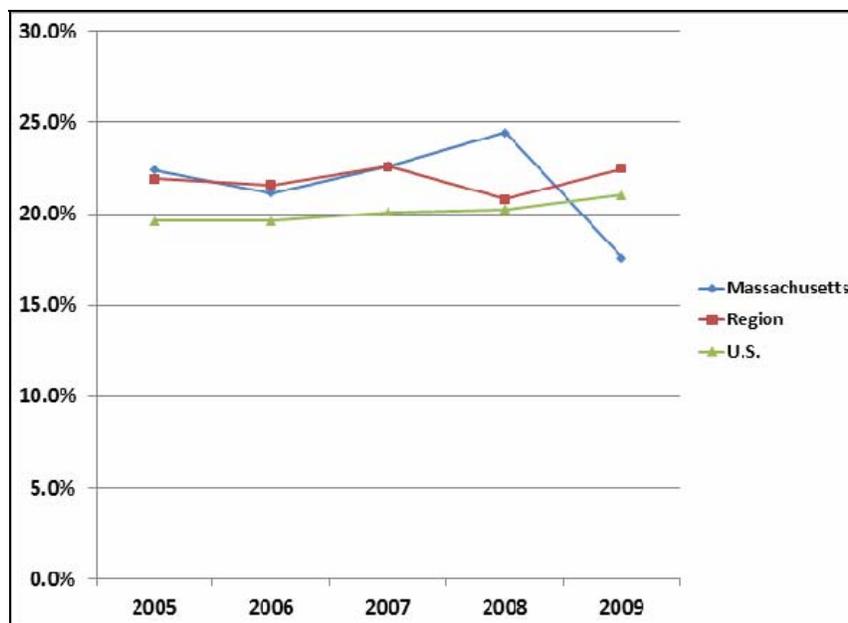
As shown in Table 37, above, Massachusetts had a greater percentage of fatalities (37%) where the highest BAC in the crash was 0.08% or above, as compared to Region 1 (36%) or the U.S. as a whole (35%).

Table 38. BACs of Drivers/Operators Involved in Fatal Crashes

	2005	2006	2007	2008	2009	Total 2005-09
MA	(N=598)	(N=568)	(N=570)	(N=442)	(N=437)	(N=2,615)
BAC						
0.00%	77.3%	77.6%	72.5%	72.2%	80.5%	76.0%
0.01-0.07%	1.5%	3.0%	3.9%	4.1%	2.3%	2.9%
0.08%+	22.4%	21.1%	22.6%	24.4%	17.6%	21.7%
Region	(N=1,669)	(N=1,649)	(N=1,549)	(N=1,427)	(N=1,313)	(N=7,607)
BAC						
0.00%	76.1%	76.1%	73.2%	75.9%	74.9%	75.3%
0.01-0.07%	2.5%	3.0%	4.0%	3.6%	2.8%	3.2%
0.08%+	21.9%	21.6%	22.6%	20.8%	22.5%	21.9%
U.S.	(N=59,220)	(N=57,846)	(N=56,019)	(N=50,416)	(N=45,228)	(N=268,729)
BAC						
0.00%	78.0%	77.9%	76.8%	76.8%	76.2%	77.2%
0.01-0.07%	2.7%	2.9%	3.2%	3.1%	2.9%	3.0%
0.08%+	19.6%	19.6%	20.1%	20.2%	21.0%	20.1%

*Based on NHTSA's alcohol imputation data. Rounding may cause the sum of sub-categories to differ slightly from total values

As Table 38 (above) shows, Massachusetts had a smaller percentage of drivers involved in fatal crashes who had a BAC of 0.08% (21.7%) for the years 2005 through 2009 than Region 1 (21.9%), both of which were greater than the U.S. as a whole (20.1%). The year-by-year numbers are also displayed in the supplement to Table 38, below:



Percent of Drivers/Operators with BAC \geq 0.08%

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III. SPEEDING-RELATED CRASHES

SPEEDING-RELATED CRASHES – KEY FINDINGS

In the period 2005-2009:

- The percentage of speeding-related fatalities in Massachusetts have consistently been below the percentages in Region 1, and have been trending downward since a high of 34% in 2006. A low of 23% of fatalities were recorded as speeding-related in 2009 (Figure 24).
- Four counties accounted for 52% of speeding-related fatalities in Massachusetts. Middlesex County had the highest number of speeding-related fatalities in the Massachusetts (91 fatalities, 15% of total), followed by Worcester (89, 14.6%), Bristol (77, 12.7%), and Hampden (59, 9.7%) (Table 39).
- Massachusetts's speeding-related population-based fatality decreased by 44% in 2009 as compared to the average of the previous four years. There were 2.23 fatalities per 100,000 population in 2005, and 1.15 fatalities per 100,000 population in 2009. The counties with the highest speeding-related population-based fatality rates over the five year period were Franklin (3.9), Barnstable (3.5), Berkshire (3.1), and Bristol (2.8) (Table 40).
- A plurality, 37.3%, of speeding-related fatalities in Massachusetts occurred on roads with a speed limit of 30 mph or less. Statewide, 78.5% of speeding-related fatalities occurred on roads with a speed limit of 50 mph or under, compared to 70.4% in Region 1 and 45.7% Nationwide (Table 41).
- A plurality, 37.6%, of Massachusetts's speeding-related fatalities occurred on Local roads. Almost as many (37.1%) occurred on the road type Interstate/Expressway. For Region 1, a plurality, 30.3%, occurred on Local roads, while Nationwide, a plurality, 34.5%, occurred on Arterial roads (Table 42).
- In Massachusetts, slightly over 55% of speeding-related fatal crashes occurred on Friday, Saturday, and Sunday. For Region 1, 56.7% of speeding-related fatal crashes occurred on these days, and Nationwide, 54.4% of speeding-related fatal crashes occurred on these days. In Massachusetts, the highest number of fatalities occurred in October (57 fatalities, 10.5% of total), August (56, 10.3%), and May (55, 10.1%). 60.2% of speeding-related fatal crashes occurred between 6 p.m. and 3 a.m. in Massachusetts, compared to 57.2% in Region 1 and 49.3% Nationwide (Table 43).
- 20.6% of drivers involved in fatal crashes in Massachusetts had previous speeding convictions. This percentage was higher than the percentage for Region 1 (18.5%) and the U.S. as a whole (18.9%) (Table 44).
- In Massachusetts, persons between the ages of 21 and 24 constituted a plurality (26.2%) of drivers involved in a fatal crash with a previous speeding conviction. Males were 77.7% of the drivers involved in fatal crashes with previous speeding convictions for Massachusetts, and were 80.1% and 79.8% for Region 1 and the U.S. as a whole, respectively (Table 45).

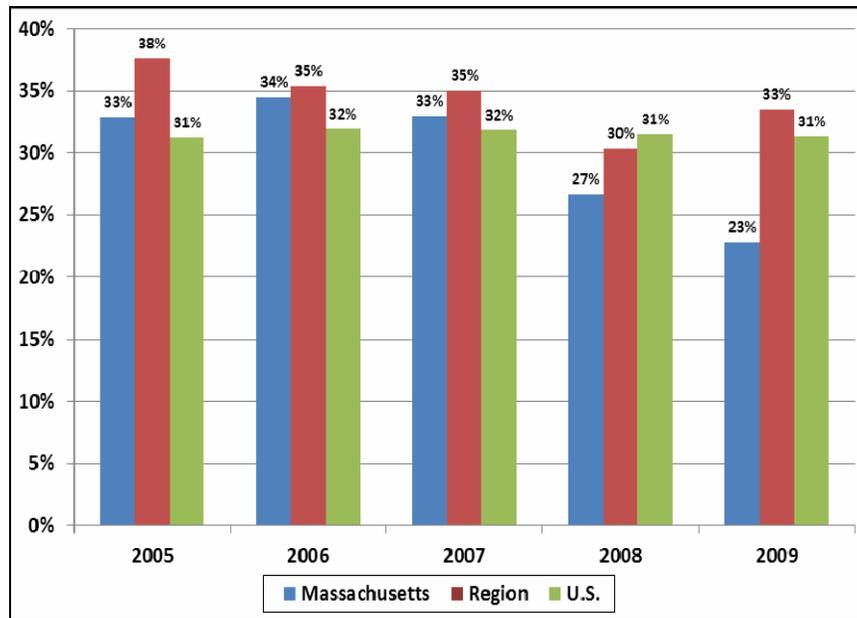


Figure 23. Speeding-Related Fatalities As Percent of Total Fatalities

As shown in Figure 24 (above) the percentage of fatalities that were speeding-related in Massachusetts has been declining since 2006, from 34% of total fatalities in 2006 to 23% in 2009. Massachusetts's percentage of fatalities that were speeding-related has consistently been below the percentage for Region 1.

Table 39. Speeding-Related Fatalities by County

County	Speed-Related Fatalities					Total 2005-2009	
	2005	2006	2007	2008	2009	N	%
Barnstable	8	3	13	8	7	39	6.4%
Berkshire	4	6	3	3	4	20	3.3%
Bristol	16	24	17	9	11	77	12.7%
Dukes	0	0	0	0	1	1	0.2%
Essex	12	13	14	8	9	56	9.2%
Franklin	1	5	4	4	0	14	2.3%
Hampden	14	13	19	9	4	59	9.7%
Hampshire	2	4	2	0	2	10	1.6%
Middlesex	27	21	15	15	13	91	15.0%
Nantucket	0	0	0	0	0	0	0.0%
Norfolk	7	21	12	7	10	57	9.4%
Plymouth	11	8	11	16	6	52	8.6%
Suffolk	13	8	12	6	4	43	7.1%

Worcester	29	22	21	12	5	89	14.6%
Total	144	148	143	97	76	608	100.0%

Counties with the highest number of speeding-related fatalities are highlighted.

Table 40. Speeding-Related Fatalities by County: Rate per 100,000 Population

County	2005	2006	2007	2008	2009
Barnstable	3.56	1.34	5.85	3.61	3.17
Berkshire	3.05	4.60	2.30	2.32	3.09
Bristol	2.94	4.41	3.12	1.65	2.01
Dukes	0.00	0.00	0.00	0.00	6.26
Essex	1.64	1.78	1.91	1.08	1.21
Franklin	1.39	6.97	5.57	5.57	0.00
Hampden	3.01	2.78	4.06	1.92	0.85
Hampshire	1.30	2.59	1.29	0.00	1.28
Middlesex	1.84	1.43	1.02	1.01	0.86
Nantucket	0.00	0.00	0.00	0.00	0.00
Norfolk	1.08	3.22	1.83	1.06	1.50
Plymouth	2.25	1.64	2.24	3.24	1.20
Suffolk	1.83	1.12	1.65	0.81	0.53
Worcester	3.68	2.78	2.64	1.50	0.62
Total	2.23	2.29	2.20	1.48	1.15

Highlighted counties are top counties from previous table.

It should be noted that the counties' population-based fatality rates can vary drastically from year to year and thus should be considered with caution.

