

**Utah Department of Public Safety
Highway Safety Office**

**Hot Topic
February 2017**

Subject: Primary Seat Belt Legislation

Legislation is one of the most effective ways to influence highway safety. This edition of the Highway Safety Hot Topic will look at the impact of changing Utah's seat belt law to primary enforcement.

Effective May 12, 2015, Utah's seat belt law became a primary enforcement law. What does that mean? It means that a person can be pulled over just for not wearing his or her seat belt. Previously, a person could only be issued a seat belt citation if s/he had been pulled over for another violation. Utah law is now all vehicle occupants must wear seat belts and children ages 8 and younger must be properly restrained in a car seat or booster seat.

Analysis

Restraint use will be looked at by month for occupants in motor vehicle crashes in Utah. Trendlines will be examined to see the general course or tendency of restraint use in crashes. For graphs, the time frame will be January 2014 through December 2016. When using trendlines, R^2 provides a measure of how well observed outcomes are replicated by the model, the coefficient of determination ranges from 0 to 1. An R^2 of 1 indicates that the line perfectly fits the data. In general the higher R^2 is the better it is.

In addition, odds ratios will be used to compare the year before the law went into effect, May 2014-April 2015, with the year after the law went into effect, May 2015-April 2016. An odds ratio (OR) is a way to quantify how strongly the presence of the primary seat belt law is associated with the presence of restraint use in crashes in the given population of occupants in motor vehicle crashes in Utah. If the OR is greater than 1, then having a primary enforcement law is considered to be associated with having restraint use in crashes. The 95% confidence interval (CI) is used to estimate the precision of the OR. The 95% CI is often used as a proxy for the presence of statistical significance if it does not overlap OR=1.

All Occupants in Motor Vehicle Crashes

Among all occupants in motor vehicle crashes in Utah, restraint use has increased. Graph 1 shows how restraint use has increased in crashes over time. The trendline shows increasing use of restraint use with $R^2=0.5249$. The OR=1.17 (95% CI: 1.11-1.24) which means that all occupants in crashes were 1.17 times more likely to be restrained in a crash after the primary enforcement law went into effect than before the law. The difference in restraint use was statistically significant.

Injured Occupants in Motor Vehicle Crashes

Among injured occupants in motor vehicle crashes in Utah, restraint use has increased. Graph 2 shows how restraint use has increased in crashes over time. The trendline shows increasing use of restraint use with $R^2=0.4113$. The OR=1.23 (95% CI: 1.12-1.35) which means that injured occupants in crashes were 1.23 times more likely to be restrained in a crash after the primary enforcement law went into effect than before the law. The difference in restraint use was statistically significant.

Occupants Killed in Motor Vehicle Crashes

Among occupants killed in motor vehicle crashes in Utah, restraint use has increased. Graph 3 shows how restraint use has changed in crashes over time. The trendline shows decreasing restraint use before the law with some increasing after the law and another decrease at the end of 2016. With $R^2=0.102$ this trendline does not replicate the data as well as the others, most likely due to the smaller numbers involving deaths. The OR=1.10 (95% CI: 0.72-1.69) which means that occupants killed in crashes were slightly more likely to be restrained in a crash after the primary enforcement law went into effect than before the law. The difference in restraint use was not statistically significant.

