HLDI
Highway Loss Data Institute

Bulletin | Vol. 33, No. 36 : December 2016

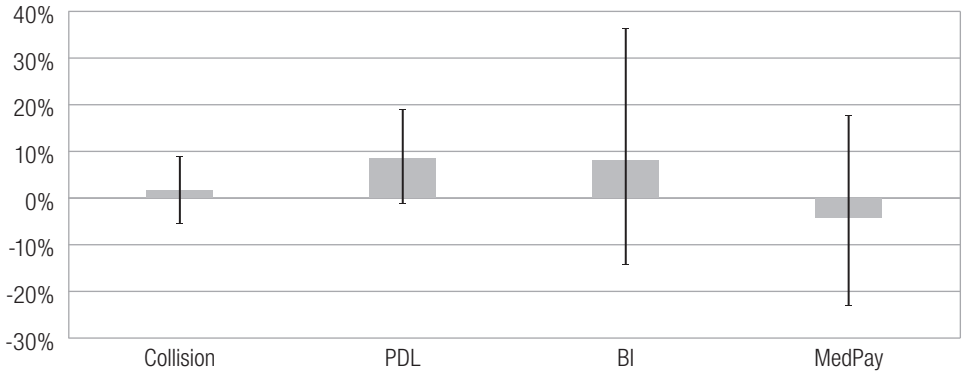
New Hampshire mandatory on-road driving test for older drivers

Summary

New Hampshire's mandatory on-road driving test for older drivers can be traced back to the 1980s. Drivers 75 and older had to renew their licenses every 5 years and take an on-road driving test. New Hampshire ended this requirement effective July 15, 2011.

This bulletin examines the differences in insurance losses for older drivers in New Hampshire, comparing 2009–10 when the road test was required with 2012–14 after the law change. Two neighboring states, Vermont and Maine served as comparison states. Results indicated no statistically significant evidence that the New Hampshire road test cut insurance loss risk for older drivers compared with neighboring states. Taking into account the experience of younger drivers and neighboring states, claim frequencies under collision, property damage liability, and bodily injury liability were higher than expected for older drivers in New Hampshire during 2009-10. Claim frequency under a fourth coverage, medical payment, was lower (see figure below). None of the findings were statistically significant.

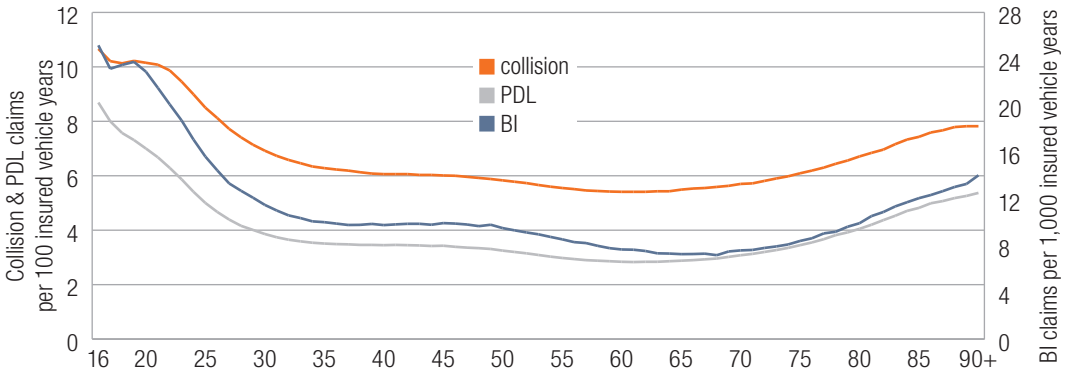
Change in New Hampshire older driver claim frequencies by coverage, 2009-10 relative to 2012-14



Introduction

The population of adults 65 and older is the fastest growing demographic in the United States. According to a U.S. Census Bureau (2014) report, by 2030 more than 20 percent of U.S. residents are projected to be 65 and older, compared with 13 percent in 2010 and 9.8 percent in 1970. As drivers age, they are at an elevated risk of involvement in motor vehicle crashes. **Figure 1** depicts how collision, property damage liability and bodily injury liability claim frequencies vary by driver age. Generally speaking, claim frequency decreases quickly from teenagers to young adults, and flattens out for prime age drivers until age 65 when claim frequencies begin to rise.