As shown in Table 41 (below) the majority (69%) of speeding-related fatalities in Massachusetts occurred on roads with speed limits of 40 miles per hour or less. The same pattern held true for Region 1, where 60% of speeding-related fatalities occurred on roads with speed limits of 40 miles per hour or less. Nationwide, however, the posted speed limits associated with the majority of fatalities (59%) were 55 mph (27.8%), 65+ mph (16.2%), and 45 mph (14.6%).

Table 41. Speeding-Related Fatalities by Posted Speed Limit

Posted Speed	Massachusetts					Total 2005-2009		
	2005	2006	2007	2008	2009	MA	Region	U.S.
	(N=145)	(N=148)	(N=143)	(N=97)	(N=76)	(N=609)	(N=1,962)	(N=62,690)
30 or less	59	48	55	34	31	37.3%	31.5%	11.7%
35	29	25	20	21	10	17.2%	16.9%	12.3%
40	21	25	22	15	4	14.3%	11.4%	7.1%
45	12	9	10	9	5	7.4%	10.6%	14.6%
50	3	2	5	1	3	2.3%	8.8%	4.2%
55	4	11	12	6	5	6.2%	7.8%	27.8%
60	0	1	0	1	1	0.5%	0.2%	3.7%
65+	16	27	19	10	13	14.0%	10.3%	16.2%
No Limit	0	0	0	0	0	0.0%	1.1%	0.3%
Unknown	1	0	0	0	4	0.8%	1.5%	2.1%
Total	145	148	143	97	76	100.0%	100.0%	100.0%

Highlighting is to help the reader identify cells with higher numbers/percentages.

Table 42. Speeding-Related Fatalities by Road Type

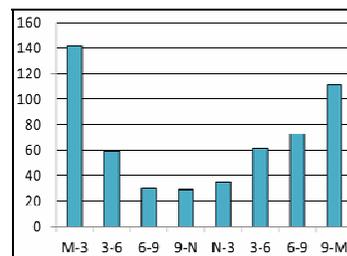
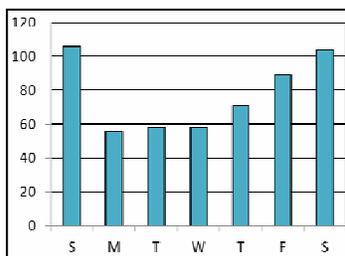
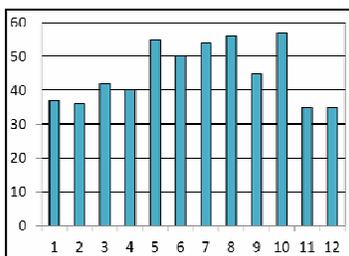
Road Type	Massachusetts					Total 2005-2009		
	2005	2006	2007	2008	2009	MA	Region	U.S.
	(N=145)	(N=148)	(N=143)	(N=97)	(N=76)	(N=609)	(N=1,962)	(N=62,690)
Interstate/Expressway	54	52	44	38	38	37.1%	23.0%	16.9%
Arterial	45	22	21	11	5	17.1%	28.5%	34.5%
Collector	16	29	3	0	0	7.9%	17.4%	24.0%
Local	29	44	75	48	33	37.6%	30.3%	23.3%
Unknown	1	1	0	0	0	0.3%	0.8%	1.2%
Total	145	148	143	97	76	100.0%	100.0%	100.0%

Highlighting is to help the reader identify cells with higher numbers/percentages.

In Massachusetts, the road type on which the plurality of speeding-related fatalities occurred was Local, with 37.6% of all speeding-related fatalities occurring on Local roads (Table 42, above). Very close behind was the percentage of fatalities that occurred on the Interstate/Expressway, 37.1%. In Region 1, 30.3% of all speeding-related fatalities occurred on Local roads, but Nationwide the plurality (34.5%) of fatalities occurred on Arterial roads.

Table 43. Speeding-Related Fatal Crashes by Month, Day of Week, and Time of Day: Totals 2005-2009

	Massachusetts		Region	U.S.
	(N=542)		(N=1,756)	(N=55,871)
	N	%	%	%
MONTH				
January	37	6.8%	7.1%	7.8%
February	36	6.6%	6.0%	7.3%
March	42	7.7%	6.9%	7.8%
April	40	7.4%	8.5%	8.4%
May	55	10.1%	8.8%	8.8%
June	50	9.2%	9.6%	8.7%
July	54	10.0%	10.4%	9.1%
August	56	10.3%	10.0%	9.0%
September	45	8.3%	8.5%	8.2%
October	57	10.5%	9.6%	8.7%
November	35	6.5%	7.9%	8.1%
December	35	6.5%	6.7%	8.1%
DAY OF WEEK				
Sunday	106	19.6%	19.8%	18.6%
Monday	56	10.3%	10.5%	11.5%
Tuesday	58	10.7%	10.3%	10.8%
Wednesday	58	10.7%	9.9%	11.3%
Thursday	71	13.1%	12.6%	11.8%
Friday	89	16.4%	16.0%	15.3%
Saturday	104	19.2%	20.9%	20.5%
Unknown	0	0.0%	0.0%	0.0%
TIME OF DAY				
Midnight-3am	142	26.2%	22.3%	18.0%
3am-6am	59	10.9%	8.5%	9.5%
6am-9am	30	5.5%	6.2%	8.4%
9am-Noon	29	5.4%	6.1%	7.4%
Noon-3pm	35	6.5%	8.9%	10.5%
3pm-6pm	61	11.3%	12.8%	14.2%
6pm-9pm	73	13.5%	15.6%	15.1%
9pm-Midnight	111	20.5%	19.3%	16.2%
Unknown	2	0.4%	0.4%	0.7%



By Month

By Day Sunday-Saturday

By Time from Midnight (3-hour periods)

As seen in Table 43 (above) the three months with the greatest number of speeding-related fatal crashes in Massachusetts were October (57, 10.5% of total), August (56, 10.3%), and May (55, 10.1%). For Region 1, the greatest number of speeding-related fatalities occurred in the months of July (10.4%), August (10%), and June and October (each with 9.6%). Nationwide, July (9.1%) saw the most speeding-related fatal crashes, followed by August (9.0%), and then May (8.8%).

Looking at Massachusetts’s speeding-related fatal crashes by day, the greatest number occurred on Sunday (106, 19.6% of total), followed by Saturday (104, 19.2% of total), and Friday (89, 16.4% of total). In Region 1, the greatest number occurred on Saturday (20.9%), followed by Sunday (19.8%), and then Friday (16.0%). This was true for the U.S. as a whole as well, with 20.5% occurring on Saturday, 18.6% on Sunday, and 15.3% on Friday.

In Massachusetts, the 3-hour windows with the most speeding-related fatal crashes were midnight to 3 a.m. (142, 26.2% of the total), 9 p.m. to midnight (111, 20.5%), and 6 p.m. to 9 p.m. (73, 13.5%). In Region 1, 22.3% of such crashes occurred between midnight and 3 a.m., 19.3% occurred between 9 p.m. and midnight, and 15.6% occurred between 6 p.m. and 9 p.m. Nationwide, 18% occurred between midnight and 3 a.m., 16.2% occurred between 9 p.m. and midnight, and 15.1% occurred between 6 p.m. and 9 p.m.

Table 44. Drivers Involved in Fatal Crashes with Previous Speeding Convictions*

	Drivers with previous speeding convictions						
	2005	2006	2007	2008	2009	Total 2005-2009	
	%	%	%	%	%	N	%
Massachusetts	21.6%	20.4%	16.7%	20.8%	24.3%	538	20.6%
Region	18.7%	19.5%	17.6%	18.1%	18.6%	1,408	18.5%
U.S.	19.1%	18.9%	19.0%	19.0%	18.4%	50,769	18.9%

*Recorded speeding convictions that occurred within three years prior to the crash

Table 45. Drivers Involved in Fatal Crashes with Previous Speeding Convictions by Age Group and Gender: Totals 2005-2009

Age Group	Massachusetts		Region	U.S.	Massachusetts				Region	U.S.
	(N=538)	%	(N=1,408)	(N=50,769)	Females		Males		% Males	% Males
					N	%	N	%		
16-20	80	14.9%	15.2%	13.0%	25	31.3%	55	68.8%	78.5%	78.1%
21-24	143	26.6%	22.1%	18.2%	29	20.3%	114	79.7%	82.6%	80.2%
25-34	138	25.7%	24.4%	25.9%	23	16.7%	115	83.3%	81.4%	79.2%
35-44	80	14.9%	17.5%	18.7%	21	26.3%	59	73.8%	76.8%	79.4%
45-54	68	12.6%	12.7%	13.4%	17	25.0%	51	75.0%	76.5%	81.2%
55-64	21	3.9%	5.0%	7.0%	5	23.8%	16	76.2%	82.9%	82.3%
65+	8	1.5%	3.1%	3.8%	0	0.0%	8	100.0%	88.6%	81.9%
Unknown	0	0.0%	0.0%	0.1%	0	0.0%	0	0.0%	0.0%	42.3%
Total	538	100.0%	100.0%	100.0%	120	22.3%	418	77.7%	80.1%	79.8%

Highlighting is to help the reader identify cells with higher numbers/percentages.

Table 45, above, shows that, in Massachusetts, the majority (67%) of drivers involved in fatal crashes with previous speeding convictions were between the ages of 21-44; those ages 21-24 constituted the plurality (27%) of drivers involved in fatal crashes with previous speeding convictions. In Region 1, drivers between the ages of 21-44 made up 64% of drivers involved in fatal crashes with previous speeding convictions; Nationwide, they made up 63% of drivers involved in fatal crashes with previous speeding convictions. In all jurisdictions (Massachusetts, Region, Nation), drivers ages 65 and older made up the smallest percentage of drivers involved in fatal crashes with previous speeding convictions. Males were much more prevalent among drivers in fatal crashes with previous speeding convictions; 77.7% of all such drivers in Massachusetts were male, which was lower than the percentage in the Region (80.1%) and the U.S. as a whole (79.8%).

IV. MOTORCYCLE CRASHES

MOTORCYCLE CRASHES – KEY FINDINGS

In the period 2005-2009:

- The percentages of fatalities that were motorcyclists in Massachusetts have consistently been less than the percentages for Region 1, but generally above those of the U.S. as a whole, with the exception of 2008. In 2009, 16% of fatalities in Massachusetts were motorcyclists, the highest percentage recorded over this five year period, compared to 17% in Region 1, and 13% in the U.S. as a whole (Figure 25).
- In Massachusetts, 54.9% of motorcycle fatal crashes occurred on Friday, Saturday, and Sunday. For Region 1 and the Nation, these percentages were 55.9% and 57.5%, respectively (Table 46).
- Sixty-three percent of motorcyclist fatalities in Massachusetts were between the ages of 25 and 54, and 92% were males (Table 47).
- Massachusetts requires the use of a helmet by all motorcycle riders. Between 2005 and 2009, 85.2% of fatally-injured motorcyclists used a helmet. This percentage higher than both the Region (51.3%) and the U.S. as a whole (56.1%) (Table 48).
- Thirty-five percent of fatally-injured motorcycle operators in Massachusetts who were tested for BAC had a BAC of at least 0.01% during this period, a percentage that is lower than both Region 1 (36%) and Nationwide (37.3%) (Table 49).
- In fatal crashes involving motorcycles, 56.9% of motorcyclists had at least one driver factor reported, versus 46.1% of the operators of other vehicles. The three most common driver factors for motorcycle operators were driving too fast (31.2%), failure to keep in proper lane (23%), and operating vehicle in an erratic or reckless manner (14.1%) (Table 50).

