

# 2010 Massachusetts Safety Belt Usage Observation Study

*Prepared for*

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## Introduction

This report presents the results of the 2010 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 1999 - 2009 are presented in Table 1 below.

**Table 1 Massachusetts Safety Belt Usage Rates, 1999-2009**

Observation Year	Observed Safety Belt Usage Rate (Weighted and Rounded)
1999	52%
2000	50%
2001	56%
2002	51%
2003	62%
2004	63%
2005	65%
2006	67%
2007	69%
2008	67%
2009	74 %

Source: Highway Safety Division, 2009 Massachusetts Safety Belt Usage Observation Survey

In 2010 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 a departure from protocol employed in previous years that also consisted 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, and 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.)

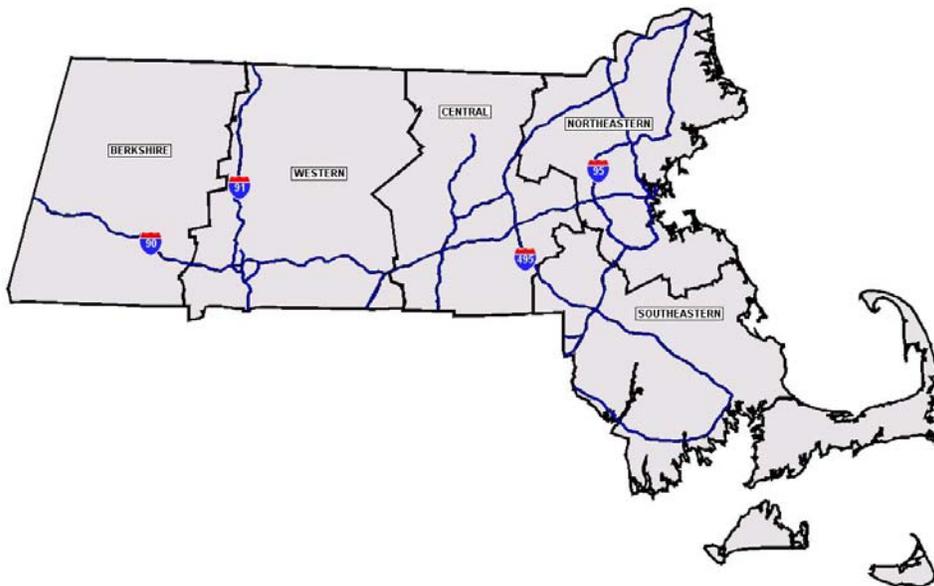


Figure 1: Observation Regions

The combination of Region, Time/Day, and Roadway Classification result 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 as part of the observational study.

## ***Results and Discussion***

Between June 7 and June 30, 2010 a total of 57,874 drivers and front outboard passengers in a total of 48,886 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 **73.70 percent**. Based upon the variation in the sampling plan the 95% confidence interval ranges between 73.14 and 74.26 percent with a relative error well below the required 5 percent threshold. This number represents the highest ever observed percentage in Massachusetts, yet is relatively unchanged from the weighted rate of 73.61 from 2009. Nevertheless, this value represents an increase of 6.86 percentage points from as recent as 2008. In an unweighted format the percentage of belt usage was 72.88, a slight decrease from the value of 73.99 percent in 2009. Table 2 presents a breakdown of observed variables, in a weighted format and as compared to both 2008 and 2009 values. Also presented in Table 2 is the change in percent (i.e., not percent change) of usage by variable from 2009 to 2010.

