



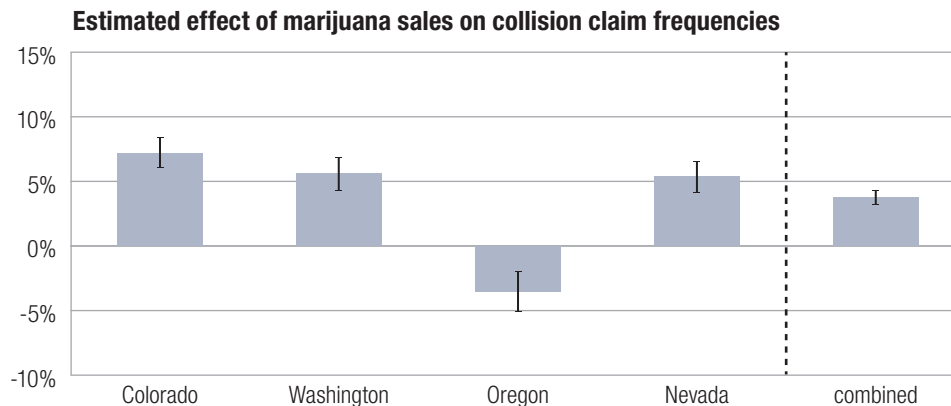
Recreational marijuana and collision claim frequencies

► Summary

Colorado was the first state to legalize recreational marijuana for adults 21 and older in the United States. Voters approved the measure in November 2012 and sales began in January 2014. Washington voters also approved recreational marijuana in November 2012 and sales began in July 2014. Oregon followed suit two years later, legalizing marijuana in November 2014, with sales starting in October 2015. In November 2016, Nevada approved recreational marijuana use and retail sales began in July 2017.

The Highway Loss Data Institute (HLDI) has published two studies analyzing changes in collision claim frequencies in Colorado, Washington, and Oregon, relative to nearby states, following the inception of legal recreational use (HLDI, 2017, 2018). The analyses controlled for differences in the rated driver populations, the insured vehicle fleet, unemployment, weather, and seasonality. The results indicated that for all three states, the legalization of retail marijuana sales was correlated with increases in collision claim frequency. The current study expands on the 2018 study by including collision loss data through 2019 and adding Nevada as a study state.

As shown in the following figure, the legalization of retail marijuana sales is associated with increases in collision claim frequencies in Colorado, Washington, and Nevada, but a decrease in Oregon. Collision claim frequency in Colorado was 7.2 percent higher than in Nebraska, Utah, and Wyoming after legalization. Similarly, claim frequency in Washington state increased by 5.6 percent compared with Idaho and Montana. For Nevada, claim frequency was 5.4 percent higher than Idaho and Utah. But in Oregon, collision claim frequency decreased by 3.5 percent compared with Idaho and Montana. All results were statistically significant.



A single analysis that combined these four states was also conducted. In this analysis, the study states were compared with other western states whose monthly collision claim frequencies were highly correlated with the frequencies for each of the study states before legalization. Using this approach, the legalization of retail sales was associated with a 3.8 percent increase in collision claim frequency.

► Introduction

Colorado was the first U.S. state to permit recreational marijuana sales to adults 21 and older. Voters approved the measure in November 2012 and sales began in January 2014. Since then, voters and legislators in numerous states have moved to legalize recreational marijuana use. As of November 2020, 15 states and the District of Columbia have legalized recreational marijuana use, most of which either currently allow or plan to allow legal marijuana sales. **Table 1** summarizes the states that legalized recreational marijuana. Sales in Washington, DC, are not authorized due to congressional restrictions.

State	Vote	Retail sales
Colorado	November 2012	January 2014
Washington	November 2012	July 2014
Oregon	November 2014	October 2015
Alaska	November 2014	October 2016
Washington, DC	November 2014	
Nevada	November 2016	July 2017
California	November 2016	January 2018
Massachusetts	November 2016	November 2018
Maine	November 2016	October 2020
Vermont	January 2018	
Michigan	November 2018	December 2019
Illinois	June 2019	January 2020
Arizona	November 2020	no later than April 5, 2021
Montana	November 2020	
New Jersey	November 2020	
South Dakota	November 2020	

As more states consider legalizing recreational marijuana use, understanding the effect that marijuana has on driving and vehicle crashes is of growing importance. Although there have been numerous studies thus far, the results have been somewhat contradictory, with some studies showing driver impairment or culpability and others not (Sewell, Poling, & Sofuoglu, 2009). For example, a study by the National Highway Traffic Safety Administration (Lacey et al., 2016) found no significant increase in crash risk after controlling for driver age, gender, race, and blood alcohol concentration. Other studies, however, have found that crash risk increases significantly after marijuana use (Elvik, 2013). Driving and simulator studies have found that marijuana use by drivers is likely to result in decreased speed, fewer attempts to overtake, and increased following distance. Yet marijuana use has also been associated with increases to reaction times and incorrect responses to emergency situations (Smiley, 1986).