Figure 1: Claim frequencies by rated driver age, 2009–14



To address the increase in crash risk for older drivers, many states apply stricter licensing procedures to older drivers. For example, some states require shorter renewal periods and/or mandatory in-person renewal and vision testing. Three states — Illinois, Indiana, and New Hampshire — have at some point mandated a road test for older drivers. Indiana repealed its road test in the late 1990s followed by New Hampshire in 2011, leaving Illinois as the only state with a mandatory road test.

The National Highway Traffic Safety Administration (NHTSA, 2013) examined driver licensing procedures for drivers 65 and older in all 50 states. In Illinois (2003–07) and in New Hampshire (2004–08), the agency found mixed results for the road test for older drivers. Although NHTSA reported crashes per population decreased in both states for older drivers subject to the road test, older drivers who remained driving showed some increase in crashes per licensed drivers. In 2014, another study on driver license renewal policies studied the influence of on-road driving tests on population-based fatal crash involvement rates for Illinois, Indiana, and New Hampshire during 1986–2011 (Teft, 2014). The analysis found "no significant evidence of any effect" of an on-road driving test for older drivers. In 2016, the Highway Loss Data Institute (HLDI) published a study evaluating the Illinois road test. It found that the mandatory road test for older drivers, together with an incrementally shortened license renewal period, reduced insurance loss risk for older drivers under collision, PDL, and BI coverages. It also found the reduction was greater in urban areas than in non-urban areas.

This current study examined the effects of New Hampshire's older driver road test by calculating and modeling claim frequencies. If the road test is effective, claim frequencies would be expected to decline as drivers with an elevated crash risk are removed from the driving population. Claim frequency measures the likelihood that an insurance loss will occur and is calculated as the number of claims per 100 (or 1,000) insured vehicle years (exposure). An insured vehicle year is equivalent to one vehicle insured for 1 year, two vehicles for 6 months, etc. The study covers calendar years 2009–10 and 2012–14 and is based on about 1.5 million insured vehicle years for each of the four coverage types examined (collision, property damage liability, bodily injury liability, and medical payment).

Method

Insurance data

Automobile insurance covers damage to vehicles and property, as well as injuries to people involved in crashes. Different insurance coverages pay for vehicle damage versus injuries, and different coverages may apply depending on who is at fault. The current study is based on collision, property damage liability, bodily injury liability, and medical payment coverages.

Collision coverage insures against vehicle damage to an at-fault driver's vehicle sustained in a crash with an object or other vehicle; this coverage is common to all 50 states. Property damage liability (PDL) coverage insures against vehicle damage that at-fault drivers cause to other people's vehicle and property in crashes; this coverage exists in all states except Michigan, where vehicle damage is covered on a no-fault basis (each insured vehicle pays for its own damage in a crash, regardless of who is at fault).

Coverage of injuries is more complex. Bodily injury (BI) liability coverage insures against medical, hospital, and other expenses for injuries that at-fault drivers inflict on occupants of other vehicles or others on the road. Although motorists in most states may have BI coverage, BI analysis in this study was limited to states with traditional tort insurance systems where the at-fault driver has first obligation to pay for injuries. Medical payment (MedPay) coverage covers injuries to insured drivers and the passengers in their vehicles, but not injuries to people in other vehicles involved in the crash.

States and older driver license procedures

New Hampshire, the study state with a traditional tort insurance system, had a mandatory road test that applied to drivers 75 and older prior to 2011. The two bordering tort states , Vermont and Maine, were used as control states. All three states had vehicle densities of less than 500 registered vehicles per square mile. Older driver licensing procedures in these three states were examined, including road test, license renewal cycle, in-person renewal, and proof of vision. **Table 1** lists the older driver licensing policies for New Hampshire and the control states.

Table 1: Older driver licensing procedures, 2009–10 and 2012–14

	2009–10				2012–14			
State	Road test	Renewal cycle	In person	Proof of vision	Road test	Renewal cycle	In person	Proof of vision
New Hampshire	Every in person renewal starting at age 75	5 years	Every other renewal*	Every renewal	None	5 years	Every other renewal	Every renewal
Vermont	None	4 years	Every other renewal	None	None	4 years in 2012–13; 2 or 4 years in 2014	Every other renewal in 2012–13; every other for 4 year renewal period or every 4th renewal for 2-year renewal period in 2014	None
Maine	None	4 years	Every renewal	Every renewal	None	4 years	Every renewal	Every renewal

*Every other renewal began on September 18, 2010.