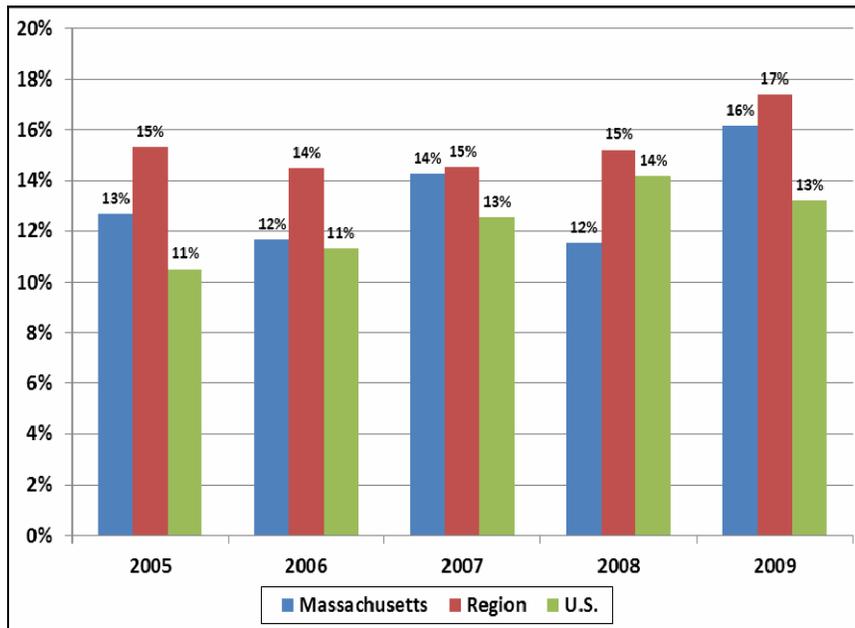


Figure 24. Motorcyclist Fatalities as Percent of Total Fatalities

As Figure 25, above, shows, motorcyclists consistently accounted for a smaller percentage of total fatalities in Massachusetts than in Region 1. The percentage of total fatalities that were motorcyclists has fluctuated in Massachusetts; a high of 16% was recorded in 2009, and the two lowest years were 2006 and 2008, at 12% each.

As Table 46 below shows, the three months with the most motorcycle fatal crashes in Massachusetts were August (44 crashes, 17% of total), June (40, 15.4%), and July (40, 15.4%). For Region 1, the top three months for such crashes were July (18.4%), June (17.1%), and August (16.9%). For the Nation, the top three months for such crashes were July (13.2%), August (12.8%), then June (12%).

On a day by day basis, the most motorcycle fatal crashes in Massachusetts occurred on Saturday (53 crashes, 20.5% of total), Sunday (53, 20.5%), and Tuesday (39, 15.1%). In Region 1, 21.2% of motorcycle fatal crashes occurred on a Sunday, 20.1% on a Saturday, and 14.6% on a Friday. Nationwide, 22.4% of motorcycle fatal crashes occurred on a Saturday, 20.4% on a Sunday, and 14.7% on a Friday.

In Massachusetts, the three-hour windows in which the most motorcycle fatal crashes occurred were 3 p.m. to 6 p.m. (65 crashes, 25.1% of total), 6 p.m. to 9 p.m. (59, 22.8%), and noon to 3 p.m. (42, 16.2%). In Region 1, the top three-hour windows were 6 p.m. to 9 p.m. (25.2%), 3 p.m. to 6 p.m. (22.4%), and noon to 3 p.m. (17.3%). Nationwide, the top three-hour windows were 3 p.m. to 6 p.m. (21.8%), 6 p.m. to 9 p.m. (20.9%), and noon to 3 p.m. (15.7%).

**Table 46. Motorcycle Fatal Crashes by Month, Day of Week, and Time of Day:
Totals 2005-2009**

	Massachusetts		Region	U.S.
	(N=259)		(N=844)	(N=23,657)
	N	%	%	%
MONTH				
January	1	0.4%	0.4%	3.0%
February	0	0.0%	0.4%	3.4%
March	12	4.6%	3.2%	6.0%
April	27	10.4%	8.5%	9.2%
May	32	12.4%	12.1%	11.6%
June	40	15.4%	17.1%	12.0%
July	40	15.4%	18.4%	13.2%
August	44	17.0%	16.9%	12.8%
September	36	13.9%	13.2%	11.5%
October	17	6.6%	6.6%	8.4%
November	9	3.5%	2.8%	5.7%
December	1	0.4%	0.5%	3.1%
DAY OF WEEK				
Sunday	53	20.5%	21.2%	20.4%
Monday	29	11.2%	10.4%	10.3%
Tuesday	39	15.1%	11.7%	10.0%
Wednesday	15	5.8%	9.0%	10.7%
Thursday	34	13.1%	12.9%	11.6%
Friday	36	13.9%	14.6%	14.7%
Saturday	53	20.5%	20.1%	22.4%
Unknown	0	0.0%	0.0%	0.0%
TIME OF DAY				
Midnight-3am	27	10.4%	9.2%	9.6%
3am-6am	6	2.3%	1.9%	3.5%
6am-9am	10	3.9%	5.0%	5.3%
9am-Noon	9	3.5%	5.9%	8.2%
Noon-3pm	42	16.2%	17.3%	15.7%
3pm-6pm	65	25.1%	22.4%	21.8%
6pm-9pm	59	22.8%	25.2%	20.9%
9pm-Midnight	40	15.4%	12.4%	14.2%
Unknown	1	0.4%	0.6%	0.7%

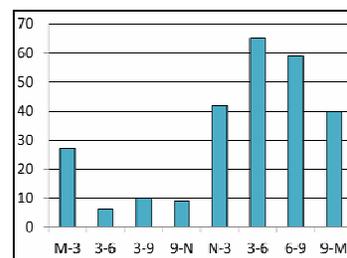
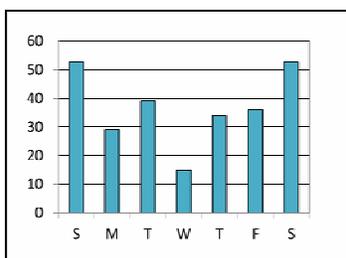
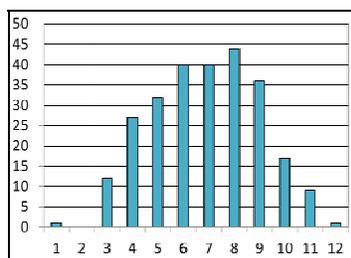


Table 47. Motorcyclist Fatalities by Age Group and Gender: Totals 2005-2009

Fatalities by Age					Fatalities by Age and Gender					
	Massachusetts		Region	U.S.	Massachusetts				Region	U.S.
	(N=264)	%	(N=872)	(N=24,361)	Females		Males		% Males	% Males
Age Group					N	%	N	%		
< 16	0	0.0%	0.6%	0.8%	0	0.0%	0	0.0%	100.0%	86.5%
16-20	19	7.2%	7.1%	6.8%	3	15.8%	16	84.2%	83.9%	89.9%
21-24	42	15.9%	11.8%	11.4%	1	2.4%	41	97.6%	95.1%	94.7%
25-34	61	23.1%	19.6%	20.9%	3	4.9%	58	95.1%	95.3%	93.4%
35-44	51	19.3%	22.4%	21.5%	5	9.8%	46	90.2%	83.6%	88.2%
45-54	54	20.5%	23.6%	21.9%	6	11.1%	48	88.9%	90.3%	88.2%
55-64	31	11.7%	11.8%	12.5%	3	9.7%	28	90.3%	89.3%	91.9%
65-74	4	1.5%	2.4%	3.4%	0	0.0%	4	100.0%	90.5%	93.5%
75+	2	0.8%	0.7%	0.8%	0	0.0%	2	100.0%	100.0%	95.9%
Unknown	0	0.0%	0.0%	0.1%	0	0.0%	0	0.0%	0.0%	53.8%
Total	264	100.0%	100.0%	100.0%	21	8.0%	243	92.0%	89.9%	90.8%

Highlighting is to help the reader identify cells with higher numbers/percentages.

As shown in Table 47 (above), the 25-34 age group made up a plurality (23.1%) of motorcyclist fatalities in Massachusetts, followed by the 45-54 age group (20.5%) and the 35-44 age group (19.3%). In Region 1, the 45-54 age group accounted for the plurality of motorcyclist fatalities (23.6%), followed by the 35-44 age group (22.4%) and the 25-34 age group (19.6%). The same pattern held true for the U.S. as a whole. Males made up a much larger percentage of Massachusetts's motorcyclist fatalities than females (92% versus 8%). This was also true for the Region (89.9% male) and the U.S. as a whole (90.8% male).

Table 48. Motorcyclist Fatalities by Age Group and Helmet Use*: Totals 2005-2009

Age Group	Motorcyclist Fatalities	Helmet Used		Helmet Not Used	
		N	%	N	%
<16	0	0	0.0%	0	0.0%
16-20	19	14	73.7%	5	26.3%
21-24	42	37	88.1%	3	7.1%
25-34	61	48	78.7%	7	11.5%
35-44	51	43	84.3%	3	5.9%
45-54	54	52	96.3%	0	0.0%
55-64	31	25	80.6%	1	3.2%
65+	6	6	100.0%	0	0.0%
Unknown	0	0	0.0%	0	0.0%
MA*	264	225	85.2%	19	7.2%
Region	872	447	51.3%	395	45.3%
U.S.	24,361	13,672	56.1%	10,045	41.2%

*Helmet use calculated as a percentage of total fatalities.

* State law requires use by all riders.

As shown in Table 48 (above), 85.2% of fatally-injured motorcyclists in Massachusetts used a helmet, a number much higher than the Region (51.3%) and the U.S. as a whole (56.1%). The age group with the highest percentage helmet usage was motorcyclists ages 65 and above, with 100% compliance. The group with the lowest percentage of helmet usage was 16-20, with only 73.7% of fatally-injured motorcyclists in that age group using a helmet.