In April 2017 and 2018, HLDI released studies estimating the effect of legalizing retail marijuana sales on collision claim frequency (HLDI, 2017, 2018). Both studies found that marijuana legalization was associated with increases in collision claim frequencies in Colorado, Washington, and Oregon, with the results for Colorado and Washington being statistically significant. A single analysis that combined these three states found a statistically significant increase of 6.0 percent in collision claim frequency in the 2018 study. Similar studies by Aydelotte et al. (2017) and Hansen, Miller, and Weber (2018) looked at the effect of legalization on fatal crash rates in Washington and Colorado, but found no statistically significant differences in fatal crash rates as a result of legalization. However, Aydelotte et al. did note that their findings “would equate to approximately 77 excess crash fatalities (of 2,890 total)” (p. 1,330), which is equivalent to a 2.7 percent increase.

Another study (Lane, & Hall, 2019), on the other hand, found that the legalization of recreational marijuana in Colorado, Washington, and Oregon was associated with a statistically significant increase of 1.08 traffic fatalities per million residents but was followed by a decrease in traffic fatalities, which suggests that legalization had a temporary effect in the year following the implementation of retail sales. A recent study also found that after legalization, Colorado, Washington, Oregon, and Alaska showed a statistically significant increase of 2.1 traffic fatalities per billion vehicle miles traveled (Kamer, Warshafsky, & Kamer, 2020). Yet Santaella-Tenorio et al. (2020) found an increase in traffic fatalities after recreational marijuana sales began in Colorado but not in Washington. The differences in findings may be due to researchers using different analytical methods, selecting different control states, and choosing different time ranges to study.

This HLDI bulletin expands on the 2018 study by including collision loss data through 2019 and adding Nevada as a study state.

► Method

Vehicles

The vehicles in this study were 1981–2020 models. The 33 most recent model years available for each calendar year were used (e.g., data from calendar year 2019 included 1988–2020 models). Loss data were included from January 2012 through December 2019. **Table 2** summarizes the exposure and claims for the study and control states.

Single state analysis	Exposure	Claims
Colorado	36,216,474	1,935,099
Washington	31,634,609	1,616,154
Oregon	21,340,667	1,014,066
Nevada	22,964,928	1,186,502
Combined analysis	84,598,814	4,439,819

Insurance data

Automobile insurance covers damages to vehicles and property in crashes plus injuries to the people involved in the 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 coverage data. This coverage insures against physical damage to a driver’s vehicle sustained in a crash with an object or other vehicle, generally when the driver is at fault. Because collision claims are the most frequent for insurers, they provide the best opportunity for looking at changes in crash frequency. In addition, because they represent the crashes of culpable drivers, they should be sensitive to changes in driving ability; although they do not necessarily account for all crashes that might be attributable to marijuana use. For example, a driver under the influence of marijuana might crash into another vehicle that violates their right of way; the other person is at fault, but absent marijuana influence, the crash might not have occurred.

Rated drivers

HLDI collects a limited number of factors about rated drivers including age, gender, marital status, and garaging location. The rated driver is the one considered to represent the greatest loss potential for an insured vehicle. In a household with multiple vehicles and/or drivers, the assignment of drivers to vehicles can vary from insurance company to company and from state to 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. In the current study, the data were stratified by rated driver age group (<25, 25–64, or 65+), gender (male, female, or unknown), marital status (married,

single, or unknown), and registered vehicle density of garaging location (<50, 50–99, 100–249, 250–499, 500–999, ≥1,000 registered vehicles per square mile).

External data

Unemployment data: State monthly unemployment data were obtained from the Bureau of Labor Statistics. Unadjusted unemployment percentages were used.

Monthly mean temperatures: State monthly mean temperatures, measured in degrees Fahrenheit, were obtained from the National Oceanic and Atmospheric Administration (NOAA) for January 2012 through December 2019 and were linked to HLDI loss data. Daily mean temperatures for states were unknown. Mean monthly temperatures were divided into two ranges: below freezing (<32°F) and above freezing (>32°F).

NOAA state monthly precipitation, measured in inches for January 2012 through December 2019, were also linked to HLDI loss data. The type of precipitation and number of days in a given month with measurable precipitation were not available.

Study states

The four studied states that permit retail sales of recreational marijuana are Colorado, Washington, Oregon, and Nevada. Relevant law dates are summarized in **Table 3**.

	Colorado	Washington	Oregon	Nevada
Vote	November 2012	November 2012	November 2014	November 2016
Retail sales	January 2014	July 2014	October 2015	July 2017

Analysis methods

Regression analysis was used to quantify the effect of changes in the legal status of marijuana on collision claim frequency while controlling for other factors that also varied with time. Collision claim frequency was defined as the number of collision claims divided by the number of insured vehicle years and was modeled using Poisson regression with a logarithmic link function.

Single state analysis

Separate analyses were conducted for the states of Colorado, Washington, Oregon, and Nevada. Each of these study states was compared with control states with no change in the legal status of marijuana. Control states were selected based on proximity to the study state as well as on the similarity of seasonal crash patterns prior to marijuana legalization. This similarity was based on the correlations between the monthly claim frequency in the study state and each potential control state during the 24 months before marijuana sales began. The Pearson correlation coefficient for Colorado and Nebraska was 0.85; for Wyoming, 0.79; and for Utah, 0.61. For Washington, the states of Montana (0.77) and Idaho (0.61) were selected as controls. For Oregon, the states of Idaho (0.71) and Montana (0.62) were used. For Nevada, the states of Utah (0.73) and Idaho (0.75) were selected.