Rated drivers

The rated driver is the one considered to represent the greatest loss potential for an insured vehicle under a policy. In a household with multiple vehicles and/or drivers, the assignment of drivers to vehicles can vary by insurance company and by state, but typically it reflects the driver most likely to operate the vehicle. Information on the actual driver at the time of a loss is not available in the HLDI database. Because only the year of birth was available during the entirety of the study, the exact age of the rated driver is unknown. A January 1 birthdate is assumed, resulting in a 2-year range in the actual age for a given rated driver. For example, the assigned age of 75 in this study can range from an actual age of 74 and 1 day to 75 and 364 days. Full dates of birth are now available in the HLDI database for future analysis. The age groups used in the analysis include 75 and older, while drivers aged 55–74 served as the comparison group.

Vehicles

The study vehicles were the 10 most recent model years for each calendar year during 2009–10 and 2012–14. For example, data from calendar year 2009 included model years 2001–10, whereas data from calendar year 2014 included model years 2006–15. Total exposure and claims are shown in **Table 2**.

Table 2: Exposure and claims by coverage type

Coverage	Exposure (insured vehicle years)	Claims
Collision	1,467,337	83,298
Property damage liability	1,467,337	42,510
Bodily injury liability	1,506,548	7,265
Medical payment	1,481,167	10,199

Analysis methods

Claim frequency

Claim frequency was analyzed for 2009–10 when the road test in New Hampshire was mandatory, and for 2012–14 after the repeal. A Poisson regression logarithmic link function was used for each insurance coverage type to examine the difference in claim frequency for drivers 75 and older between New Hampshire and the comparison states using drivers 55–74 as the comparison age group. The regression also controlled for a variety of covariates. The estimate for the 2012–14 period was used as a baseline and subtracted from the 2009–10 estimate.

The main independent variables in the analysis include:

State: A categorical variable for the study state of New Hampshire and the two control states, Vermont and Maine.

Rated driver age: Rated driver ages were classified into two age groups: a study group of ages 75 and older, and a comparison group of ages 55–74. The control age group was selected because of enough loss data. It also spanned the typical retirement ages of 65–67, allowing for the adjustment of a possible lifestyle change after retirement.

Interaction of state and rated driver age: This categorical variable was designed to capture the different patterns in claim frequencies between the study group in New Hampshire and the comparison age group in the control states. The 55–74 age group in the comparison states served as the baseline.

Renewal cycle, in-person renewal frequency, and vision proof did not change during the study periods and thus were not included in the model. Covariates included vehicle age, vehicle size and class, rated driver gender, rated driver marital status, deductible range (collision coverage only), risk, vehicle density, and calendar year. The reference categories for the categorical independent variables were assigned to the values with the highest exposure: vehicle age = 6, vehicle size and class = midsize four-door cars, gender = female, marital status = married, risk = standard, deductible = $250-$499 (collision only), vehicle density = 250–499 vehicles per square mile, and calendar year = 2010 (with road test, 2013 (without road test).

For space reasons, illustrative full regression results on collision claim frequency for 2009–10 are shown in **Appendix A**. To further simplify the presentation, the exponent of the parameter estimate was calculated, 1 was subtracted, and the result multiplied by 100. The resulting number corresponds to the effect of the feature on that loss measure. For example, the estimate of collision claim frequency for older drivers subject to the road test was -0.0139, thus older drivers in New Hampshire had a collision claim frequency 1.4 percent lower than in control states ((exp(-0.0139) -1)*100 =-1.4).

Results

Figure 2 summarizes the estimated effects of New Hampshire's older driver road test on insurance claim frequencies for the four coverage types with 2009-10 relative to 2012-14. Estimated claim frequencies increased 2, 9, and 8 percent for collision, PDL, and BI, respectively, none of which was significant. The estimated claim frequency reduction for MedPay was 4 percent, a benefit but not significant. In general, the analysis results did not show any statistical evidence to support the effectiveness of New Hampshire's road test in reducing insurance losses among older drivers.