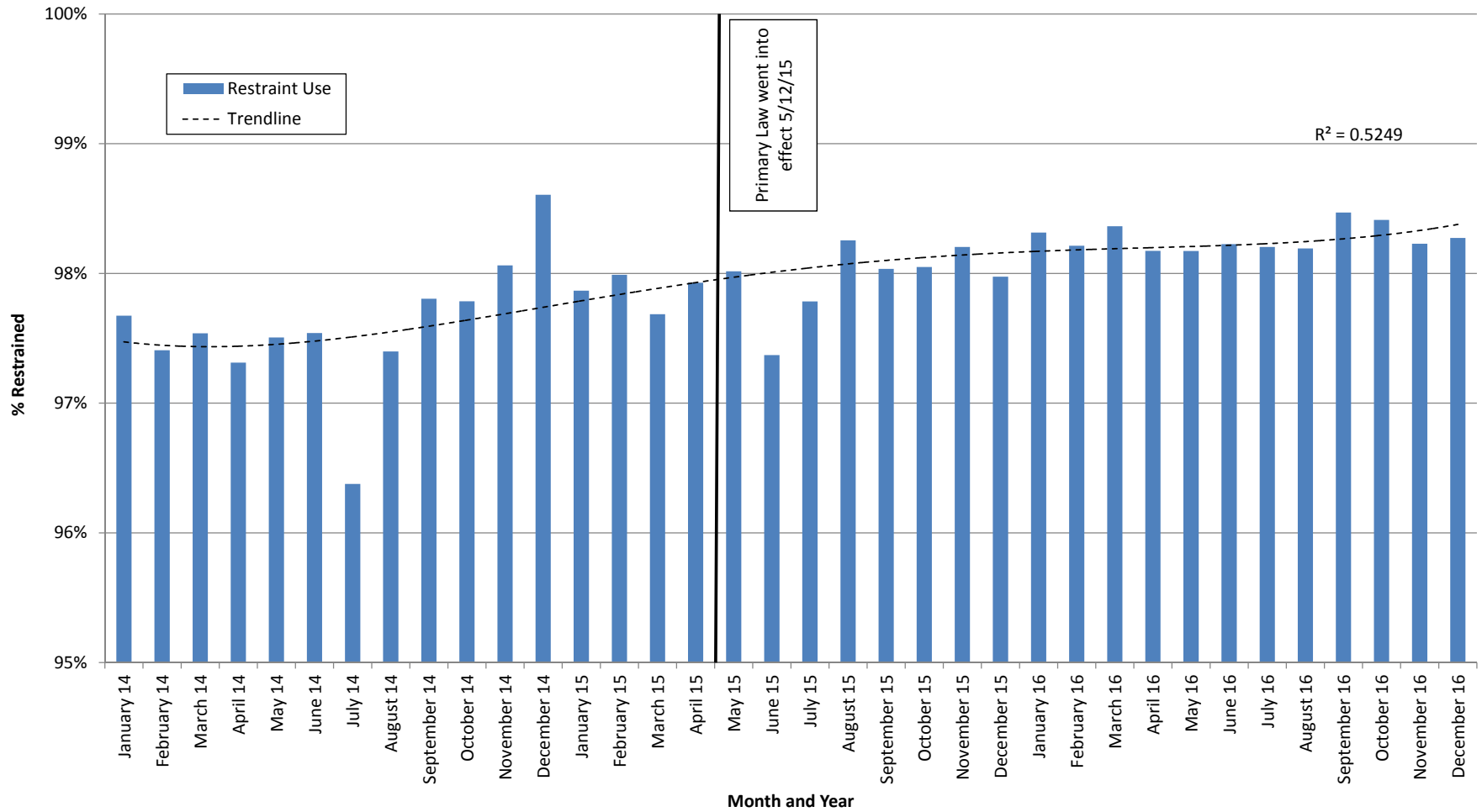
Seriously Injured Occupants in Motor Vehicle Crashes

Due to the smaller numbers involving occupants killed in crashes, serious injuries were also analyzed. Graph 4 shows how restraint use has changed in crashes over time. The trendline shows decreasing use of restraint use before the law and increasing trends after the law with $R^2=0.4724$. The OR=1.32 (95% CI: 1.04-1.67) which means that seriously injured occupants in crashes were 1.32 times more likely to be restrained in a crash after the primary enforcement law went into effect than before the law. The difference in restraint use was statistically significant.