The insurance data were stratified by vehicle age and vehicle type, rated driver age group, gender, marital status, garaging state, vehicle density, and calendar year and month. For example, a unit of observation was May 2012 collision exposure and the claim count for 2007 model year luxury SUVs, with young married males as rated drivers and vehicles garaged in an area of Idaho with a vehicle density of 50–99 vehicles per square mile. The characteristics of each stratum were treated as independent variables in the model to control for the effects on claim frequency of fluctuations in the demographic composition over time. The categorical month variable (i.e., January, February, etc.) controlled for seasonality. The monthly unemployment rate was also included to control for economic conditions. State average temperature and precipitation were used to control for weather differences independent of season. Finally, a categorical variable—legislation status—was used to track the change in marijuana’s legal status, and the passing of time was represented by a monthly sequential variable.

The estimate for the month index variable represents the claim frequency trend for the study state. The estimates for the interactions between the month index and state represent the differences between trends for the study state and each of the controls.

The effect of the law change in each study state (Colorado, Washington, Oregon, Nevada) was compared with each of its controls both individually and as a group. In the model comparing each study state with its controls individually, the interaction between garaging state and legislation status represents the change in collision claim frequency that occurred after marijuana retail sales began relative to the comparison state. This provides separate estimates for the study state compared with each of its control states. The model comparing each study state with its grouped controls included an additional variable called state type, which identified the data as being from either the study state or one of its controls. The interaction between legislation status and state type was used instead of its interaction with garaging state to estimate the effect of legalizing marijuana on claim frequency. Using state type instead of garaging state provides a single estimate for the study state compared with all its control states combined. The interaction estimates with *p* values less than 0.05 indicate that the legalization of retail sales had a statistically meaningful effect on collision claim frequency in the study state. For space reasons, illustrative full regression results for Colorado’s collision claim frequency are shown in the **Appendix**.

Combined analysis

In addition to the eight models described previously, an analysis that combined Colorado, Washington, Oregon, and Nevada in a single dataset was also conducted. Idaho, Montana, Utah, and Wyoming served as controls. The four control states had statistically significant correlations of monthly claim frequencies with each of the four study states. This model was essentially the same as those described previously, except that a single variable was used to estimate the main effect instead of the interaction between state (or state type) and legislation status. This variable was based on both the month and the state, and equaled 1 only in the study states after the legislation took effect in that state.

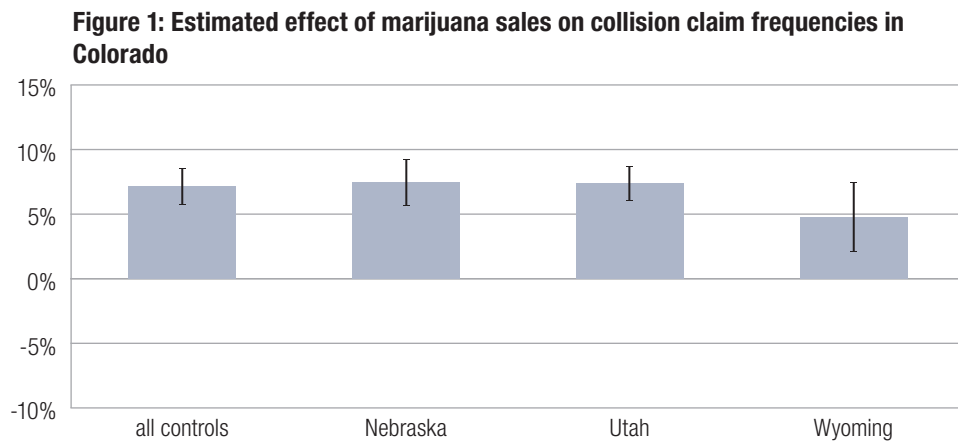
► Results

Single state analyses

Figures 1–4 illustrate the estimated changes in collision claim frequency associated with legal recreational marijuana sales. A summary table (Table 4) contains the model estimates and regression details. Figure 5 compares the current results with those of the 2018 analysis.

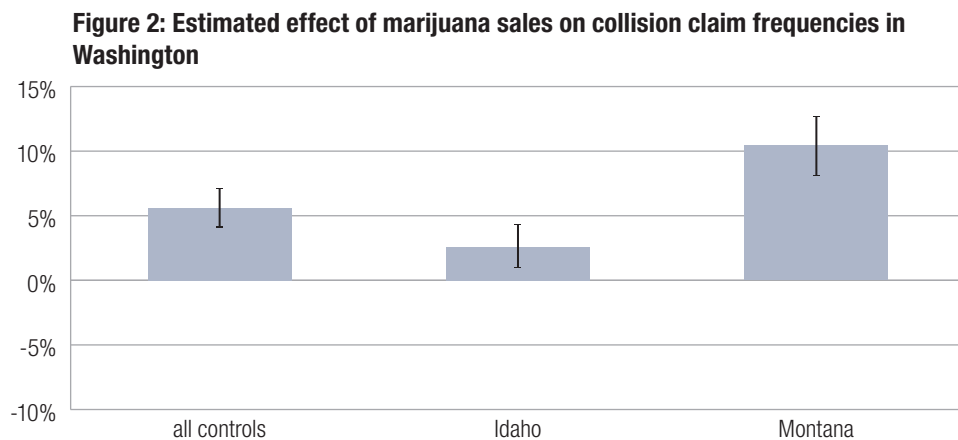
Colorado

Figure 1 shows the estimated effect of marijuana sales in Colorado, which began in January 2014. A significant 7.2 percent increase in collision claim frequency was estimated in Colorado compared with the three control states combined. Results varied when each individual control state was examined independently, with effects ranging from a 4.8 percent increase in Colorado compared with Wyoming to a 7.4 percent increase when compared with Nebraska and Utah. All the claim frequency increases were statistically significant.