Figure 2: Change in New Hampshire older driver claim frequencies by coverage, 2009-10 relative to 2012-14

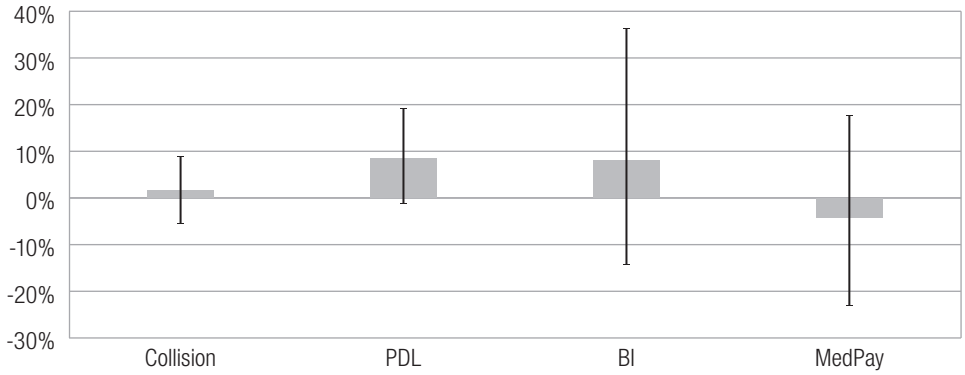


Figure 3 shows collision claim frequency estimates for New Hampshire older drivers before and after repeal of the road test. The estimated difference between the two periods is also shown. When the road test was mandated in New Hampshire, collision claim frequency was estimated to be 1 percent lower for older drivers in New Hampshire compared with those in the control states. After the repeal, claim frequencies were estimated to be 3 percent lower. The effect of the New Hampshire road test on collision claim frequency was estimated to be a small 2 percent disbenefit.

Figure 3: Estimated effects of New Hampshire's road test on collision claim frequency, New Hampshire versus control states, before and after road test law

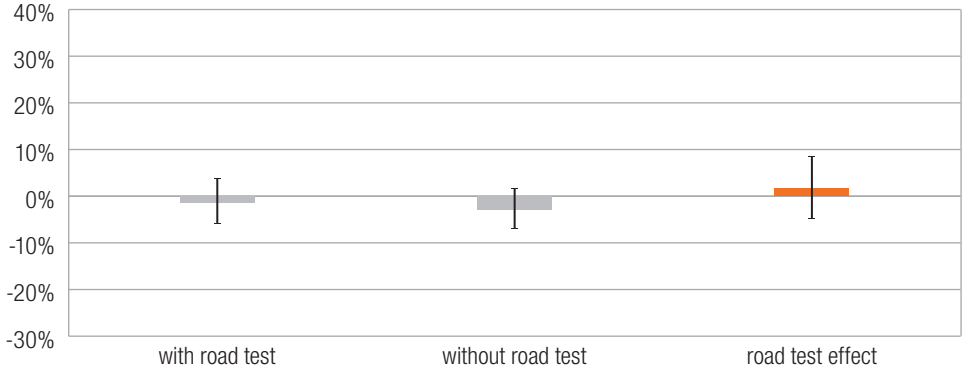


Figure 4 illustrates analysis results for property damage liability claim frequency. When the road test was required, PDL claim frequency was estimated to be 2 percent higher for older drivers in New Hampshire compared with those in the control states, and 6 percent lower after the law change. The effect of the law on PDL claim frequency was estimated to be a 9 percent disbenefit. None of the estimates were significant.

Figure 4: Estimated effects of New Hampshire's road test on PDL claim frequency, New Hampshire versus control states, before and after road test law

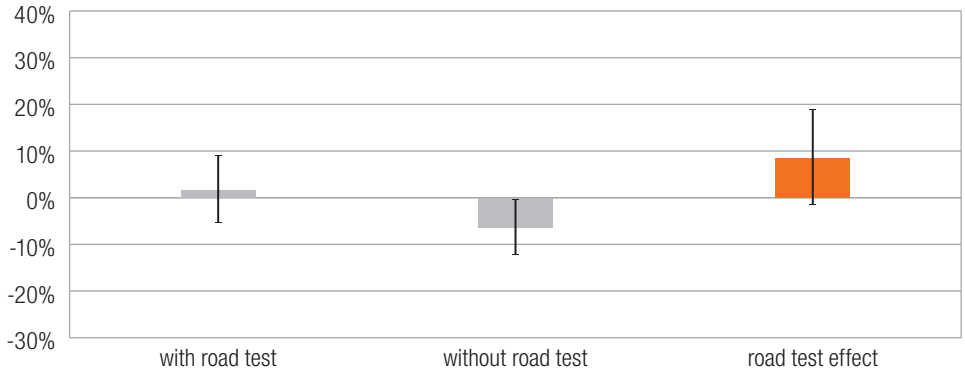
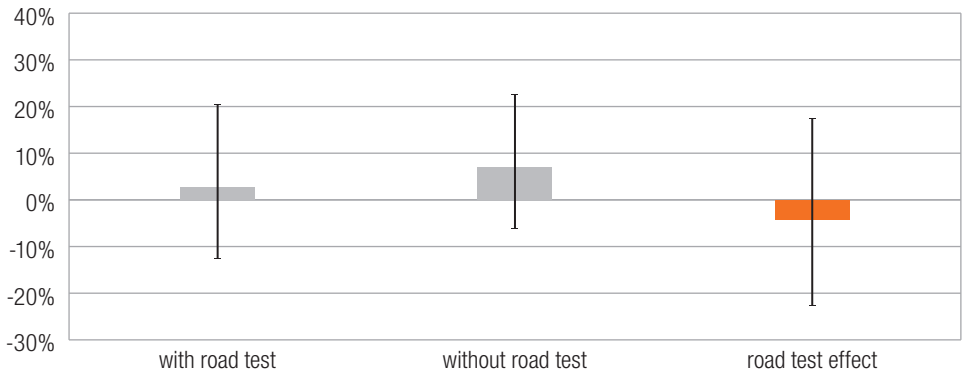