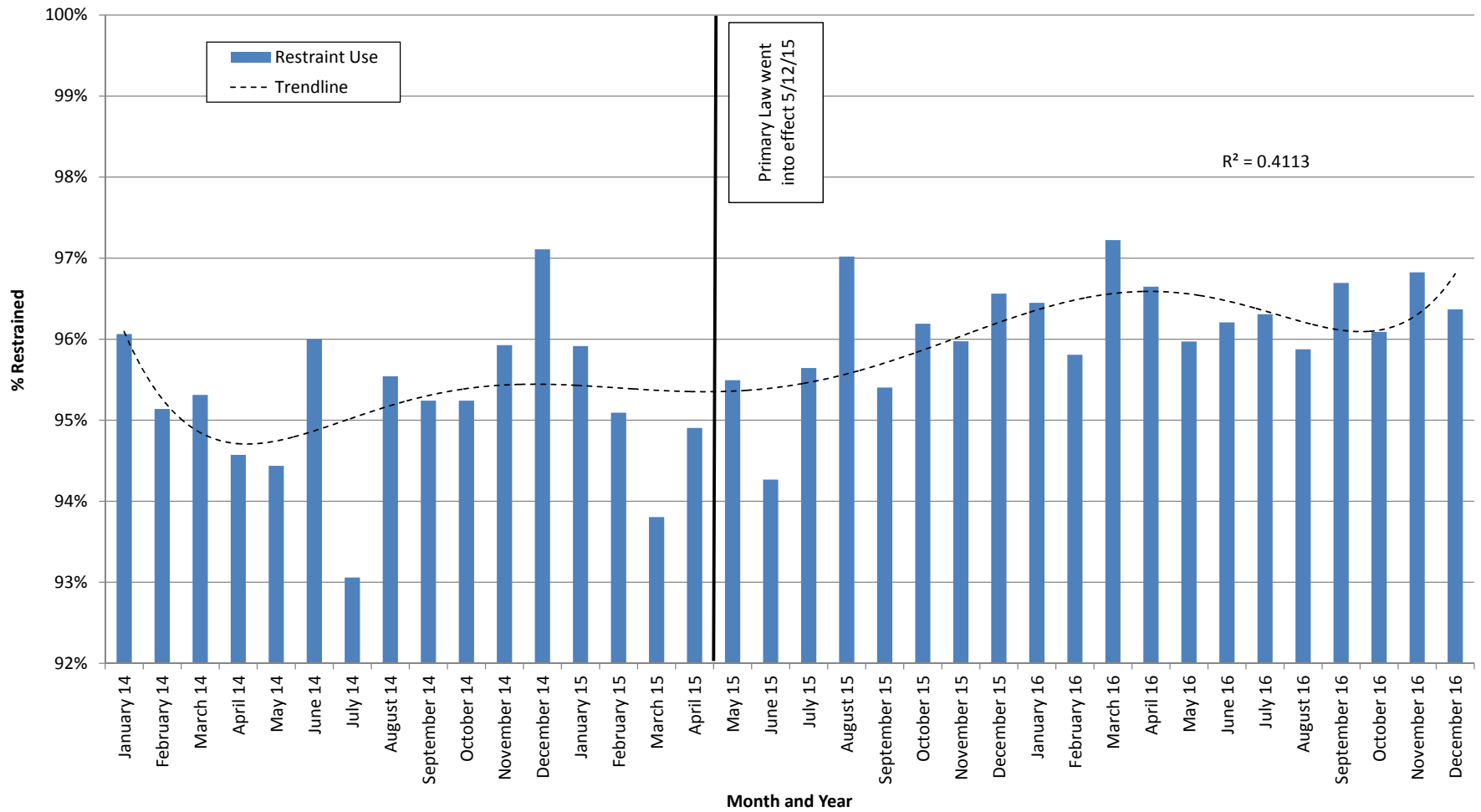
Conclusion

Many factors go into how crashes occur and the effectiveness of laws. This analysis shows that the primary seat belt enforcement law has coincided with an increasing use of restraints in crashes. This increase is most noticeable among all occupants in crashes, injured occupants in crashes, and seriously injured occupants in crashes.