Washington

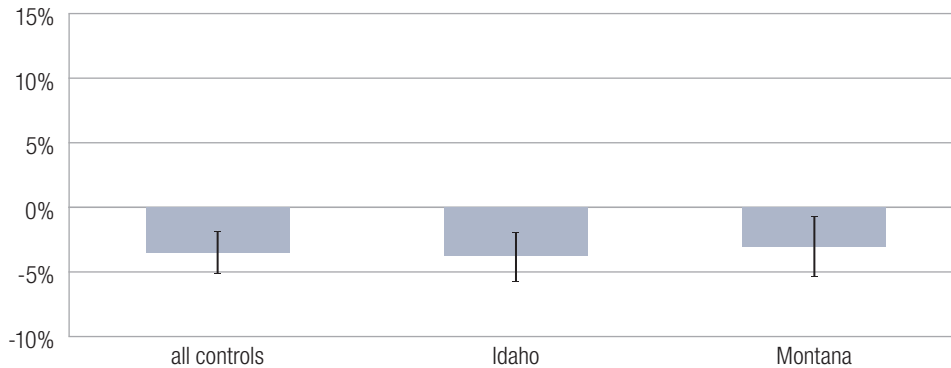
Figure 2 shows the estimated effect of marijuana sales in Washington, which began 6 months after Colorado. A significant 5.6 percent increase in collision claim frequency was estimated in Washington after retail sales began in July 2014 compared with the control states combined. When compared with Idaho and Montana individually, claim frequencies increased by an estimated 2.6 and 10.4 percent, respectively; these increases were also statistically significant.



Oregon

Oregon began retail sales of marijuana to the public in October 2015. **Figure 3** shows the estimated effect of legalizing marijuana sales in the state compared with two control states. Unlike Colorado and Washington, collision claim frequencies for Oregon were lower than expected compared with the control states when either combined or examined individually. Collision claim frequency was 3.5 percent lower when compared with the control states combined. When each individual control state was examined independently, the effects were a 3.1 percent decrease compared with Montana and a 3.7 percent decrease compared with Idaho. All the results were statistically significant.

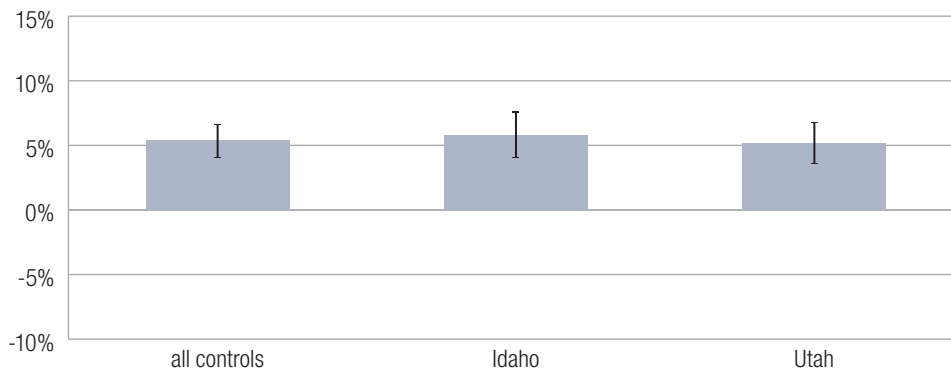
Figure 3: Estimated effect of marijuana sales on collision claim frequencies in Oregon



Nevada

Retail sales began in Nevada in July 2017. The estimated effects of legalizing marijuana sales in the state compared with two control states are summarized in **Figure 4**. Collision claim frequency in Nevada was estimated to increase by 5.4 percent compared with the control states combined. The effects were similar when compared with each control state individually. Claim frequencies increased by 5.8 percent for Nevada compared with Idaho and 5.1 percent compared with Utah. All the increases were statistically significant.

Figure 4: Estimated effect of marijuana sales on collision claim frequencies in Nevada



Combined analysis

A final analysis was completed that combined the loss results for Colorado, Washington, Oregon, and Nevada and four highly correlated control states in the west that included Idaho, Montana, Utah, and Wyoming. This analysis yielded a significant 3.8 percent increase in collision claim frequency for states that currently permit retail sales of recreational marijuana.

Table 4 summarizes the results across the different analyses.

