Will A Primary Seat Belt Law Reduce Fatalities on Vermont's Highways?

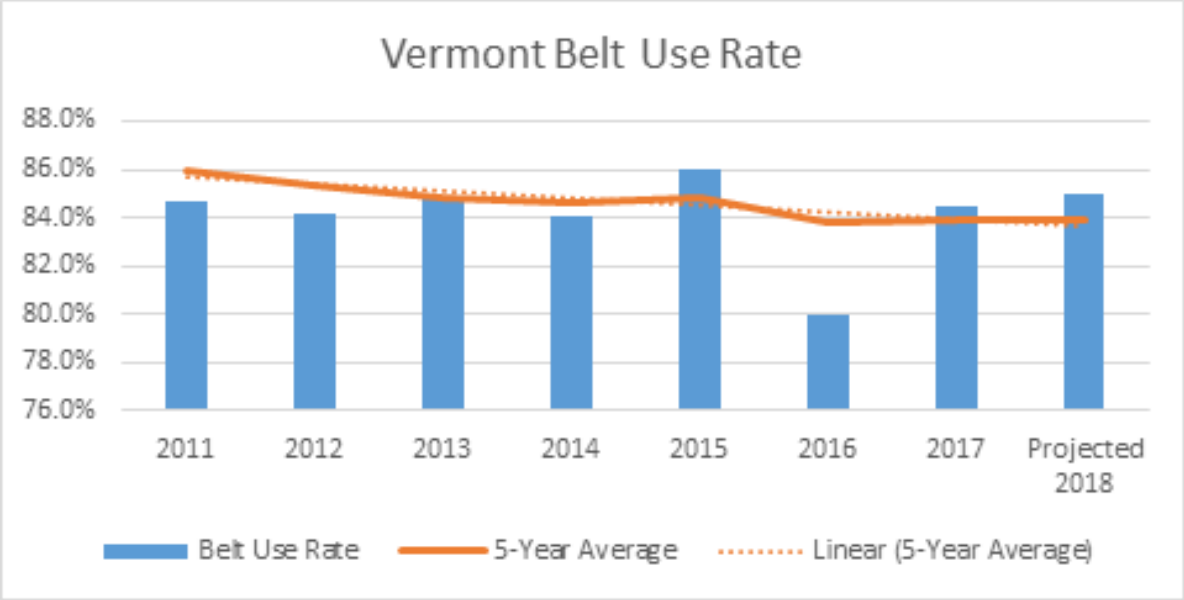
Introduction:

Vermont's current seat belt compliance law was enacted in 1993 and in part was effective on January 1, 1994. The task to various State agencies and Departments of administering educational programs is to inform the public of the benefits of safety belts and encourage compliance with the safety belt requirements that went into effect on May 12, 1993. See 23 VSA § 1259 (as amended).

Statistical Facts:

- In 2017, of the 69 people that lost their lives on Vermont highways 24 were unbelted. Of those 24 lives lost 7 were either partially or totally ejected from the vehicle. FARS 2017 Data (FARS- Fatality Analysis Reporting System)

- In 2017, the seat belt compliance rate in Vermont was 84.5%. See 2017 Vermont Seat Belt Use Study.



- In 2017, according to the National Occupant Protection Survey (NOPUS), the national seat belt compliance rate was 89.7%. (see below)