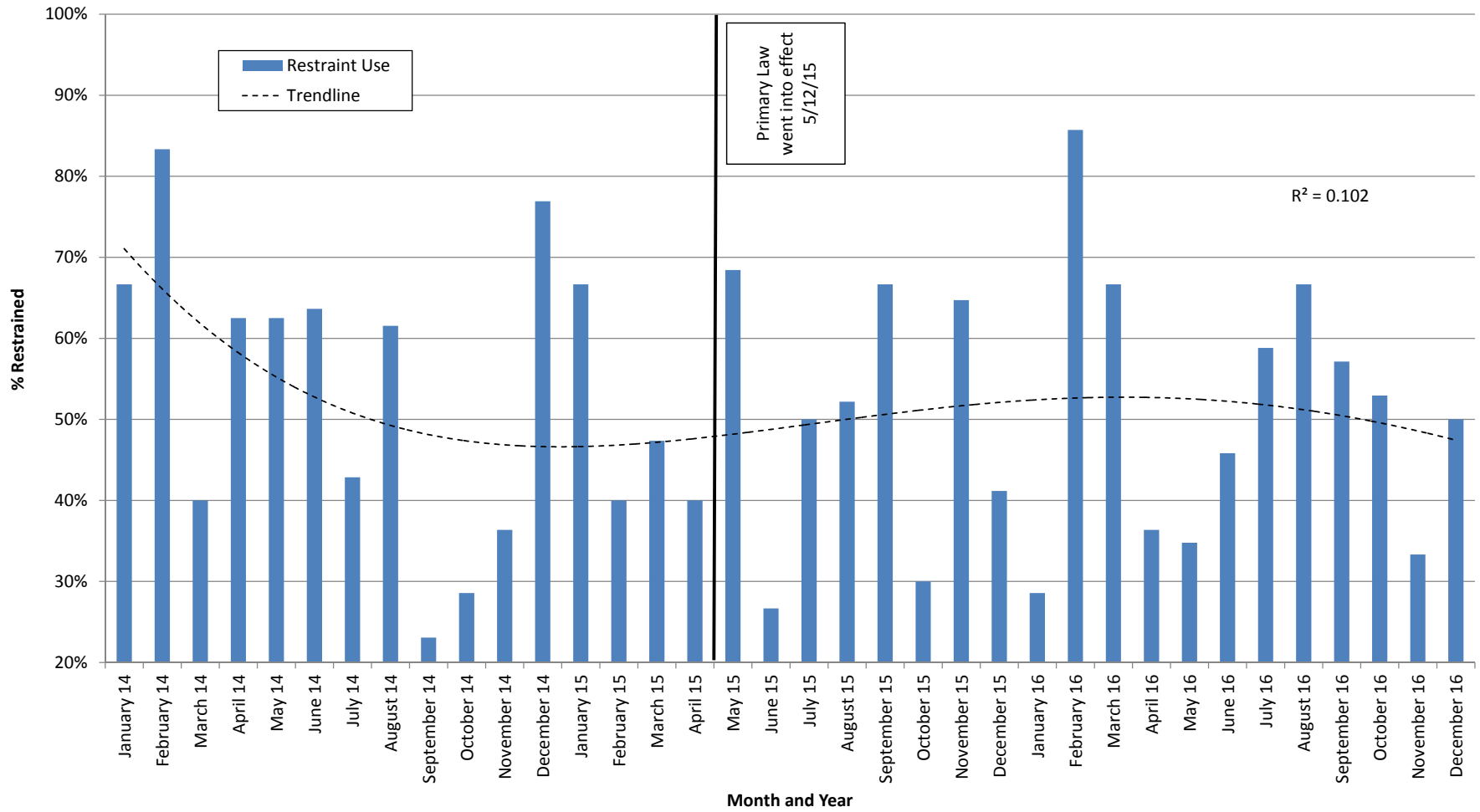
Graph 1: Restraint Use of All Occupants in Motor Vehicle Crashes by Month, Utah, 2014-2016



Graph 2: Restraint Use of Injured Occupants in Motor Vehicle Crashes by Month, Utah, 2014-2016



Graph 3: Restraint Use of Occupants Killed in Motor Vehicle Crashes by Month, Utah, 2014-2016



Graph 4: Restraint Use of Seriously Injured Occupants in Motor Vehicle Crashes by Month, Utah, 2014-2016