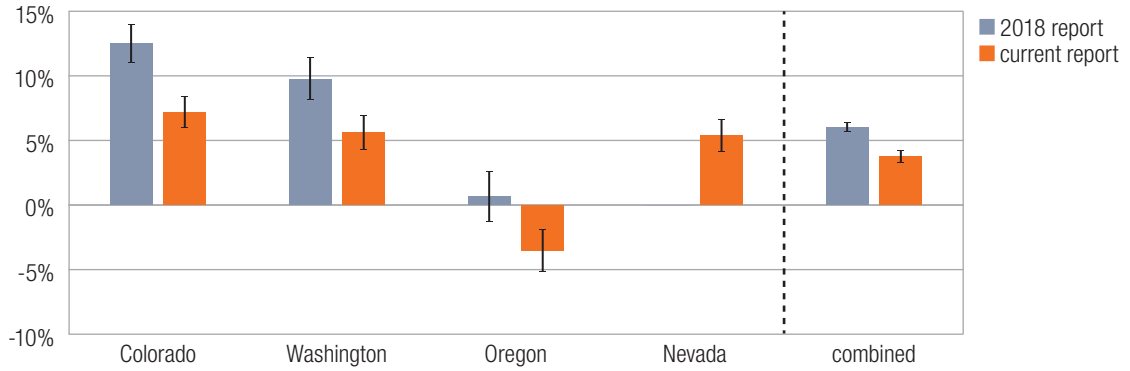
Table 4: Detailed results of regression analysis on collision claim frequencies								
Study	Control	Estimate	Effect	Standard error	Wald 95% confidence limits		Chi-square	P value
Colorado	Nebraska	0.0718	7.4%	0.0080	0.0562	0.0874	81.03	<0.0001
	Utah	0.0710	7.4%	0.0070	0.0573	0.0846	103.36	<0.0001
	Wyoming	0.0466	4.8%	0.0128	0.0215	0.0718	13.21	0.0003
	Nebraska, Utah, Wyoming	0.0691	7.2%	0.0060	0.0573	0.0809	131.37	<0.0001
Washington	Idaho	0.0257	2.6%	0.0087	0.0087	0.0428	8.73	0.0031
	Montana	0.0993	10.4%	0.0106	0.0786	0.1201	87.99	<0.0001
	Idaho, Montana	0.0545	5.6%	0.0071	0.0406	0.0684	59.03	<0.0001
Oregon	Idaho	-0.0382	-3.7%	0.0099	-0.0576	-0.0188	14.93	0.0001
	Montana	-0.0310	-3.1%	0.0123	-0.0551	-0.0070	6.42	0.0113
	Idaho, Montana	-0.0356	-3.5%	0.0085	-0.0522	-0.0190	17.63	<0.0001
Nevada	Idaho	0.0563	5.8%	0.0093	0.0381	0.0744	36.98	<0.0001
	Utah	0.0502	5.1%	0.0075	0.0354	0.0650	44.30	<0.0001
	Idaho, Utah	0.0523	5.4%	0.0069	0.0388	0.0657	58.11	<0.0001
Colorado, Washington, Oregon, Nevada	Idaho, Montana, Utah, Wyoming	0.0369	3.8%	0.0021	0.0327	0.0410	302.76	<0.0001

Comparison with prior HLDI results

Figure 5 compares the current results with the results of the 2018 HLDI report. The results of the 2017 report are not included, as the method used in the 2017 report was slightly different from the method for the 2018 and current studies, thus the results are not directly comparable. Additionally, Nevada was examined as an individual study state in the current report for the first time. However, the combined results for both the 2018 and the current reports included Nevada as one of the study states.

Given these caveats, compared with prior results, the estimated effect of marijuana sales on collision claim frequency declined in Colorado, Washington, and Oregon. The findings that the effect of marijuana sales in Colorado and Oregon was attenuating have been documented in the 2018 report. The effect in Colorado declined from 12.5 percent to 7.2 percent; in Washington, the effect declined from 9.7 percent to 5.6 percent. In Oregon, collision claim frequency showed a slight but statistically insignificant increase in the 2018 report, but was associated with a statistically significant 3.5 percent decrease in the current report. For the combined analysis, the estimated effect also decreased from 6.0 percent to 3.8 percent.

Figure 5: Estimated effect of marijuana sales on collision claim frequencies



► **Discussion**

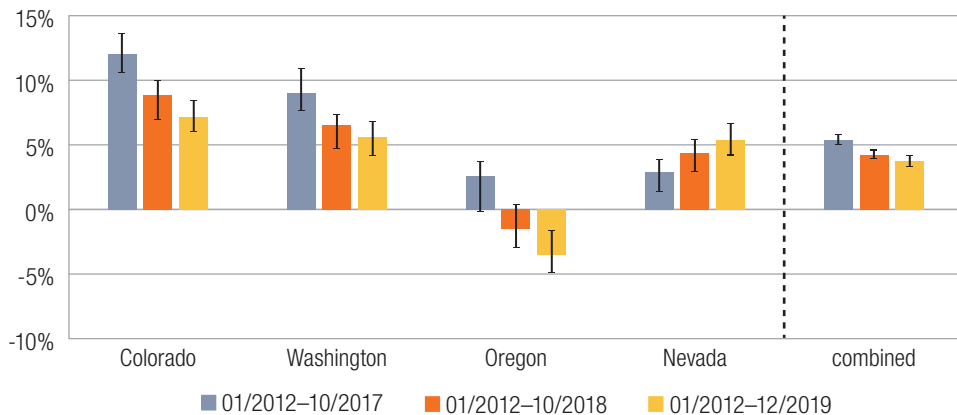
In January 2014, Colorado became the first state in the United States to legalize retail sales of marijuana for recreational use. Since then, voters and legislators in numerous states have moved to legalize recreational marijuana use. Before the November 2020 election, eleven states and the District of Columbia had legalized recreational marijuana use, nearly all of which either currently allow or plan to allow legal marijuana sales. As more states move toward legalizing recreational marijuana use, it is imperative to better understand how this may affect crash risk.