Table 49. Motorcyclist Operator Fatalities, Alcohol Involvement and Speed: Totals 2005-2009

Age Group	MC Operator Fatalities	BAC ≥ 0.01%*			Speed as a Factor	
		# Tested	# ≥ 0.01%	%	#	%
<16	0	0	0	0.0%	0	0.0%
16-20	16	15	2	13.3%	8	50.0%
21-24	41	31	8	25.8%	22	53.7%
25-34	60	45	18	40.0%	25	41.7%
35-44	50	34	15	44.1%	14	28.0%
45-54	51	33	12	36.4%	10	19.6%
55-64	28	16	6	37.5%	6	21.4%
65+	6	3	1	33.3%	0	0.0%
Unknown	0	0	0	0.0%	0	0.0%
MA	252	177	62	35.0%	85	33.7%
Region	809	650	234	36.0%	306	37.8%
U.S.	22,757	17,533	6,541	37.3%	9,006	39.6%

* Based on actual state BAC data

As shown in Table 49 (above), 37.5% of fatally-injured motorcycle operators in the State between the ages 55-64 who were tested for BAC had a positive BAC, the highest percentage of any age group. Overall, 35% of fatally-injured motorcycle operators in Massachusetts who were tested had a positive BAC, a percentage slightly lower than found in Region 1 (36%) or the U.S. as a whole (37.3%) during the same time period. Speed was cited as a factor in 53.7% of motorcycle operator fatalities for the 21 to 24 age group, the highest percentage of any group. Overall, 33.7% fatally-injured motorcycle operators in Massachusetts were involved a crash in which speed was a factor, a percentage slightly higher than that of the Region (37.8%) or the Nation (39.6%).

Table 50 (below) shows the operator factors of fatal crashes involving motorcycles. During the period 2005-2009, 56.9% of motorcycle operators and 46.1% of other operators had at least one factor reported in such crashes, with the most common for motorcyclists being *driving too fast* (31.2%), *failure to keep in proper lane* (23%), and *operating vehicle in erratic manner* (14.1%). For other operators, the most common factors were *failure to yield* (22.0%), *operating vehicle in erratic manner* (14.2%), and *failure to keep in proper lane* (7.8%).

Table 50. Fatal Crashes Involving Motorcycles: Operator Factors

	2005		2006		2007		2008		2009		Total 2005-2009	
	MC	Other Op	MC	Other Op								
	(N=56)	(N=33)	(N=51)	(N=26)	(N=65)	(N=28)	(N=43)	(N=16)	(N=54)	(N=38)	(N=269)	(N=141)
Factors	%*	%*	%*	%*	%*	%*	%*	%*	%*	%*	%*	%*
None reported	35.7%	57.6%	29.4%	53.8%	41.5%	50.0%	51.2%	50.0%	59.3%	55.3%	43.1%	53.9%
One or more factors reported	64.3%	42.4%	70.6%	46.2%	58.5%	50.0%	48.8%	50.0%	40.7%	44.7%	56.9%	46.1%
Top Factors												
Driving too fast... in excess of speed limit	32.1%	3.0%	39.2%	3.8%	36.9%	0.0%	30.2%	0.0%	16.7%	2.6%	31.2%	2.1%
Failure to...lane	17.9%	9.1%	19.6%	7.7%	40.0%	7.1%	18.6%	12.5%	14.8%	5.3%	23.0%	7.8%
Inattentive	5.4%	3.0%	2.0%	0.0%	1.5%	7.1%	0.0%	6.3%	7.4%	7.9%	3.3%	5.0%
Operating vehicle in erratic ...manner	10.7%	12.1%	27.5%	19.2%	15.4%	17.9%	4.7%	12.5%	11.1%	10.5%	14.1%	14.2%
Operator inexperience	7.1%	0.0%	7.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	0.0%
Failure to yield	5.4%	15.2%	0.0%	34.6%	1.5%	28.6%	0.0%	6.3%	0.0%	21.1%	1.5%	22.0%

*Driver may have multiple factors reported. Highlighting is to help reader distinguish MC operator percentages from Other operator percentages; bolding is to help reader identify commonly reported factors.

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V. RESTRAINT USE

OCCUPANT RESTRAINT – KEY FINDINGS

In the period 2005-2009:

- Observed seat belt use in Massachusetts has consistently been below the National rate, although it has been increasing since 2005. For 2009, this figure was 74%, compared to 84% for the Nation as a whole (Figure 26).
- In Massachusetts, 27.9% of fatally-injured passenger vehicle occupants in 2009 properly used their restraints, a figure that was below the 34.7% recorded for Region 1 in 2009, both of which were below the Nationwide use rate of 43.4% in 2009. Restraint use among fatally-injured passenger vehicle occupants in Massachusetts has consistently been below that of Region 1 and the Nation (Table 51). In every year, in every jurisdiction (Massachusetts, Region, Nation), the restraint use among fatally-injured passenger vehicle occupants in crashes occurring at night is lower than restraint use as a whole (Table 51).
- In Massachusetts, 61.1% of fatally-injured passenger vehicle occupants in the 35-44 age group were not using restraints, the highest of all age groups. However, those in the 10-15 age group had a lower percentage of restraint use (15.8%) than those ages 35-44, although the restraint use status of more of those in the 10-15 age group was unknown (26.3%) versus the 35-44 age group (12.7%). The age group with the highest percentage of restraint use was the 75 and above age group; 50% of fatally-injured passenger vehicle occupants ages 75 and older used their restraints. Of those ages 5 and under, 100% used their restraints, and for those ages 5 to 9, 60% used their restraints, but the sample size here was small: 3 and 5 total fatalities, respectively (Table 52).

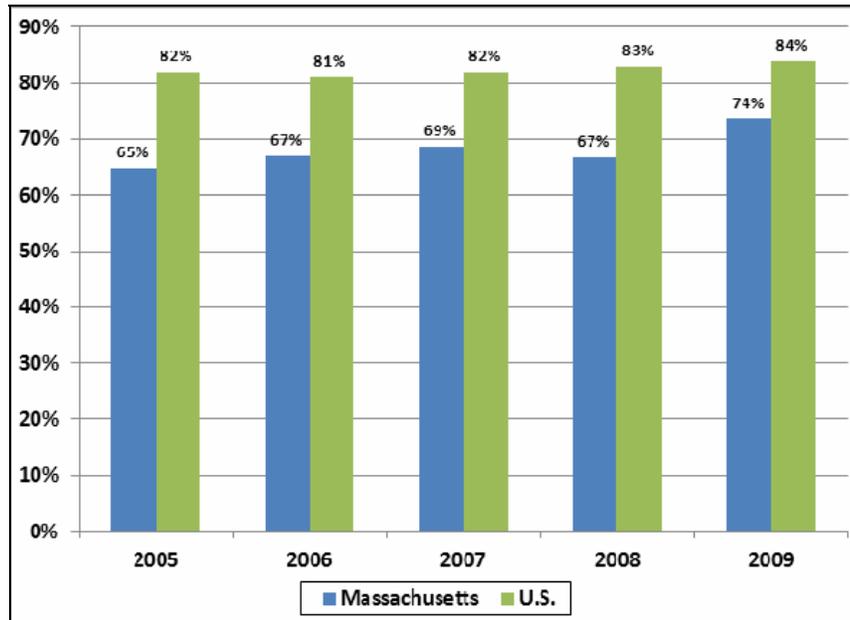


Figure 25. Observed Seat Belt Usage Rates, 2005-2009

As seen in Figure 26, above, Massachusetts's observed seat belt usage rate has been trending upward (the 2009 usage rate of 74% was a 10% increase over the average of the previous four years), but has still consistently been below the U.S. rate.

Table 51. Restraint Use of Fatally-Injured Passenger Vehicle Occupants

	2005	2006	2007	2008	2009
Restraint Used					
Massachusetts	28.2%	26.3%	26.9%	29.4%	27.9%
Region	33.7%	33.3%	36.5%	36.3%	34.7%
U.S.	41.4%	41.4%	42.4%	42.0%	43.4%
Restraint Used Night*					
Massachusetts	23.4%	17.0%	21.7%	18.8%	24.2%
Region	26.0%	26.7%	28.1%	18.8%	27.2%
U.S.	30.8%	30.9%	31.3%	30.0%	32.1%

Restraint use percentage based on all fatalities

*In crashes that occurred between 8 pm and 4 am.

Table 51 shows restraint use among fatally-injured passenger vehicle occupants, for *all crashes* and for those that occurred at night. As shown above, the restraint use by fatally injured passenger vehicle occupants in Massachusetts has consistently been below both the Region and the U.S., for both night (8 p.m. to 4 a.m.) crashes and crashes as a whole (night crashes are a subset of these numbers). The restraint percent use for fatally-injured passenger vehicle occupants in Massachusetts for 2009 (27.9%) represented a 1.1% increase over the average of the previous 4 years.

Table 52. Fatally-Injured Passenger Vehicle* Occupants, Restraint Use by Age Group: Totals 2005-2009

Age Group	Occupant Restraint Usage			
	N	Used	Not Used	Unknown
<5	3	100.0%	0.0%	0.0%
5-9	5	60.0%	20.0%	20.0%
10-15	19	15.8%	57.9%	26.3%
16-20	242	21.5%	59.1%	19.4%
21-24	190	17.4%	60.5%	22.1%
25-34	221	24.0%	58.4%	17.6%
35-44	126	26.2%	61.1%	12.7%
45-54	155	27.1%	54.8%	18.1%
55-64	131	32.8%	50.4%	16.8%
65-74	94	34.0%	43.6%	22.3%
75+	138	50.0%	30.4%	19.6%
Unknown	3	33.3%	33.3%	33.3%
MA	1,327	27.7%	53.6%	18.8%
Region	3,893	34.8%	51.7%	13.5%
U.S.	140,150	42.0%	50.5%	7.5%

* Automobiles, SUVs, and Pickup Trucks

Highlighting is to help reader identify cells discussed in the text.

Table 53. Restraint Use* of Fatally-Injured Occupants by Passenger Vehicle Type

	2005	2006	2007	2008	2009	Total 2005-2009
Cars						
Massachusetts	37.9%	32.9%	38.2%	40.1%	36.8%	37.1%
Region	45.0%	42.0%	46.3%	46.0%	42.7%	44.4%
U.S.	51.0%	51.1%	53.1%	51.6%	53.9%	52.0%
Pickup						
Massachusetts	10.0%	40.9%	42.1%	25.0%	27.8%	29.5%
Region	19.5%	29.7%	39.5%	36.2%	30.2%	30.6%
U.S.	31.0%	31.4%	32.2%	32.4%	32.4%	31.8%
Other (incl. SUV)						
Massachusetts	27.3%	31.1%	20.4%	19.4%	32.4%	26.2%
Region	25.9%	37.1%	29.7%	28.3%	39.0%	31.9%
U.S.	39.6%	40.5%	40.7%	40.8%	42.8%	40.8%

* Known restraint use

Table 53 (above) breaks down restraint use (where restraint use is known) of fatally-injured passenger vehicle occupants by vehicle type. In Massachusetts from 2005 through 2009, 37.1% of fatally-injured occupants of *Cars* used their restraints, a rate that was lower than either the Region (44.4%) and the U.S. as a whole (52.0%). The same pattern was also observed for fatally-injured occupants of *Pickups*. In Massachusetts, 29.5 % of fatally- injured occupants of *Pickups* used their restraints, as compared to 30.6% for the Region and 31.8% Nationwide. 26.2% of fatally injured occupants of the other *Other (including SUV)* vehicle category used their restraints in Massachusetts, while 31.9% did so in the Region and 40.8% did so Nationwide.

