

# 2011 Massachusetts Safety Belt Usage Observation Study

*Prepared for*

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## Introduction

This report presents the results of the 2011 safety belt observation study conducted in the Commonwealth of Massachusetts. The observations and report were completed by the University of Massachusetts Traffic Safety Research Program (UMassSafe) located at the University of Massachusetts in Amherst. This observational study was conducted as a component of an effort to evaluate safety belt usage in the Commonwealth as directed by the Executive Office of Public Safety and Security's - Highway Safety Division (EOPSS-HSD).

The reported safety belt usage in Massachusetts, a secondary safety belt law state, has consistently had an observed usage rate lower than the national average. The survey results of safety belt observation usage in Massachusetts from 2000 - 2010 are presented in Table 1 below.

**Table 1 Massachusetts Safety Belt Usage Rates, 2000-2010**

Observation Year	Observed Safety Belt Usage Rate (Weighted and Rounded)
2000	50%
2001	56%
2002	51%
2003	62%
2004	63%
2005	65%
2006	67%
2007	69%
2008	67%
2009	74 %
2010	74 %

Source: Highway Safety Division, 2010 Massachusetts Safety Belt Usage Observation Survey

In 2011, the safety belt study consisted of a single stage statewide survey to assess safety belt usage in the Commonwealth of Massachusetts in compliance with *SAFETEA-LU* requirements. This report represents the direct observation results from this observation effort. Please note that this single stage approach is consistent with that adopted in 2010 and a departure from protocol employed in previous years that consisted also of a sub-sample observation stage used to evaluate the EOPSS-HSD-sponsored Spring *Click It or Ticket* (CIOT) Mobilization.

The sampling model used in this effort was previously developed and approved by the National Highway Traffic Safety Administration (NHTSA) as part of the methodology used in 2009. The sampling plan utilized the Massachusetts Statewide Travel Demand Model to stratify roadways in Massachusetts with the probability of a segment being selected being dependent on the proportion of road segment traffic volumes to the total volumes of all segments in the corresponding stratum. Roadways were stratified by direction on the basis of: functional classification, geography, time period, and day of the week.

## Observation Approach

As a component of the observation study, teams of observers made 160 site visits to complete the statewide observation. The teams observed and recorded the following attributes for occupants of passing vehicles:

- Vehicle information:
  - Vehicle type (passenger car, pickup truck, SUV, van, small commercial passenger vehicles)
  - State of vehicle license plate (MA, NH, Other)
- Shoulder belt usage:
  - Driver seat belt usage
  - Front seat outboard passenger seat belt usage
- Vehicle occupant information
  - Driver gender
  - Driver age category (teenager, adult, elderly adult)
  - Driver apparent race (white, black, Hispanic, other)
  - Passenger gender
  - Passenger age category (child, teenager, adult, elderly adult)
  - Passenger apparent race (white, black, Hispanic, other)

Observations were completed across the Commonwealth with the regions as pictured in Figure 1. Within each region equal visits were made based upon time of day/day of week and roadway functional classification. Roadways were classified as local, collector, arterial, or freeway locations. The specific time periods included the following:

- Weekday A.M. Peak Period (6 a.m. to 10 a.m.)
- Weekday Midday Peak Period (10 a.m. to 3 p.m.)
- Weekday P.M. Peak Period (3 p.m. to 7 p.m.)
- Weekend Period (6 a.m. to 7 p.m.)

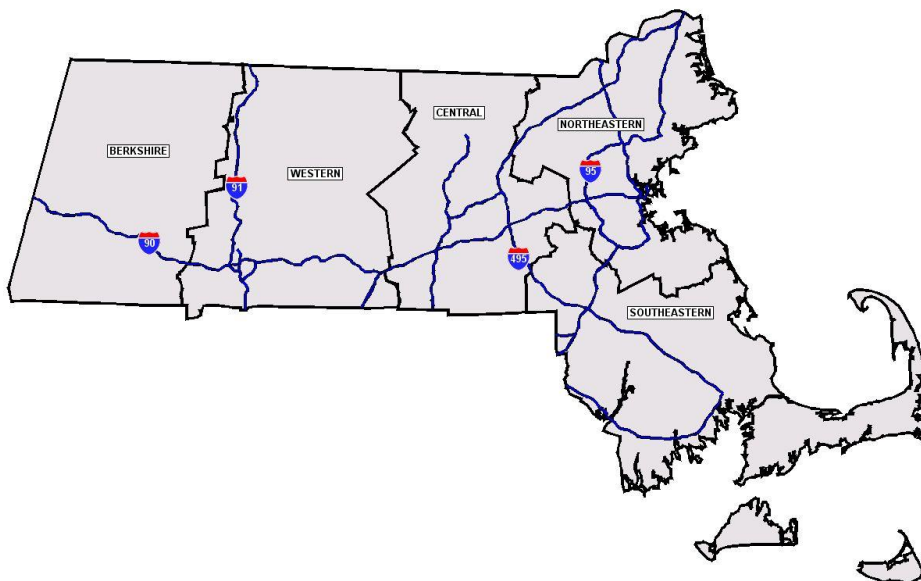


Figure 1: Observation Regions

The combination of region, time/day, and roadway classification resulted in the creation of 80 unique strata from which two observation locations were randomly sampled for each strata. Please note that the approved sampling plan called for the addition of sites as needed if the calculated variance did not achieve plus/minus 5 percent as required with NHTSA protocol. Given the directive to use the approved 2009 sampling plan, the same locations observed in 2009 were re-visited in 2010 and again in 2011 as part of the observational study.