Table 1
Seat Belt Use by Major Characteristics

Occupant Group[1]	2016 Belt Use[2]	2016 95% Confidence Interval[3]	2017 Belt Use[2]	2017 95% Confidence Interval[3]	2016–2017 Change in Percentage Points	2016–2017 Change 95% Confidence Interval[4]	2016–2017 Change P-value[5]
All Occupants	90.1%	(88.5, 91.5)	89.7%	(88.2, 91.0)	-0.5	(-2.2, 1.3)	0.59
Drivers	90.5%	(88.9, 92.0)	90.2%	(88.7, 91.5)	-0.4	(-2.2, 1.4)	0.65
Right-Front Passengers	88.6%	(86.8, 90.2)	87.9%	(86.1, 89.4)	-0.7	(-2.8, 1.3)	0.48
Occupants in States With[6]							
Primary Enforcement Laws	92.1%	(90.8, 93.2)	90.9%	(89.2, 92.3)	-1.2	(-3.1, 0.7)	0.21
Secondary/No Enforcement Laws	83.0%	(77.6, 87.3)	85.7%	(82.4, 88.5)	2.7	(-0.9, 6.3)	0.13
Occupants Traveling on							
Expressways	92.7%	(90.5, 94.3)	92.5%	(90.9, 93.9)	-0.1	(-1.9, 1.6)	0.90
Surface Streets	88.3%	(86.5, 90.0)	87.8%	(85.8, 89.5)	-0.6	(-2.6, 1.5)	0.57
Occupants Traveling in							
Fast Traffic	92.0%	(90.0, 93.7)	91.5%	(89.9, 92.9)	-0.5	(-2.6, 1.6)	0.61
Medium-Speed Traffic	88.6%	(86.2, 90.7)	89.1%	(86.6, 91.2)	0.5	(-1.6, 2.5)	0.65
Slow Traffic	87.5%	(84.6, 90.0)	86.0%	(83.8, 87.9)	-1.6	(-4.2, 1.1)	0.23
Occupants Traveling in							
Heavy Traffic	92.3%	(90.9, 93.5)	91.6%	(90.1, 92.8)	-0.7	(-2.3, 0.8)	0.33
Moderately Dense Traffic	88.3%	(85.7, 90.5)	88.1%	(86.1, 89.8)	-0.2	(-2.7, 2.2)	0.85
Light Traffic	81.5%	(79.1, 83.8)	82.0%	(78.3, 85.2)	0.5	(-2.9, 3.8)	0.79
Occupants Traveling Through							
Light Precipitation	89.3%	(83.2, 93.4)	89.8%	(86.5, 92.4)	0.5	(-5.1, 6.1)	0.86
Light Fog	91.0%	(85.5, 94.6)	90.8%	(81.7, 95.6)	-0.2	(-8.0, 7.5)	0.95
Clear Weather Conditions	90.2%	(88.5, 91.6)	89.6%	(88.1, 91.0)	-0.5	(-2.2, 1.1)	0.52
Occupants in							
Passenger Cars	91.1%	(89.6, 92.4)	90.6%	(89.2, 91.8)	-0.5	(-1.9, 0.9)	0.46
Vans and SUVs	92.3%	(91.0, 93.5)	91.7%	(90.1, 93.0)	-0.6	(-2.6, 1.3)	0.50
Pickup Trucks	83.2%	(79.7, 86.1)	83.2%	(80.6, 85.6)	0.1	(-3.3, 3.5)	0.97
Occupants in the							
Northeast	90.9%	(87.5, 93.4)	86.5%	(82.8, 89.5)	-4.4	(-9.1, 0.4)	0.07
Midwest	**85.5%**	**(79.7, 89.9)**	**88.6%**	**(85.0, 91.4)**	**3.1**	**(0.1, 6.0)**	**0.04**
South	90.9%	(89.0, 92.5)	88.9%	(86.1, 91.2)	-2.0	(-5.4, 1.4)	0.24
West	93.4%	(89.6, 95.9)	94.5%	(92.2, 96.1)	1.0	(-0.5, 2.6)	0.18
Occupants in							
Urban Areas	90.5%	(88.9, 91.9)	90.2%	(88.7, 91.5)	-0.3	(-2.0, 1.3)	0.69
Rural Areas	89.5%	(86.9, 91.6)	88.7%	(86.1, 90.9)	-0.7	(-3.5, 2.1)	0.59
Occupants Traveling During							
Weekdays	90.0%	(88.3, 91.5)	89.5%	(87.9, 91.0)	-0.5	(-2.4, 1.4)	0.61
Weekday Rush Hours	89.9%	(88.3, 91.4)	89.7%	(88.0, 91.2)	-0.3	(-2.3, 1.8)	0.80
Weekday Non-Rush Hours	90.1%	(87.9, 91.9)	89.4%	(87.2, 91.2)	-0.7	(-2.7, 1.3)	0.48
Weekends	90.4%	(88.4, 92.1)	90.0%	(88.5, 91.4)	-0.4	(-2.0, 1.2)	0.62

[1] Drivers and right-front passengers of all observed passenger vehicles
[2] Shoulder belt use observed from 7 a.m. to 6 p.m.
[3] The Wilson Confidence Interval has the form: $((2n_{EFF}p + t^2) \pm t\sqrt{(t^2 + 4n_{EFF}pq)})/2(n_{EFF} + t^2)$, where p is the estimated percentage of Belt Use, $n_{EFF} = n/DEFF$ is the effective sample size (where n is the sample size and $DEFF$ is the design effect), $t \equiv t_{1-\alpha/2}(df)$, is a multiplier from the t-distribution with df degrees of freedom, and $q = 1 - p$. For percentages these endpoints are multiplied by 100.
[4] The regular symmetric interval was used for the estimated change in percentage point, which is in the form: $p \pm t_{1-\alpha/2}(df)\sqrt{v(p)}$, where p is the estimated change in percentage point, $v(p)$ is its estimated variance, and $t_{1-\alpha/2}(df)$ is a multiplier from the t-distribution with df degrees of freedom.
[5] **A p-value of 0.05 or less indicates that there is a statistically significant difference (at the alpha=0.05 level) between the 2015 and 2016 estimates for the group in question, indicated with bold type.**
[6] Use rates reflect the laws in effect at the time data were collected.
Data Source: National Occupant Protection Use Survey, National Highway Traffic Safety Administration, National Center Statistics and Analysis.