HLDI has been monitoring changes in collision claim frequency in states that legalized recreational marijuana sales since Colorado first began sales in 2014. The current results still indicate that the legalization of marijuana is associated with increases in collision claim frequencies in most states examined. Results for Colorado, Washington, and Nevada were higher compared with the nearby control states, and the results were statistically significant. Collision claim frequency for Oregon, however, showed a decrease associated with legalizing retail sales, and the result was also statistically significant. Compared with the 2018 results, the effects declined in both Colorado and Washington, and showed an opposite direction in Oregon.

Although the current results for Oregon exhibit a statistically significant decrease, a single analysis that examined Colorado, Washington, Oregon, and Nevada together still found a significant increase of 3.8 percent to collision claim frequencies associated with the legalization of recreational marijuana sales.

Figure 6 summarizes the estimated effect of marijuana sales on collision claim frequencies over time for all studied states. The effects in Colorado, Washington, and Oregon showed a decreasing trend over time, while the effects increased gradually in Nevada. Consequently, the single analysis that combined these states also showed a decreasing trend over time.

Figure 6: Estimated effect of marijuana sales on collision claim frequencies over time



Figures 7–9 show recent monthly marijuana tax revenue for Colorado, Oregon, and Nevada, respectively, and Figure 10 summarizes the quarterly tax revenue for Washington. Oregon had the highest state marijuana tax rate at 17 percent, followed by Colorado at 15 percent. For Nevada and Washington, state marijuana tax rates are 10 percent and 6.5 percent, respectively. Although the tax revenues fluctuate from month to month, all states exhibit a trend of increasing tax revenue over time. The increase in tax revenues implies that sales, and consequently usage, of marijuana has been increasing as well. Despite this, except for Nevada which was the most recent study state to legalize, the results have been attenuating over time. One possible explanation may be that after retail sales begin in a state, there is a surge of new marijuana users who are unfamiliar with the impairment effects but over time, the heavier and more experienced users experience weaker effects.