For both the *Cars* and *Pickup* vehicle categories, the percentage of restraint use by fatally-injured occupants declined over the 2005-2009 time period, with *Cars* experiencing a 1% decline and *Pickups* a 7% decline. The *Other* category, however, experienced a 29.7% increase in the percentage of fatally-injured occupant restraint use.

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VI. PEDESTRIAN AND BICYCLIST CRASHES

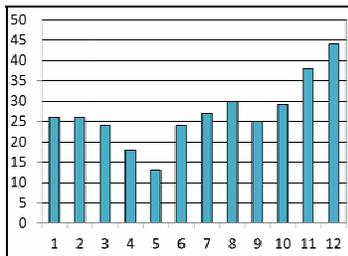
PEDESTRIAN AND BICYCLIST CRASHES – KEY FINDINGS

In the period 2005-2009:

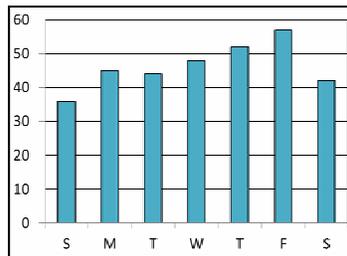
- Slightly more than 51% of pedestrian fatal crashes in Massachusetts occurred between 3 p.m. and midnight, as compared to 53.3% in Region 1 and 56.6% Nationwide. 41.7% of pedestrian fatal crashes in Massachusetts occurred on Friday, Saturday, or Sunday, as compared to 44.3% in Region 1 and 48.3% Nationwide for these days (Table 54).
- The 10 cities with the largest number of pedestrian fatalities in Massachusetts accounted for 32.1% of all pedestrian fatalities in the Massachusetts. Boston (39 pedestrian fatalities, 11.9% of all pedestrian fatalities), Springfield (13, 4%), New Bedford (8, 2.4%), Quincy (8, 2.4%), and Worcester (8, 2.4%) were the top cities in the Massachusetts (Table 55).
- Persons ages 75 and older constituted a plurality of pedestrian fatalities in Massachusetts, with 22.9% of all pedestrian fatalities. The same holds true for Region 1, where they constituted 20.6% of pedestrian fatalities. Nationwide, persons ages 75 and older constituted 10.9% of pedestrian fatalities. Persons ages 25-64 constituted 51.4% of pedestrian fatalities in Massachusetts, as compared to 50.3% in Region 1 and 60.3% in the U.S. as a whole for the same age group. Persons age 65 and over accounted for 33.6% of pedestrian fatalities in the Massachusetts, compared to 32.5% in the Region and 19.2% in the U.S. as a whole (Table 56).
- Males represented 64.2% of the Massachusetts's pedestrian fatalities, a similar rate to that of the Region (63.9%) and lower than that of the U.S. as a whole (69.7%) (Table 56).
- Of pedestrians ages 16 and above killed in Massachusetts and with a known BAC, 18.8% had a BAC of at least 0.08%, below the percentage for the Region (24.2%), and significantly below the percentage for the U.S. as a whole (38.7%). In Massachusetts, a BAC of at least 0.08% was most common in the 35-44 age group (47.1%). In Region 1, a BAC of at least 0.08% was most common in the 35-44 age group (52.3%). In the U.S., 54.8% of those in the 21-24 age group with a known BAC had a BAC of at least 0.08% (Table 57).
- The number of bicyclist fatalities in Massachusetts was increasing through 2007, with a high of 11 such fatalities recorded in that year. After 2007, the number of bicyclist fatalities began decreasing, settling at 6 in 2009. This was a 25% decline in the number of bicyclist fatalities as compared to the average of the previous four years. In Region 1, and Nationwide, there was also a downward trend in bicyclist fatalities, with a 58.4% decrease in the Region and a 15.4% decrease Nationwide (Table 58).

Table 54. Pedestrian Fatal Crashes by Month, Day of Week, and Time of Day: Totals 2005-2009

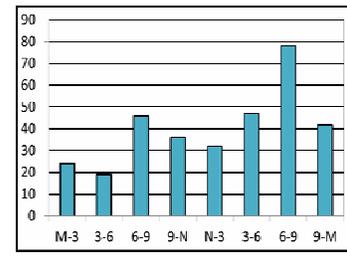
	Massachusetts		Region		U.S.	
	(N=324)	%	(N=673)	%	(N=22,534)	%
MONTH	N	%	N	%	N	%
January	26	8.0%	55	8.2%	2,070	9.2%
February	26	8.0%	45	6.7%	1,749	7.8%
March	24	7.4%	50	7.4%	1,764	7.8%
April	18	5.6%	47	7.0%	1,575	7.0%
May	13	4.0%	37	5.5%	1,536	6.8%
June	24	7.4%	41	6.1%	1,535	6.8%
July	27	8.3%	54	8.0%	1,663	7.4%
August	30	9.3%	53	7.9%	1,826	8.1%
September	25	7.7%	56	8.3%	1,979	8.8%
October	29	9.0%	61	9.1%	2,253	10.0%
November	38	11.7%	84	12.5%	2,273	10.1%
December	44	13.6%	90	13.4%	2,311	10.3%
DAY OF WEEK						
Sunday	36	11.1%	80	11.9%	3,245	14.4%
Monday	45	13.9%	91	13.5%	2,848	12.6%
Tuesday	44	13.6%	90	13.4%	2,877	12.8%
Wednesday	48	14.8%	94	14.0%	3,038	13.5%
Thursday	52	16.0%	100	14.9%	2,892	12.8%
Friday	57	17.6%	118	17.5%	3,640	16.2%
Saturday	42	13.0%	100	14.9%	3,993	17.7%
Unknown	0	0.0%	0	0.0%	1	0.0%
TIME OF DAY						
Midnight-3am	24	7.4%	63	9.4%	2,871	12.7%
3am-6am	19	5.9%	34	5.1%	2,063	9.2%
6am-9am	46	14.2%	84	12.5%	2,015	8.9%
9am-Noon	36	11.1%	66	9.8%	1,249	5.5%
Noon-3pm	32	9.9%	66	9.8%	1,453	6.4%
3pm-6pm	47	14.5%	98	14.6%	2,412	10.7%
6pm-9pm	78	24.1%	153	22.7%	5,551	24.6%
9pm-Midnight	42	13.0%	108	16.0%	4,789	21.3%
Unknown	0	0.0%	1	0.1%	131	0.6%



By Month



By Day Sunday-Saturday



By Time from Midnight (3-hour periods)

As shown in Table 54 (above), the three months with the greatest number of pedestrian fatal crashes in Massachusetts were December (44 crashes, 13.6% of total), November (38, 11.7%), and August (30, 9.3%). For Region 1, 61 fatal crashes occurred in October (9.1% of total), 84 in November (12.5% of total), and 90 in December (13.4% of total). Nationwide, 2,253 fatal crashes occurred in October (10% of total), 2,273 in November (10.1%), and 2,311 in December (10.3%).

The three days of the week with the most pedestrian fatal crashes in Massachusetts were Friday (57 fatal crashes, 17.6% of the total), Thursday (52, 16%), and Wednesday (48, 14.8%). For Region 1, 94 pedestrian fatal crashes occurred on Wednesday (14.0%), 100 each on Thursday and Saturday (14.9%), and 118 on Friday (17.5%). Nationwide, the days with the most pedestrian fatal crashes were Saturday (17.7%), Friday (16.2%), and Sunday (14.4%).

The three-hour windows in which the most pedestrian fatal crashes occurred in Massachusetts were 6 p.m. to 9 p.m. (78 crashes, 24.1% of the total), 3 p.m. to 6 p.m. (47, 14.5%), and 6 a.m. to 9 a.m. (46, 14.2%). In Region 1, 22.7% of pedestrian fatal crashes occurred between 6 p.m. and 9 p.m., 16% occurred between 9 p.m. and midnight, and 14.6% occurred between 3 p.m. and 6 p.m. The pattern Nationwide varied slightly, where 24.6% of pedestrian fatal crashes occurred between 6 p.m. and 9 p.m., 21.3% occurred between 9 p.m. and midnight, and 12.7% occurred between midnight and 3 a.m.

Table 55. Pedestrian Fatalities by Top Cities

City	2005	2006	2007	2008	2009	Total 2005-2009	
						N	%
Boston	7	7	10	13	2	39	11.9%
Springfield	6	1	4	0	2	13	4.0%
New Bedford	1	0	1	3	3	8	2.4%
Quincy	1	4	1	1	1	8	2.4%
Worcester	2	4	1	1	0	8	2.4%
Lynn	2	1	0	3	1	7	2.1%
Lowell	3	1	0	2	0	6	1.8%
Taunton	2	2	1	1	0	6	1.8%
Weymouth	2	0	0	0	3	5	1.5%
Revere	1	2	0	0	2	5	1.5%
Total Top 10 Cities	27	22	18	24	14	105	32.1%
All Pedestrians Fatalities	76	61	66	76	48	327	100%

Table 56. Pedestrian Fatalities by Age Group and Gender: Totals 2005-2009

Fatalities by Age					Fatalities by Age and Gender					
Age Group	Massachusetts		Region	U.S.	Massachusetts				Region	U.S.
	(N=327)	%	(N=678)	(N=22,892)	Females		Males		% Males	% Males
					N	%	N	%		
<5	3	0.9%	0.9%	2.2%	2	66.7%	1	33.3%	50.0%	61.6%
5-9	4	1.2%	1.2%	2.0%	1	25.0%	3	75.0%	87.5%	64.6%
10-15	10	3.1%	3.4%	3.2%	3	30.0%	7	70.0%	56.5%	62.8%
16-20	15	4.6%	5.8%	6.0%	3	20.0%	12	80.0%	71.8%	68.8%
21-24	16	4.9%	5.6%	6.3%	6	37.5%	10	62.5%	57.9%	75.0%
25-34	21	6.4%	7.7%	13.0%	5	23.8%	16	76.2%	78.8%	74.6%
35-44	38	11.6%	10.6%	15.8%	12	31.6%	26	68.4%	69.4%	72.6%
45-54	61	18.7%	17.8%	19.5%	21	34.4%	40	65.6%	70.2%	73.8%
55-64	48	14.7%	14.2%	12.0%	15	31.3%	33	68.8%	61.5%	70.1%
65-74	35	10.7%	11.9%	8.3%	16	45.7%	19	54.3%	55.6%	64.8%
75+	75	22.9%	20.6%	10.9%	33	44.0%	42	56.0%	55.7%	57.0%
Unknown	1	0.3%	0.3%	0.8%	0	0.0%	1	100.0%	100.0%	81.0%
Total	327	100.0%	100.0%	100.0%	117	35.8%	210	64.2%	63.9%	69.7%

Highlighting is to help reader identify cells with higher numbers/percentages

For Massachusetts, those ages 75 and older constituted the plurality of pedestrian fatalities (22.9%), followed by those ages 45-54 (18.7%), and those ages 55-64 (14.7%). Similar numbers were seen in Region 1, where those ages 75 and older made up 20.6% of pedestrian fatalities, followed by those ages 45-54 (17.8%) and those ages 55-64 (14.2%). Nationwide, those ages 45-54 accounted for the plurality of pedestrian fatalities (19.5%), followed by those ages 35-44 (15.8%) and those ages 25-34 (13.0%). Males accounted for 64.2% of Massachusetts's pedestrian fatalities, a percentage similar to that in Region 1 (63.9%) and lower than Nationwide (69.7%).