## ***Results and Discussion***

Between June 6 and June 30, 2011 a total of 52,873 drivers and front outboard passengers in a total of 43,554 vehicles were observed at the 160 observation locations. The statistically weighted percentage of front seat occupants properly using seat belts during the observation study was **73.22 percent**. Based upon the variation in the sampling plan the 95% confidence interval ranges between 72.57 and 73.87 percent with a relative error well below the required 5 percent threshold. This number is virtually equivalent to the statistically weighted rate of 73.7 percent observed within Massachusetts in 2010. In an unweighted format the percentage of belt usage was 73.79, a slight increase from the value of 72.88 percent in 2010. Table 2 presents a breakdown of observed variables, in a weighted format and as compared to both 2009 and 2010. Also presented in Table 2 is the change in percent (i.e., not percent change) of usage by variable from 2011 to 2010.

Although the results presented do not represent a significant change from 2010, the observed rate remains significantly higher than that observed as recently as 2008 (66.84%). As shown in Table 2, the change in percent belted by variable remained fairly constant across most all observation variables, and as a result the trends observed and documented in both 2009 and 2010 remain relatively constant as well. Some of the interesting findings include, but are not necessarily limited to the following:

- Males again had a significantly lower belt usage than females (67.57% vs. 80.17%); however in 2011 male belt usage increased while the observed female belt usage rate decreased.
- The belt usage for elder adults was again much higher than that of teens and adults. Also worth noting is the decrease in the observed teen belt usage rate (72.46% to 68.85%). Of significance is the increase in the observed usage rate for adults (0.57 percentage points) given their overall prevalence within the sample.
- The belt usage of occupants in out of state vehicles (other than New Hampshire) was again higher than that in those of Massachusetts vehicles. Vehicles registered in New Hampshire once again had a usage rate comparable to that of Massachusetts vehicles (72.60% and 72.37%, respectively).
- Observed belt usage for occupants in small commercial vehicles (47.30%) and pick-up trucks (59.40%) were significantly lower than occupants of all other vehicle types. In comparison with 2010, the observed belt usage within pick-up trucks increased slightly and decreased within all other vehicle types.
- Regionally, the observed belt usage was lowest in the Western and Southeast Regions, which both had decreased values of observed belt usage as compared to 2010.
- Consistent with previous observation data, the observed seat belt usage rate was highest along freeways (79.70%), while local and collector roadways had the lowest observed usage rates (67.99 and 67.97%).
- Drivers with passengers were more likely to be belted than those without passengers (75.25% vs. 72.55%) and the observed passenger usage rate was between these values at 73.71%. This trend is consistent with previous years.

**Table 2 Summary of Weighted Study Data by Observation Variable with Known Belt Status**

Observation Variable	2011 Data		2010 Data	2009 Data	Change in Percentage (2011 vs. 2010)
	Total Observed Occupants with Known Belt Status	Weighted Percent Belted	Weighted Percent Belted	Weighted Percent Belted	
All Vehicle Occupants	52,142	73.22	73.70	73.61	-0.48
<b>Gender</b>					
Male	28,629	67.57	66.97	68.44	0.61
Female	23,370	80.17	81.53	79.43	-1.36
Status Unknown	143	68.00	84.58	84.30	-16.58
<b>Apparent Age</b>					
Child (passenger <12)	368	87.64	90.15	87.87	-2.52
Teen	3,202	68.85	72.46	66.91	-3.60
Adult	44,308	72.87	72.30	72.81	0.57
Elder Adult (>65)	4,211	79.19	83.50	82.12	-4.31
Status Unknown	53	50.55	78.74	75.08	-28.19
<b>Apparent Race</b>					
Black	2,322	65.47	65.77	71.98	-0.30
Hispanic	2,153	54.39	57.71	63.82	-3.33
White	45,894	74.30	74.99	73.92	-0.69
Other	1,631	78.97	70.75	82.63	8.22
Status Unknown	142	70.58	73.23	77.41	-2.65
<b>State of Vehicle Registration</b>					
Massachusetts	47,709	72.37	73.02	72.63	-0.66
New Hampshire	369	72.60	72.51	71.85	0.10
Out of State (Other)	3,937	83.98	81.91	84.93	2.06
Unknown	127	60.95	64.72	91.53	-3.77
<b>Vehicle Type</b>					
Passenger Car	27,914	75.76	76.64	75.77	-0.88
Pick-up Truck	4,828	59.40	58.17	60.87	1.23
SUV	12,685	77.72	78.50	77.04	-0.79
Van	3,555	78.71	80.02	80.07	-1.31
Commercial Vehicle	3086	47.30	51.28	49.96	-3.98
<b>Time of Day/Day of Week</b>					
A.M. Peak – Weekday	12,341	72.14	73.65	72.46	-1.51
Midday Peak – Weekday	12,117	69.90	72.24	70.85	-2.35
P.M. Peak – Weekday	13,586	75.58	75.70	75.33	-0.12
Weekend	14,098	74.76	72.99	75.55	1.77
<b>Observation Region</b>					
Berkshire	9,764	76.00	74.01	77.61	1.98
Western	9,819	70.71	73.32	73.27	-2.61
Central	9,521	74.41	74.36	72.48	0.05
Northeast	11,950	76.15	75.45	72.92	0.70
Southeast	11,088	68.82	72.56	72.26	-3.73
<b>Occupant Role</b>					
Driver Alone	34,089	72.55	73.24	72.05	-0.70
Driver with Passenger	9,259	75.24	75.12	77.30	0.13
Passenger	8,794	73.71	74.29	74.94	-0.58
<b>Functional Classification</b>					
Collector	14,009	67.97	67.36	68.59	0.61
Arterial	19,343	71.89	74.56	73.11	-2.67
Freeway	16,881	79.70	78.95	80.05	0.75
Local	1,909	67.99	73.17	72.54	-5.18