Figure 7: Colorado marijuana retail tax revenue, February 2014–December 2019

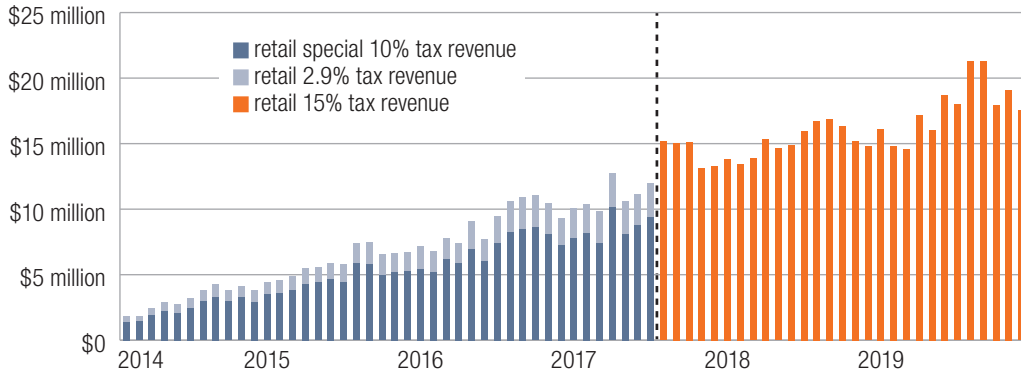


Figure 8: Oregon marijuana retail tax revenue, February 2016–December 2019

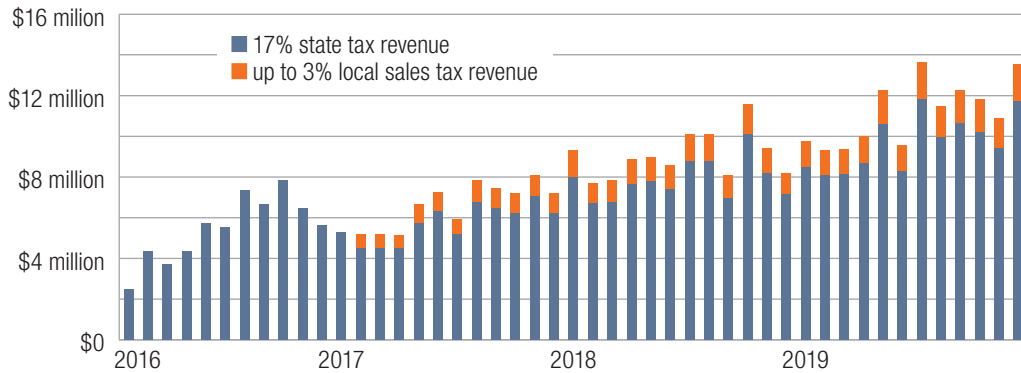


Figure 9: Nevada marijuana retail tax revenue, July 2017–December 2019

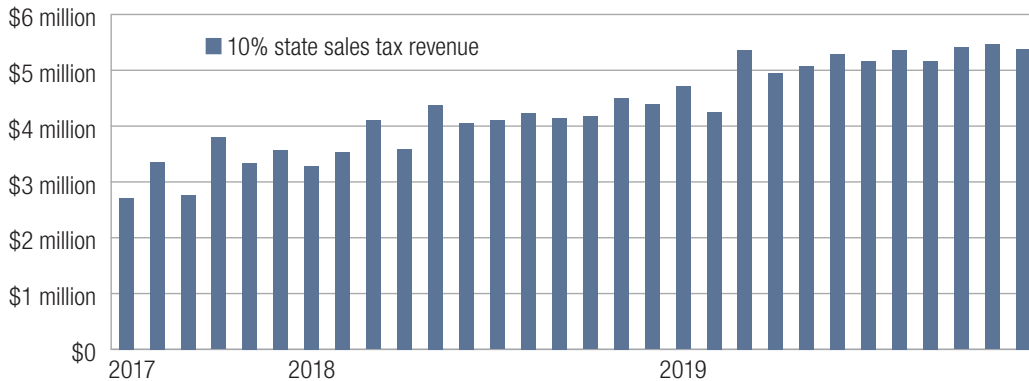
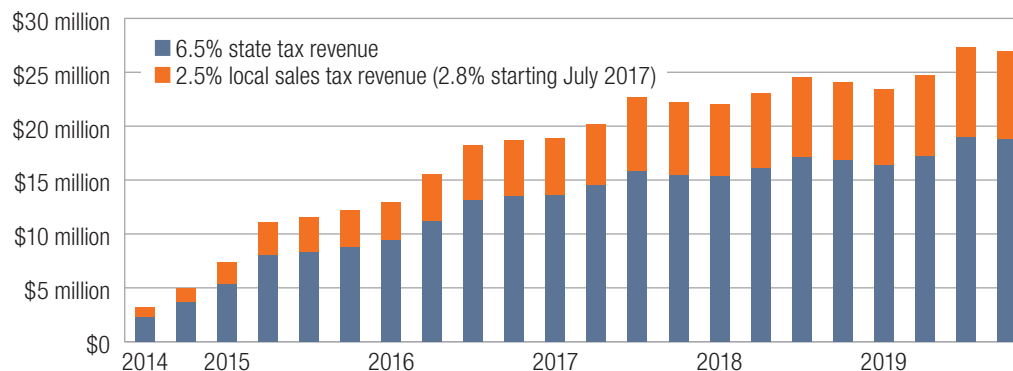


Figure 10: Washington marijuana retail tax revenue, third quarter 2014–fourth quarter 2019



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► Appendix

Appendix: Illustrative regression results — collision frequency									
Parameter		Degrees of freedom	Estimate	Effect	Standard error	Wald 95% confidence limits		Chi-square	P value
Intercept		1	-8.5691		0.0135	-8.5956	-8.5426	401218.00	<0.0001
Vehicle age	-1	1	-0.1489	-13.8%	0.0135	-0.1754	-0.1224	121.34	<0.0001
	0	1	0.0044	0.4%	0.0041	-0.0037	0.0124	1.14	0.2848
	2	1	-0.0311	-3.1%	0.0035	-0.0379	-0.0242	79.45	<0.0001
	3	1	-0.0674	-6.5%	0.0035	-0.0743	-0.0605	362.63	<0.0001
	4	1	-0.1012	-9.6%	0.0036	-0.1082	-0.0942	806.75	<0.0001
	5	1	-0.1332	-12.5%	0.0036	-0.1403	-0.1261	1358.73	<0.0001
	6	1	-0.1575	-14.6%	0.0036	-0.1647	-0.1504	1862.57	<0.0001
	7	1	-0.1889	-17.2%	0.0037	-0.1961	-0.1816	2606.90	<0.0001
	8	1	-0.2182	-19.6%	0.0037	-0.2256	-0.2109	3389.59	<0.0001
	9	1	-0.2644	-23.2%	0.0038	-0.2719	-0.2569	4745.99	<0.0001
	10	1	-0.3071	-26.4%	0.0039	-0.3148	-0.2994	6098.65	<0.0001
	11	1	-0.3525	-29.7%	0.0041	-0.3604	-0.3445	7550.45	<0.0001
	12	1	-0.3981	-32.8%	0.0043	-0.4065	-0.3897	8598.39	<0.0001
	13	1	-0.4517	-36.3%	0.0046	-0.4608	-0.4426	9475.90	<0.0001
	14	1	-0.5088	-39.9%	0.0051	-0.5188	-0.4988	9902.88	<0.0001
	15	1	-0.5586	-42.8%	0.0057	-0.5698	-0.5474	9567.09	<0.0001
	16	1	-0.6365	-47.1%	0.0066	-0.6494	-0.6236	9298.66	<0.0001
	17	1	-0.6946	-50.1%	0.0076	-0.7096	-0.6797	8296.75	<0.0001
	18	1	-0.7318	-51.9%	0.0089	-0.7492	-0.7143	6785.83	<0.0001
	19	1	-0.8074	-55.4%	0.0107	-0.8283	-0.7865	5742.86	<0.0001
	20	1	-0.8704	-58.1%	0.0128	-0.8955	-0.8452	4595.19	<0.0001
	21	1	-0.9346	-60.7%	0.0155	-0.965	-0.9042	3628.88	<0.0001
	22	1	-0.9607	-61.7%	0.0181	-0.9962	-0.9252	2813.25	<0.0001
	23	1	-1.0668	-65.6%	0.0222	-1.1104	-1.0233	2302.17	<0.0001
	24	1	-1.1189	-67.3%	0.0261	-1.1700	-1.0678	1840.99	<0.0001
	25	1	-1.2221	-70.5%	0.0315	-1.2839	-1.1604	1504.48	<0.0001
	26	1	-1.2792	-72.2%	0.0366	-1.3509	-1.2074	1219.52	<0.0001
	27	1	-1.3833	-74.9%	0.0428	-1.4672	-1.2993	1042.93	<0.0001
	28	1	-1.4402	-76.3%	0.0483	-1.5349	-1.3454	887.29	<0.0001
	29	1	-1.5040	-77.8%	0.0556	-1.6130	-1.3950	731.36	<0.0001
	30	1	-1.5598	-79.0%	0.0632	-1.6836	-1.4360	609.73	<0.0001
31	1	-1.6955	-81.6%	0.0746	-1.8417	-1.5493	516.99	<0.0001	
	1	0	0	0	0	0	0		
Rated driver age group	<25	1	0.2914	33.8%	0.0025	0.2864	0.2963	13418.70	<0.0001
	66+	1	-0.0053	-0.5%	0.0020	-0.0093	-0.0013	6.84	0.0089
	25–65	0	0	0	0	0	0		
Rated driver gender	Male	1	-0.0310	-3.1%	0.0016	-0.0340	-0.0279	398.72	<0.0001
	Unknown	1	-0.1727	-15.9%	0.0056	-0.1837	-0.1616	943.79	<0.0001
	Female	0	0	0	0	0	0		
Rated driver marital status	Single	1	0.2349	26.5%	0.0017	0.2316	0.2381	19780.60	<0.0001
	Unknown	1	0.1280	13.7%	0.0053	0.1177	0.1383	594.24	<0.0001
	Married	0	0	0	0	0	0		