As Table 57 shows, 47.1% of pedestrian fatalities ages 35-44 who had a BAC recorded had a BAC of 0.08% or greater. Overall, 18.8% of Massachusetts pedestrian fatalities who had a BAC recorded had a BAC of 0.08% or higher, a percentage that was lower than both Region 1 (24.2%) and the U.S. as a whole (38.7%).

Table 57. Pedestrian Fatalities by Age Group With BAC: Totals 2005-2009

Age Group	Massachusetts	Region	U.S.
	0.08% or greater N=33 of 176*	0.08% or greater N=106 of 439*	0.08% or greater N=5,807 of 14,995*
16-20	10.00%	19.35%	29.69%
21-24	45.45%	50.00%	54.77%
25-34	35.29%	39.53%	53.01%
35-44	47.06%	52.27%	53.46%
45-54	33.33%	42.67%	49.95%
55-64	16.67%	17.46%	33.04%
65+	0.00%	0.78%	8.63%
Unknown	0.00%	0.00%	55.21%
Total	18.75%	24.15%	38.73%

*Persons with known BACs

Highlighting is to help reader identify cells with higher percentages.

Table 58. Bicyclist Fatalities

	2005	2006	2007	2008	2009	Total 2005-2009	% Change 2005-09
Massachusetts	5	6	11	10	6	38	-25.00%
Region	15	18	21	23	8	85	-58.44%
U.S.	786	772	701	718	630	3,607	-15.35%

VII. YOUNG DRIVERS

YOUNG DRIVERS – KEY FINDINGS

In the period 2005-2009:

- Fatal crashes involving young drivers (16-20 years old) in Massachusetts decreased by 32.6%, compared to 31.3% in Region 1 and 25.8% in the U.S. as a whole (Table 59).
- In Massachusetts, young driver fatalities decreased by 45.3% between 2005 and 2009. Region 1 and the U.S. showed lesser declines: 32.2% and 27.1%, respectively (Table 59).
- Young driver fatalities in Massachusetts have accounted for between 5.7% (2009) and 9.3% (2005) of all fatalities in the State. Young driver fatalities have accounted for between 6.9% (2009) and 9.6% (2006) of all fatalities in Region 1, and between 6.8% (2009) and 8.0% (2006) of all fatalities in the U.S. as a whole (Figure 27).
- Almost 47% of fatal crashes involving young drivers in Massachusetts occurred between 3 p.m. and Midnight, whereas 48.6% and 49.4% of these crashes occurred during the same time in Region 1 and the U.S. as a whole, respectively. 54.6% of fatal crashes involving young drivers in Massachusetts occurred on Friday, Saturday, or Sunday, compared to 54.1% in Region 1 and 53.3% in the U.S. as a whole (Table 60).
- At least one driver-related factor was reported for 74.3% of young drivers involved in fatal crashes in Massachusetts. “Driving too fast” was the most frequently reported factor and was reported in 41.4% of the crashes (Table 61).
- Compared to all drivers, a higher percentage of young drivers involved in fatal crashes have previous speeding convictions. This was observed in Massachusetts (23.7% for young drivers compared to 20.6% for all), in the Region (22.8% for young drivers compared to 18.5% for all) and in the U.S. as a whole (20.5% of young drivers compared to 18.9% for all).
- In Massachusetts, a higher percentage of young drivers involved in fatal crashes had a previous crash (of any sort) than all drivers: 27.5% as compared to 22.9%. The same was seen in Region 1 and the U.S. as a whole. 17.1% of young drivers in Region 1 involved in fatal crashes had been involved in a previous crash as compared to 14.7% for all drivers, and for the U.S. as a whole, 13.7% of young drivers in a fatal crash had been involved in a previous crash compared to 12.1% of all drivers (Table 62).
- *Young drivers* themselves accounted for 43.5% of fatalities in crashes involving young drivers in Massachusetts; *passengers* represented 28.1% of fatalities, and *other road users* accounted for 28.4% of fatalities in these crashes. In Region 1, 45.8% of fatalities in crashes involving young drivers were *young drivers* themselves; 27.3% were *passengers* and 26.9% were *other road users*. Nationwide, *young drivers* accounted for 42% of the fatalities in young driver-involved crashes, while *passengers* and *other road users* accounted for 25.9% and 32.1% of the fatalities, respectively. (Table 63).
- The counties of Worcester (60 young driver involved fatalities, 16.5 of the total%), Bristol (48, 13.2%), Middlesex (46, 12.7%), and Plymouth (43, 11.8%) accounted for 54.2% of fatalities involving young drivers in the years 2005 through 2009.

The data in Table 59 underscore the fact that Massachusetts's performance exceeded that of Region 1 and also the Nation as a whole in reducing fatal crashes involving young drivers in 2009, compared to the previous four-year average. In terms of the number of young driver fatalities, Massachusetts's improvement over this interval also exceeded that of Region 1 and the U.S. as a whole.

Table 59. Fatal Crashes and Fatalities Involving Young Drivers

	2005	2006	2007	2008	2009	Total 2005-2009	% Change 2005-2009
Massachusetts							
Fatal Crashes	83	66	72	58	47	326	-32.62%
Young Drivers Killed	41	33	35	30	19	158	-45.32%
Region							
Fatal Crashes	214	207	199	154	133	907	-31.27%
Young Drivers Killed	106	118	92	85	68	469	-32.17%
U.S.							
Fatal Crashes	7,004	7,012	6,593	5,527	4,850	30,986	-25.77%
Young Drivers Killed	3,382	3,407	3,124	2,687	2,295	14,895	-27.14%

As shown in Figure 27, below, the percentage of fatalities in Massachusetts that were young drivers has generally been declining from a high of 9.3% in 2005, although 2008 (8.2%) did represent an increase from 2007 (8.1%).

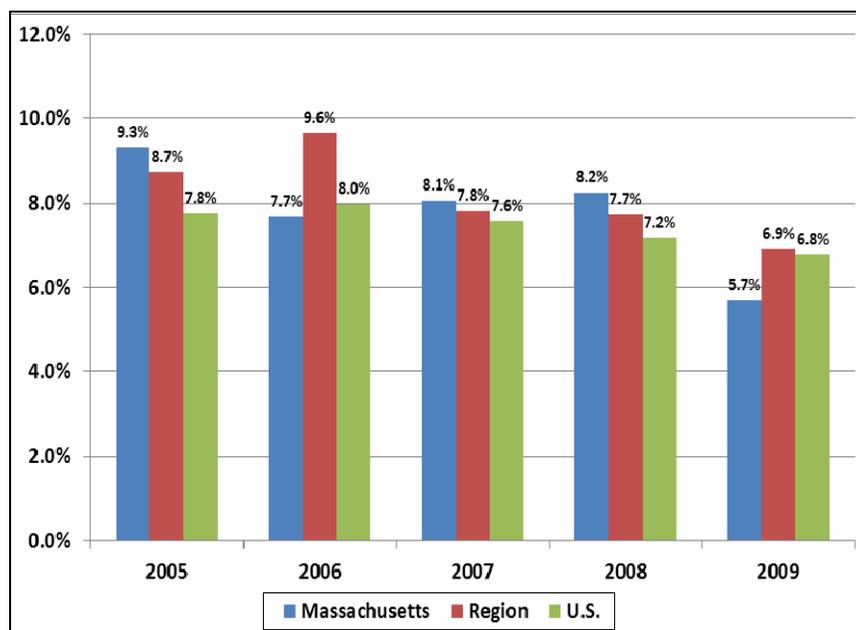
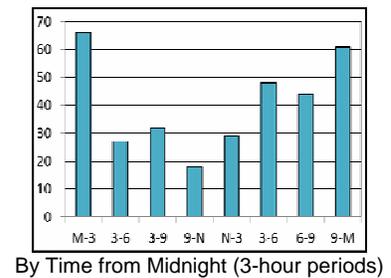
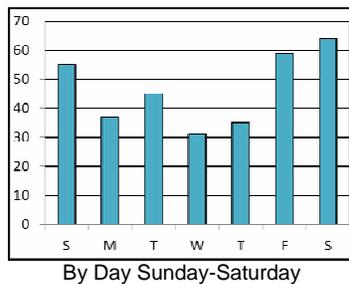
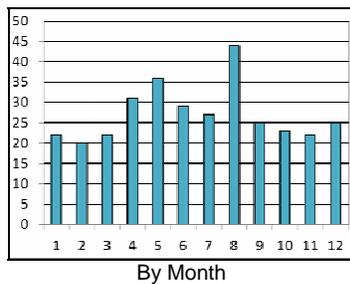


Figure 26. Young Driver Fatalities as Percent of Total

**Table 60. Young Driver-Involved Fatal Crashes by Month, Day of Week, and Time of Day:
Totals 2005-2009**

	Massachusetts		Region	U.S.
	(N=326)		(N=907)	(N=30,986)
	N	%	%	%
MONTH				
January	22	6.7%	6.6%	7.2%
February	20	6.1%	5.8%	6.8%
March	22	6.7%	7.1%	7.9%
April	31	9.5%	9.2%	8.3%
May	36	11.0%	8.9%	9.0%
June	29	8.9%	9.0%	9.2%
July	27	8.3%	9.9%	9.8%
August	44	13.5%	12.2%	8.9%
September	25	7.7%	7.6%	8.3%
October	23	7.1%	7.8%	8.7%
November	22	6.7%	8.4%	8.4%
December	25	7.7%	7.4%	7.6%
DAY OF WEEK				
Sunday	55	16.9%	17.4%	17.6%
Monday	37	11.3%	11.1%	11.9%
Tuesday	45	13.8%	11.8%	11.4%
Wednesday	31	9.5%	10.1%	11.7%
Thursday	35	10.7%	12.8%	11.8%
Friday	59	18.1%	17.1%	16.0%
Saturday	64	19.6%	19.6%	19.7%
Unknown	0	0.0%	0.0%	0.0%
TIME OF DAY				
Midnight-3am	66	20.2%	17.2%	14.4%
3am-6am	27	8.3%	7.4%	8.2%
6am-9am	32	9.8%	7.6%	8.9%
9am-Noon	18	5.5%	6.5%	7.2%
Noon-3pm	29	8.9%	12.1%	11.5%
3pm-6pm	48	14.7%	15.2%	16.4%
6pm-9pm	44	13.5%	15.3%	15.8%
9pm-Midnight	61	18.7%	18.1%	17.2%
Unknown	1	0.3%	0.6%	0.6%



In Massachusetts, the months that recorded the most young driver-involved fatal crashes were August (44 crashes, 13.5% of the total), May (36, 11%), and April (31, 9.5%). In Region 1, 12.2% of young driver-involved fatal crashes occurred in August, followed by July (9.9%), and April (9.2%). Nationwide, the months with the most young driver-involved fatal crashes were July (9.8%), June (9.2%), and May (9.0%).