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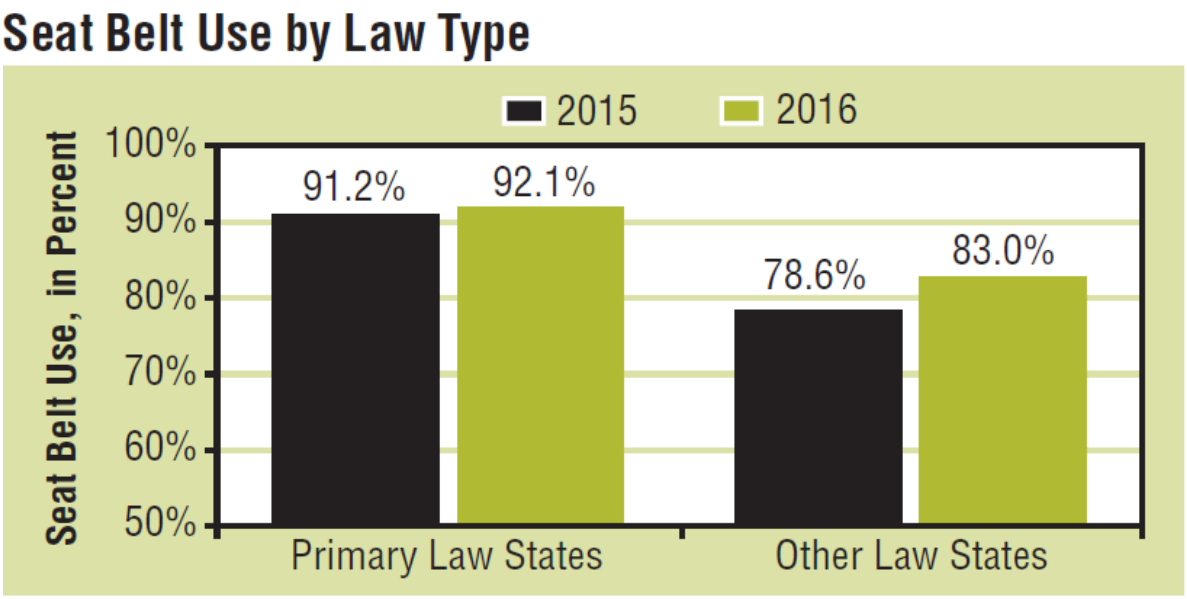
Person Fatalities by Ejected Status					
Year	Not ejected	Partially ejected	Totally ejected	Unknown	Grand Total
2010	45	2	11		58
2011	37	2	6		45
2012	41	5	12		58
2013	42	2	14	1	59
2014	25	2	6		33
2015	26	3	7		36
2016	32	4	12		48
2017**	41	2	5		48
Grand Total	**289**	**22**	**73**	**1**	**385**
*This table does not count pedestrians, bicyclists or motorcyclists.					
**2017 is not complete - as of 1/3/18					

- Seat belt use rates in states with primary enforcement safety belt laws are generally higher than in secondary enforcement law states.



Source: NOPUS

States With Primary Enforcement Seat Belt Laws*

Alabama	Hawaii	Michigan	Rhode Island
Alaska	Illinois	Minnesota	South Carolina
Arkansas	Indiana	Mississippi	Tennessee
California	Iowa	New Jersey	Texas
Connecticut	Kansas	New Mexico	Utah
Delaware	Kentucky	New York	Washington
District of Columbia	Louisiana	North Carolina	West Virginia
Florida	Maine	Oklahoma	Wisconsin
Georgia	Maryland	Oregon	

*States with laws in effect as of May 31, 2016.

Example Study:

STATE OF MINNESOTA

In April of 2014, the State of Minnesota completed a follow-up study to its 2012 analysis of the impact of the enactment of a primary seat belt law in that State. Particularly, the impact that it had on crash fatalities and injuries and the associated hospital charges for those injuries. The earlier 2012 study found that since 2009, when the primary seat belt law was enacted, there were 68 fewer deaths, 321 fewer severe injuries and 432 fewer moderate injury crashes. Further, it was found that those reductions translated to reduced expenditures of at least $45 million in hospital charges. The 2014 follow up revealed that the findings of the 2012 study have continued. Minnesota Seat Belt Report.pdf

STATE OF MAINE

In April of 2010, the State of Maine completed an evaluation of the State's change from a secondary to primary seat belt enforcement law. The study focused primarily on the effect of the law change on daytime and nighttime seat belt use, public awareness, and police attitudes. In short, the study found that both daytime and nighttime use increased; motorists were aware of the law change and its consequences; and, that law enforcement responded positively to the law. NHTSA Evaluation of PBL 2010.pdf

Conclusion:

Based on the data and the representative studies referenced above it is reasonable to conclude that the enactment of a primary seat belt law in Vermont would save lives on our highways. The exact number of lives it would save is impossible to predict with any degree of certainty, however if wearing a seat belt saved one life to that person's family and community the law will have accomplished its purpose. Further, as referenced in the Minnesota study it is reasonable to conclude that the enactment of such a law would lead to medical expense savings.