The results presented are encouraging given the slightly increased rate of observed safety belt usage as well as the fact that the observed rate is still significantly higher than the rate observed as recently as 2008. 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 2009 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. Also of interest is that female belt usage increased from 2009 to 2010 while male belt usage slightly decreased.
- The belt usage for teens is significantly higher than in 2009 and is virtually equivalent with the overall observed adult belt usage rate. Elder adults again had the highest observed safety belt usage rate.
- 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 had a usage rate comparable to that of Massachusetts vehicles (72.5% and 73%, respectively).
- Based upon the apparent race of occupants, belt usage decreased in most categories; however belt usage among white vehicle occupants increased slightly.
- Observed belt usage for occupants in small commercial vehicles and pick-up trucks were significantly lower than occupants of all other vehicle types; however, there were no major changes in the observed safety belt usage rate amongst occupants of any vehicle type from 2009 to 2010.
- Regionally, the observed belt usage was relatively consistent across regions. There were slight decreases in the observed belt usage in the Berkshire Region with modest increases in both the Central and Northeastern Regions.
- Belt usage in the PM peak period (3:00 to 7:00 PM) was again the highest. The observed weekend belt usage rate decreased slightly from 2009 to 2010.
- Consistent with previous observation data the observed freeway usage rate was highest along freeways (79%), while collector roadways had the lowest observed usage rates (67%).

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

Observation Variable	2010 Data		2009 Data	2008 Data	Change in Percentage 2009 to 2010
	Total Observed Occupants with Known Belt Status	Weighted Percent Belted	Weighted Percent Belted	Weighted Percent Belted	
All Vehicle Occupants	57,874	73.70	73.61	66.84	0.09
<b>Gender</b>					
Male	31,159	66.97	68.44	60.82	-1.47
Female	26,446	81.53	79.43	73.95	2.10
Status Unknown	269	84.58	84.30	82.62	0.28
<b>Apparent Age</b>					
Child (passenger <12)	516	90.15	87.87	82.92	2.28
Teen	963	72.46	66.91	58.97	5.55
Adult	49,957	72.30	72.81	65.77	-0.51
Elder Adult (>65)	6,307	83.50	82.12	76.41	1.38
Status Unknown	131	78.74	75.08	90.10	3.66
<b>Apparent Race</b>					
Black	2,497	65.77	71.98	63.11	-6.21
Hispanic	2,129	57.71	63.82	48.38	-6.11
White	49,422	74.99	73.92	67.90	1.07
Other	3,409	70.75	82.63	69.83	-11.88
Status Unknown	417	73.23	77.41	61.78	-4.18
<b>State of Vehicle Registration</b>					
Massachusetts	52,799	73.02	72.63	66.05	0.39
New Hampshire	576	72.51	71.85	68.51	0.66
Out of State (Other)	4,474	81.91	84.93	78.46	-3.02
Unknown	25	64.72	91.53	80.00	-26.81
<b>Vehicle Type</b>					
Passenger Car	29,936	76.64	75.77	69.43	0.87
Pick-up Truck	5,819	58.17	60.87	48.89	-2.70
SUV	13,651	78.50	77.04	71.51	1.46
Van	4,404	80.02	80.07	70.26	-0.05
Commercial Vehicle	4,064	51.28	49.96	42.70	1.32
<b>Time of Day/Day of Week</b>					
A.M. Peak – Weekday	13,665	73.65	72.46	67.01	1.19
Midday Peak – Weekday	14,280	72.24	70.85	66.50	1.39
P.M. Peak – Weekday	15,797	75.70	75.33	67.37	0.37
Weekend	14,132	72.99	75.55	66.41	-2.56
<b>Observation Region</b>					
Berkshire	10,248	74.01	77.61	70.88	-3.60
Western	10,903	73.32	73.27	69.16	0.05
Central	13,795	74.36	72.48	65.11	1.88
Northeast	12,146	75.45	72.92	68.42	2.53
Southeast	11,382	72.56	72.26	60.96	0.30
<b>Occupant Role</b>					
Driver Alone	39,869	73.24	72.05	65.60	1.19
Driver with Passenger	8,988	75.12	77.30	68.06	-2.18
Passenger	9,017	74.29	74.94	70.11	-0.65
<b>Functional Classification</b>					
Collector	16,409	67.36	68.59	59.70	-1.23
Arterial	23,177	74.56	73.11	66.39	1.45
Freeway	16,258	78.95	80.05	73.51	-1.10
Local	2,030	73.17	72.54	72.19	0.63