The days with the most young driver-involved fatal crashes in Massachusetts were Saturday (64 crashes, 19.6% of the total), Friday (59, 18.1%), and Sunday (55, 16.9%). In Region 1, 19.6% of such crashes occurred on Saturday, 17.4% on Sunday, and 17.1% on Friday. Nationwide, 19.7% of such crashes occurred on Saturday, 17.6% on Sunday, and 16% on Friday.

In Massachusetts, the three-hour windows in which the most young driver-involved fatal crashes occurred were midnight to 3 a.m. (66, 20.2% of all such crashes), 9 p.m. to midnight (61 crashes, 18.7%), and 3 p.m. to 6 p.m. (48 crashes 14.7%). In Region 1, 9 p.m. to midnight accounted for 18.1% of young driver-involved fatal crashes, followed by midnight to 3 a.m. (17.2%), and 6 p.m. to 9 p.m. (15.3%). Nationwide, the most young driver-involved fatal crashes occurred from 9 p.m. to midnight (17.2%), followed by 3 p.m. to 6 p.m. (16.4%), then 6 p.m. to 9 p.m. (15.8%).

Table 61. Driver Factors of Young Drivers Involved in Fatal Crashes

Factors	2005	2006	2007	2008	2009	Total
	(N=87)	(N=68)	(N=76)	(N=59)	(N=48)	2005-2009
	%*	%*	%*	%*	%*	(N=338) %*
None reported	21.8%	11.8%	21.1%	44.1%	37.5%	25.7%
One or more factors reported	78.2%	88.2%	78.9%	55.9%	62.5%	74.3%
Top Factors						
Driving too fast...	41.4%	51.5%	40.8%	37.3%	33.3%	41.4%
Inattentive	4.6%	2.9%	2.6%	1.7%	4.2%	3.3%
Erratic, reckless manner	27.6%	39.7%	23.7%	27.1%	31.3%	29.6%
Failure to keep in proper lane	39.1%	32.4%	60.5%	16.9%	20.8%	36.1%
Failure to yield right of way	2.3%	5.9%	1.3%	0.0%	6.3%	3.0%

*Driver may have multiple factors reported
Highlighting is to help reader identify most common factor

As seen in Table 61, 74.3% of young drivers involved in fatal crashes reported at least one driver factor reported. The top factor was *driving too fast* (41.4%), followed by *failure to keep in proper lane* (36.1%) and driving in an *erratic, reckless manner* (29.6%).

Table 62. Previous Speeding Convictions and Previous Crashes for Young Drivers versus All Drivers: Totals 2005-2009

	Massachusetts				Region		U.S.	
	Young drivers		All drivers		Young drivers	All drivers	Young drivers	All drivers
	(N=338)	%	(N=2,615)	%	(N=939)	(N=7,607)	(N=32,344)	(N=268,731)
Previous Speeding*	80	23.7%	538	20.6%	22.8%	18.5%	20.5%	18.9%
Previous Crash Recorded**	93	27.5%	599	22.9%	17.1%	14.7%	13.7%	12.1%

*Convictions recorded within three years prior to the fatal crash

**Crashes recorded within three years prior to the fatal crash

Highlighting is to help reader identify young drivers

In Massachusetts, more young drivers (16-20) in fatal crashes had a previous speeding conviction (23.7%) than did drivers of all ages (20.6%), and more (27.5% of young drivers as compared to 22.9% of all drivers) had a previous crash recorded as well. For young drivers, these percentages were higher than those in Region 1 (22.8% with a previous speeding conviction, 17.1% with a previous crash) or the Nation (20.5% with a previous speeding conviction, 13.7% with a previous crash).

Table 63. Fatalities in Young Driver-Involved Crashes

						MA	Region	U.S.
	2005	2006	2007	2008	2009	2005-2009	2005-2009	2005-2009
Victims	(N=92)	(N=74)	(N=81)	(N=67)	(N=49)	%	%	%
Young Drivers	41	33	35	30	19	43.5%	45.8%	42.0%
Passengers	24	23	28	17	10	28.1%	27.3%	25.9%
Other Road Users	27	18	18	20	20	28.4%	26.9%	32.1%

As seen in Table 63, above, young drivers themselves made up the plurality of fatalities in young driver-involved crashes for Massachusetts (43.5%), Region 1 (45.8%), and Nationwide (42%).

Table 64 (below) shows young driver-involved fatalities by county. The four counties with the most young driver-involved fatalities (Worcester, Bristol, Middlesex, and Plymouth) all experienced declines in the number of young driver-involved fatalities in 2009 as compared to the prior four year-average. Young driver-involved fatalities declined by 71.4% in Worcester, 31.7% in Bristol, 61.9% in Middlesex, and 47.4% in Plymouth.

Table 64. Young Driver-Involved Fatalities by County

County	2005	2006	2007	2008	2009	Total 2005-2009	
						N	%
Barnstable	2	7	5	0	5	19	5.2%
Berkshire	3	3	0	1	0	7	1.9%

Bristol	13	12	11	5	7	48	13.2%
Dukes	0	0	0	1	1	2	0.6%
Essex	11	8	7	6	6	38	10.5%
Franklin	0	2	2	3	0	7	1.9%
Hampden	12	4	7	5	9	37	10.2%
Hampshire	1	1	4	0	0	6	1.7%
Middlesex	10	12	9	11	4	46	12.7%
Nantucket	0	0	0	0	0	0	0.0%
Norfolk	5	5	9	5	3	27	7.4%
Plymouth	10	9	6	13	5	43	11.8%
Suffolk	6	1	5	6	5	23	6.3%
Worcester	19	10	16	11	4	60	16.5%
Total	92	74	81	67	49	363	100.0%

Counties with the highest number of young driver-involved fatalities are highlighted

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VIII. OLDER DRIVERS

OLDER DRIVERS – KEY FINDINGS

In the period 2005-2009:

- Fatal crashes involving drivers age 65-74 increased by 16.5% in Massachusetts from 2005 to 2009, compared to a 3.3% increase in Region 1 and a 6.1% decrease Nationwide. Driver fatalities for the age group 65-74 increased 33.3% in Massachusetts, compared to a 12.8% increase in Region I and an 8.9% decrease Nationwide (Table 65).
- Driver fatalities for the 65-74 age group in Massachusetts have been between 3% (2008) and 6% (2009) of all fatalities in Massachusetts. In Region 1, they have accounted for between 3.5% (2008) and 5.4% (2009) of all fatalities, while being between 4.0% (2006) and 4.6% (2009) of all U.S. fatalities (Figure 28).
- In Massachusetts, 45.1% of crashes that involved drivers in the 65-74 age group occurred between noon and 6 p.m. In Region 1, 51.2% of crashes that involved drivers in this age group occurred between noon and 6 p.m., and for the Nation as a whole, 45.9% of crashes that involved drivers in this age group occurred between noon and 6 p.m. (Table 67).
- Fatal crashes involving drivers ages 75 and older decreased by 21.6% in Massachusetts, compared to decreases of 22.7% in Region and 11.5% Nationwide. Driver fatalities for the age group 75 and older decreased 32.2% in Massachusetts, compared to a 25.5% decrease in Region I and a 12.2% decrease Nationwide (Table 66).
- Driver fatalities for the age group 75 and older in Massachusetts have been between 6.0% (2009) and 7.9% (2005) of all fatalities in the State. In Region 1, they have accounted for between 6.5% (2007) and 8.7% (2006) of all fatalities. Both percentages are above those for the Nation as a whole, which ranged from 5.5% (2007) to 6.0% (2009) (Figure 29).
- In Massachusetts, 53.1% of crashes that involved drivers 75 and older occurred between noon and 6 p.m. In Region 1, 53.5% of crashes that involved drivers in this age group occurred between noon and 6 p.m., and for the Nation as a whole, 50.8% of crashes that involved drivers in this age group occurred between noon and 6 p.m. (Table 68).

Table 65. Fatal Crashes and Fatalities Involving Drivers Ages 65-74

	2005	2006	2007	2008	2009	Total 2005-2009	% Change 2005-2009
Massachusetts							
Fatal Crashes	28	23	33	19	30	133	16.5%
Drivers Ages 65-74 Killed	16	17	16	11	20	80	33.3%
Region							
Fatal Crashes	88	76	93	72	85	414	3.3%
Drivers Ages 65-74 Killed	50	48	52	38	53	241	12.8%
U.S.							
Fatal Crashes	3,217	3,029	3,038	2,927	2,868	15,079	-6.1%
Drivers Ages 65-74 Killed	1,831	1,695	1,698	1,640	1,564	8,428	-8.9%

Table 65, above, shows that fatal crashes involving drivers ages 65-74 have increased 16.5% in Massachusetts from 2005 to 2009; the number of drivers ages 65-74 killed in fatal crashes increased by 33.3%. Region 1 had a smaller increase in both crashes involving drivers ages 65-74 (3.3%) and in drivers of that age killed (12.8%). The Nation has experienced a decline in both crashes (6.1%) and drivers killed (8.9%).

As shown in Figure 28, below, the percentage of total fatalities that were drivers ages 65-74 has fluctuated in Massachusetts; the percentage in 2009 (6%) represented a high for the five-year period.

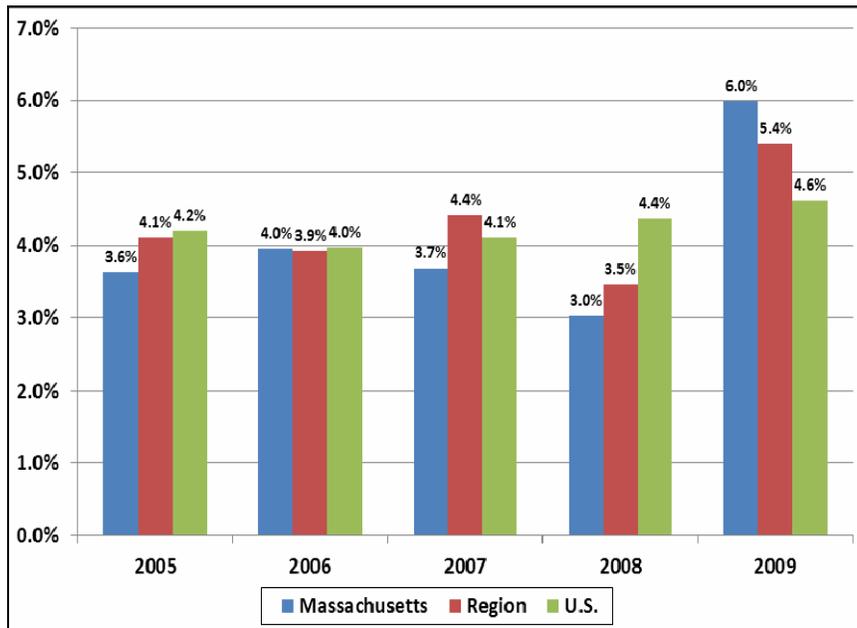


Figure 27. Driver Ages 65-74 Fatalities as Percent of Total Fatalities

Table 66. Fatal Crashes and Fatalities Involving Drivers Ages 75 and Older

	2005	2006	2007	2008	2009	Total 2005-2009	% Change 2005-2009
Massachusetts							
Fatal Crashes	42	36	37	33	29	177	-21.6%
Drivers Ages 75 and Older Killed	35	29	28	26	20	138	-32.2%
Region							
Fatal Crashes	106	123	102	109	85	525	-22.7%
Drivers Ages 75 and Older Killed	89	106	76	94	68	433	-25.5%
U.S.							
Fatal Crashes	2,932	2,902	2,800	2,602	2,485	13,721	-11.5%
Drivers Ages 75 and Older Killed	2,416	2,391	2,272	2,155	2,027	11,261	-12.2%

Table 66, above, shows that fatal crashes involving drivers ages 75 and older decreased by 21.6% in Massachusetts from 2005 to 2009, while the number of drivers ages 75 and older killed in fatal crashes declined by 32.2%. Region 1 experienced a 22.7% decline in fatal crashes and a 25.5% decline in drivers killed, while the U.S. experienced an 11.5% decline in fatal crashes and a 12.2% decline in drivers killed.