Figure 5 demonstrates analysis results for bodily injury liability claim frequency. Before the repeal, BI claim frequency was estimated to be nonsignificant 9 percent lower for older drivers in New Hampshire compared with those in the control states. After the repeal, however, the estimate was a significant 16 percent lower. Thus, the effect of the law change on BI claim frequency was estimated to be a nonsignificant 8 percent disbenefit.

Figure 5: Estimated effects of New Hampshire's road test on BI claim frequency, New Hampshire versus control states, before and after road test law

Figure 6 shows MedPay claim frequency estimates before and after the repeal. Under the road test law, MedPay claim frequency was estimated to be 3 percent higher for older drivers in New Hampshire compared with those in the control states. After the law, the estimate was 7 percent. The estimated effect of the road test law on MedPay claim frequency was a nonsignificant 4 percent benefit.

Figure 6: Estimated effects of New Hampshire's road test on MedPay claim frequency, New Hampshire versus control states, before and after road test law



Discussion

Analysis of New Hampshire's on-road driving test for older drivers did not reveal reductions in insurance claim frequencies. Much of the population in New Hampshire, including many older drivers live in non-urban areas that likely lack public transportation as an alternative to driving. Older drivers may have been willing to make the effort to take the license renewal test due to the lack of transportation options. In a previous HLDI study, the road test in Illinois was found to be associated with larger benefits in urban areas where drivers may have been willing to give up their licenses.

References

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Appendix A

Appendix A: Illustrative regression results — collision frequency							
Parameter		Degrees of freedom	Estimate	Effect	Standard error	Wald chi-square	P-value
Intercept		1	-8.9419		0.0200	200374.00	<0.0001
Vehicle age	0	1	0.3237	38.2%	0.0184	309.02	<0.0001
	1	1	0.3067	35.9%	0.0159	370.11	<0.0001
	2	1	0.2674	30.7%	0.0152	307.66	<0.0001
	3	1	0.2027	22.5%	0.0153	175.16	<0.0001
	4	1	0.1390	14.9%	0.0153	82.41	<0.0001
	5	1	0.1014	10.7%	0.0153	44.06	<0.0001
	7	1	-0.0660	-6.4%	0.0164	16.17	<0.0001
	8	1	-0.1422	-13.3%	0.0173	67.60	<0.0001
	-1	1	0.0905	9.5%	0.0487	3.45	0.0634
	6	0	0	0	0		
Size and class	Large 2dr cars	1	-0.5550	-42.6%	0.2889	3.69	0.0548
	Large 4dr cars	1	-0.1064	-10.1%	0.0187	32.20	<0.0001
	Large cargo/passenger vans	1	-0.7162	-51.1%	0.0724	97.93	<0.0001
	Large luxury cars	1	0.0746	7.7%	0.0249	8.99	0.0027
	Large luxury SUVs	1	-0.0290	-2.9%	0.0576	0.25	0.6145
	Large minivans	1	-0.2548	-22.5%	0.0435	34.36	<0.0001
	Large pickups	1	-0.2894	-25.1%	0.0167	299.77	<0.0001
	Large SUVs	1	-0.1109	-10.5%	0.0268	17.10	<0.0001
	Large sports cars	1	-0.4421	-35.7%	0.1585	7.78	0.0053
	Large station wagons	1	-0.3123	-26.8%	0.0931	11.26	0.0008
	Micro 2dr cars	1	-0.6640	-48.5%	0.3017	4.84	0.0278
	Midsize 2dr cars	1	0.0507	5.2%	0.0362	1.96	0.1618
	Midsize cargo/passenger vans	1	-8.4849	-100.0%	47.6454	0.03	0.8587
	Midsize luxury cars	1	0.0783	8.1%	0.0229	11.72	0.0006
	Midsize luxury SUVs	1	0.0035	0.4%	0.0290	0.01	0.9045
	Midsize minivans	1	-0.3448	-29.2%	1.0001	0.12	0.7303
	Midsize SUVs	1	-0.1838	-16.8%	0.0148	153.37	<0.0001
	Midsize sports cars	1	-0.4133	-33.9%	0.0503	67.47	<0.0001
	Midsize station wagons	1	-0.2033	-18.4%	0.0246	68.13	<0.0001
	Mini 2dr cars	1	-0.2220	-19.9%	0.0498	19.90	<0.0001
	Mini 4dr cars	1	-0.0575	-5.6%	0.0446	1.66	0.1975
	Mini SUVs	1	0.0530	5.4%	0.3336	0.03	0.8737
	Mini sports cars	1	-0.4171	-34.1%	0.1404	8.83	0.0030
	Mini station wagons	1	-0.1978	-17.9%	0.0466	18.06	<0.0001
	Small 2dr cars	1	-0.0189	-1.9%	0.0291	0.42	0.5159
	Small 4dr cars	1	-0.0352	-3.5%	0.0146	5.80	0.0160
	Small pickups	1	-0.3760	-31.3%	0.0215	305.06	<0.0001
	Small SUVs	1	-0.2526	-22.3%	0.0157	258.93	<0.0001
	Small sports cars	1	-0.4346	-35.2%	0.0812	28.62	<0.0001
	Small station wagons	1	-0.1215	-11.4%	0.0222	29.93	<0.0001
	Very large 4dr cars	1	-0.1380	-12.9%	0.0646	4.56	0.0326