Appendix: Illustrative regression results — collision frequency

Parameter		Degrees of freedom	Estimate	Effect	Standard error	Wald 95% confidence limits		Chi-square	P value
Registered vehicle density	<50	1	-0.3299	-28.1%	0.0026	-0.3349	-0.3248	16628.70	<0.0001
	50–99	1	-0.2547	-22.5%	0.0027	-0.2601	-0.2494	8698.93	<0.0001
	100–249	1	-0.0531	-5.2%	0.0026	-0.0582	-0.0480	423.35	<0.0001
	250–499	1	-0.1709	-15.7%	0.0024	-0.1756	-0.1661	5008.77	<0.0001
	500–999	1	-0.1072	-10.2%	0.0023	-0.1117	-0.1027	2175.00	<0.0001
	1,000+	0	0	0	0	0	0		
Vehicle type	luxury cars	1	0.4238	52.8%	0.0035	0.4169	0.4307	14398.10	<0.0001
	luxury SUVs	1	0.2407	27.2%	0.0038	0.2333	0.2482	4038.45	<0.0001
	nonluxury cars	1	0.3101	36.4%	0.0023	0.3057	0.3146	18575.30	<0.0001
	nonluxury SUVs	1	0.0907	9.5%	0.0024	0.0860	0.0955	1406.01	<0.0001
	pickups	0	0	0	0	0	0		
Unemployment		1	-0.0164	-1.6%	0.0019	-0.0202	-0.0126	72.21	<0.0001
Temperature range	00–31	1	0.0225	2.3%	0.0057	0.0112	0.0338	15.33	<0.0001
	32+	0	0	0	0	0	0		
Precipitation		1	0.0592	6.1%	0.0030	0.0533	0.0650	393.69	<0.0001
Month index		1	-0.0018	-0.2%	0.0001	-0.0020	-0.0017	470.25	<0.0001
State	Nebraska	1	-0.1429	-13.3%	0.0072	-0.1570	-0.1288	393.77	<0.0001
	Utah	1	-0.1402	-13.1%	0.0056	-0.1512	-0.1292	627.65	<0.0001
	Wyoming	1	0.0514	5.3%	0.0067	0.0382	0.0646	58.62	<0.0001
	Colorado	0	0	0	0	0	0		
Legislation status		1	0.0041	0.4%	0.0041	-0.0039	0.0121	1.03	0.3104
Month index x state	Nebraska	1	0.0018	0.2%	0.0001	0.0015	0.0020	245.70	<0.0001
	Utah	1	0.0019	0.2%	0.0001	0.0017	0.0021	440.32	<0.0001
	Wyoming	1	0.0007	0.1%	0.0001	0.0004	0.0009	19.44	<0.0001
	Colorado	0	0	0	0	0	0		
Month	January	1	-0.0103	-1.0%	0.0037	-0.0175	-0.0031	7.86	0.0051
	February	1	0.0261	2.6%	0.0042	0.0179	0.0343	38.58	<0.0001
	March	1	-0.0743	-7.2%	0.0058	-0.0858	-0.0629	161.66	<0.0001
	April	1	-0.1366	-12.8%	0.0057	-0.1479	-0.1254	566.42	<0.0001
	May	1	-0.1192	-11.2%	0.0057	-0.1303	-0.1081	442.46	<0.0001
	June	1	-0.0884	-8.5%	0.0059	-0.0999	-0.0769	227.53	<0.0001
	July	1	-0.1213	-11.4%	0.0057	-0.1325	-0.1100	446.44	<0.0001
	August	1	-0.1035	-9.8%	0.0057	-0.1146	-0.0925	334.88	<0.0001
	September	1	-0.1135	-10.7%	0.0056	-0.1244	-0.1025	411.21	<0.0001
	October	1	-0.0963	-9.2%	0.0056	-0.1072	-0.0854	299.05	<0.0001
	November	1	-0.0347	-3.4%	0.0054	-0.0454	-0.0241	40.89	<0.0001
	December	0	0	0	0	0	0		
State type x legislation status		1	0.0691	7.2%	0.0060	0.0573	0.0809	131.37	<0.0001



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