Figure 29, below, shows that, in both Massachusetts and Region 1, drivers ages 75 and older consistently made up a larger percentage of total fatalities than in the Nation (with the exception of 2009, where drivers ages 75 and older made up 6% of all fatalities in both Massachusetts and the U.S). Also note that the U.S as a whole has experienced an increase in its percentages, with a high (for this five-year period) of 6.0% in 2009.

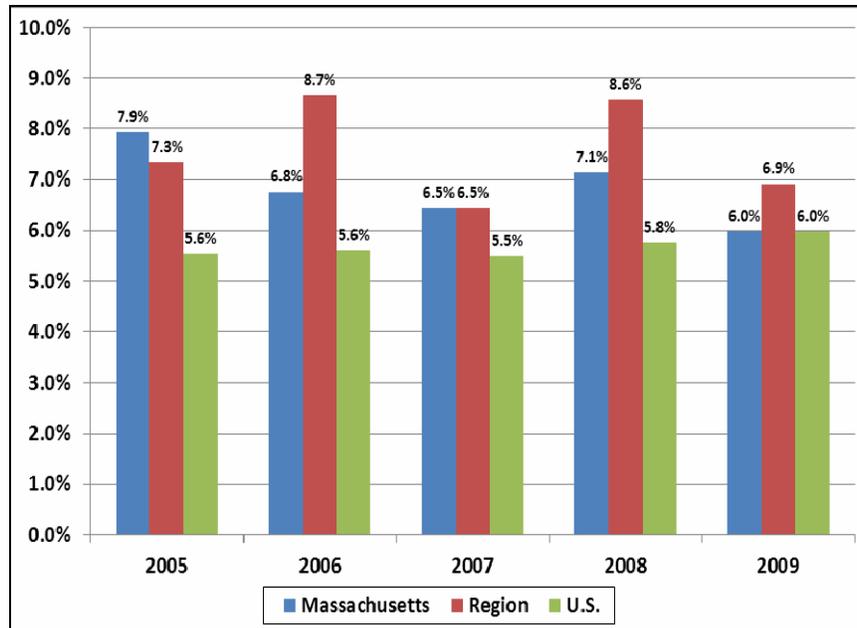


Figure 28. Driver Ages 75 and Older Fatalities as Percent of Total Fatalities

As Table 67 (below) shows for Massachusetts, the months with the highest number of fatal crashes involving drivers ages 65-74 were July (19 crashes, 14.3% of total), November (15, 11.3%), and April and December, each with 12 crashes and each representing 9% of the total. For Region 1, the months with the highest number of fatal crashes were July (13.3%), April (10.1%) and October (9.9%). Nationwide, the three months with the highest number of fatal crashes were June (8.9%), followed by July and December (8.8% each).

The days of the week the highest number of fatal crashes involving drivers ages 65-74 in Massachusetts were Thursday (24 crashes, 18% of total), Wednesday (21, 15.8%), and Tuesday and Saturday (19 crashes each, 14.3% of the total each). In Region 1, the most fatal crashes occurred on Friday (19.3%), followed by Thursday (17.1%), then Tuesday and Wednesday (15% each). Nationwide, most crashes occurred on a Friday (16.3%), followed by Thursday (15.1%) and Wednesday (14.7%).

In Massachusetts, the 3-hour windows in which the most fatal crashes involving drivers ages 65-74 occurred were 3 p.m. to 6 p.m. (33 crashes, 24.8% of the total), 9 a.m. to noon (27, 20.3%), and noon to 3 p.m. (27, 20.3%). For Region 1, 25.8% of such crashes occurred between 3 p.m. and 6 p.m., 25.4% occurred between noon and 3 p.m., and 18.4% occurred between 9 a.m. and noon. Nationwide, 23.7% occurred between noon and 3 p.m., 22.2% occurred between 3 p.m. and 6 p.m., and 17.5% occurred between 9 a.m. and noon.

As Table 68 shows, the top months for fatal crashes involving drivers ages 75 and older in Massachusetts were October (19 crashes, 10.7% of total), November (18, 10.2%), and May, July, and August (17 crashes each, each 9.6% of the total). For Region 1, the top months for such crashes were August (11.8%), October (11.6%), and July (9.9%). Nationwide, the top months were October (9.3%), May (9%), and June and July (8.8% each).

The top three days of the week for such crashes in Massachusetts were Friday (30 crashes, 16.9% of the total), Monday (29, 16.4%), and Wednesday and Saturday (27 each, each with 15.3% of the total). For the Region, the days with the most such crashes were Friday (16.4%), Wednesday (16%), and Monday (15.8%). Nationwide, the days with the most such crashes were Friday (16.5%), Tuesday (15.2%), and Monday (15%).

The 3-hour windows in which the most fatal crashes involving drivers ages 75 and older occurred in Massachusetts were 3 p.m. to 6 p.m. (49 crashes, 27.7% of the total), noon to 3 p.m. (45, 25.4%), and 9 a.m. to noon (42, 23.7%). This also held true for Region 1 and the Nation as well, with very few fatal crashes involving drivers ages 75 and older occurring earlier than 6 a.m. or later than 9 p.m.

**Table 67. Fatal Crashes Involving Drivers Ages 65-74 by Month, Day of Week, and Time of Day:
Totals 2005-2009**

	Massachusetts		Region	U.S.
	(N=133)		(N=414)	(N=15,079)
	N	%	%	%
MONTH				
January	11	8.3%	7.2%	7.8%
February	8	6.0%	5.3%	7.2%
March	10	7.5%	7.0%	7.5%
April	12	9.0%	10.1%	8.1%
May	8	6.0%	7.0%	8.2%
June	8	6.0%	8.7%	8.9%
July	19	14.3%	13.3%	8.8%
August	10	7.5%	7.5%	8.7%
September	10	7.5%	7.7%	8.7%
October	10	7.5%	9.9%	8.6%
November	15	11.3%	7.2%	8.7%
December	12	9.0%	8.9%	8.8%
DAY OF WEEK				
Sunday	14	10.5%	10.1%	11.9%
Monday	18	13.5%	10.4%	13.8%
Tuesday	19	14.3%	15.0%	13.8%
Wednesday	21	15.8%	15.0%	14.7%
Thursday	24	18.0%	17.1%	15.1%
Friday	18	13.5%	19.3%	16.3%
Saturday	19	14.3%	13.0%	14.5%
TIME OF DAY				
Midnight-3am	3	2.3%	1.4%	2.4%
3am-6am	1	0.8%	2.4%	3.0%
6am-9am	12	9.0%	8.5%	9.9%
9am-Noon	27	20.3%	18.4%	17.5%
Noon-3pm	27	20.3%	25.4%	23.7%
3pm-6pm	33	24.8%	25.8%	22.2%
6pm-9pm	22	16.5%	10.9%	13.7%
9pm-Midnight	8	6.0%	7.0%	7.2%
Unknown	0	0.0%	0.2%	0.4%

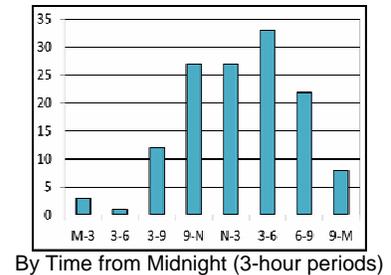
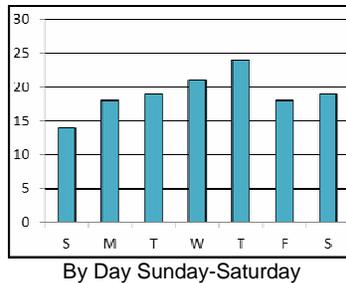
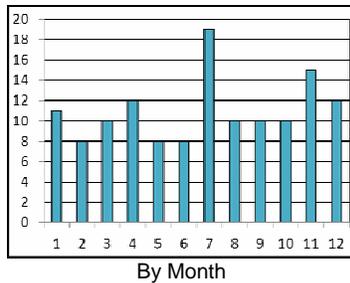


Table 68. Fatal Crashes Involving Drivers Ages 75 and Older by Month, Day of Week, and Time of Day: Totals 2005-2009

	Massachusetts		Region	U.S.
	(N=177)		(N=525)	(N=13,721)
	N	%	%	%
MONTH				
January	13	7.3%	7.2%	7.8%
February	15	8.5%	7.2%	6.9%
March	12	6.8%	5.5%	8.0%
April	14	7.9%	6.3%	7.7%
May	17	9.6%	8.4%	9.0%
June	12	6.8%	8.4%	8.8%
July	17	9.6%	9.9%	8.8%
August	17	9.6%	11.8%	8.3%
September	13	7.3%	7.4%	7.9%
October	19	10.7%	11.6%	9.3%
November	18	10.2%	8.4%	8.6%
December	10	5.6%	7.8%	8.7%
DAY OF WEEK				
Sunday	18	10.2%	11.0%	11.1%
Monday	29	16.4%	15.8%	15.0%
Tuesday	20	11.3%	14.3%	15.2%
Wednesday	27	15.3%	16.0%	14.7%
Thursday	26	14.7%	15.4%	14.9%
Friday	30	16.9%	16.4%	16.5%
Saturday	27	15.3%	11.0%	12.5%
TIME OF DAY				
Midnight-3am	0	0.0%	0.4%	1.1%
3am-6am	4	2.3%	1.3%	1.6%
6am-9am	16	9.0%	9.7%	8.5%
9am-Noon	42	23.7%	24.6%	22.8%
Noon-3pm	45	25.4%	29.1%	27.3%
3pm-6pm	49	27.7%	24.4%	23.5%
6pm-9pm	14	7.9%	6.9%	10.9%
9pm-Midnight	7	4.0%	3.6%	4.0%
Unknown	0	0.0%	0.0%	0.3%