Appendix A: Illustrative regression results — collision frequency							
Parameter		Degrees of freedom	Estimate	Effect	Standard error	Wald chi-square	P-value
	Very large luxury cars	1	0.1129	12.0%	0.0659	2.93	0.0868
	Very large luxury SUVs	1	0.3827	46.6%	0.1090	12.34	0.0004
	Very large minivans	1	-0.0584	-5.7%	0.0190	9.47	0.0021
	Very large pickups	1	-0.3059	-26.4%	0.0250	150.16	<0.0001
	Very large SUVs	1	-0.1739	-16.0%	0.0411	17.89	<0.0001
	Midsize 4dr cars	0	0	0	0		
Rated driver gender	Male	1	-0.0226	-2.2%	0.0094	5.77	0.0163
	Unknown	1	-0.1321	-12.4%	0.0383	11.87	0.0006
	Female	0	0	0	0		
Rated driver marital status	Single	1	0.1814	19.9%	0.0098	340.40	<0.0001
	Unknown	1	0.1310	14.0%	0.0378	11.98	0.0005
	Married	0	0	0	0		
Risk	Nonstandard	1	0.1614	17.5%	0.0125	167.23	<0.0001
	Standard	0	0	0	0		
Deductible range	0–100	1	0.3631	43.8%	0.0171	448.90	<0.0001
	101–250	1	0.2617	29.9%	0.0083	983.03	<0.0001
	>500	1	-0.4767	-37.9%	0.0185	660.92	<0.0001
	251–500	0	0	0	0		
Registered vehicle density	0–49	1	-0.1675	-15.4%	0.0125	179.98	<0.0001
	50–99	1	-0.1121	-10.6%	0.0122	84.78	<0.0001
	100–249	1	-0.0724	-7.0%	0.0105	47.88	<0.0001
	250–499	0	0	0	0		
Calendar year	2009	1	0.0114	1.1%	0.0075	2.31	0.1284
	2010	0	0	0	0		
Rated driver age	75+	1	0.1920	21.2%	0.0189	103.23	<0.0001
	55–74	0	0	0	0		
State	New Hampshire	1	0.0823	8.6%	0.0135	37.22	<0.0001
	control	0	0	0	0		
Rated driver age * state	75+*New Hampshire	1	-0.0139	-1.4%	0.0283	0.25	0.6205
	75+*control	0	0	0	0		

HLDI
Highway Loss Data Institute

1005 N. Glebe Road, Suite 700
Arlington, VA 22201
+1 703 247 1600
iihs-hldi.org