



# Effect of repeal of the national maximum speed limit law on occurrence of crashes, injury crashes, and fatal crashes on Utah highways<sup>☆</sup>

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## Abstract

Speed limits were increased in Utah and other States after repeal of the national maximum speed limit law (NMSL) in 1995. This study analyzed effects of the increased speed limit on Utah highways on crash rates, fatality crash rates, and injury crash rates. Annual (1992–1999) rates of crashes, fatality crashes, and injury crashes for the following highway categories were calculated: urban Interstate segments (current speed limit 60–65 miles per hour (mph)); rural Interstate segments (current speed limit 70–75 mph); 55 mph rural non-Interstate highway segments; and high-speed non-Interstate highways (current speed limit 60–65 mph). Data were analyzed using autoregressive integrative moving average intervention time series analysis techniques. There were significant increases in total crash rates on urban (60–65 mph) Interstate segments (confounded by extensive ongoing highway construction on these highways), and in fatal crash rates on high-speed (60–65 mph) rural non-Interstate segments. The following variables were unaffected: total, fatality, and injury crash rates on rural Interstate segments; fatality and injury crash rates on urban Interstate segments; total and injury crash rates on high-speed non-Interstate segments. These results show an adverse effect on crash occurrence for subsets of crash types and highways, but do not show a major overall effect of NMSL repeal and increased speed limit on crash occurrence on Utah highways.

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## 1. Introduction

The national maximum speed limit (NMSL) of 55 miles per hour (mph) (89 kilometers per hour (kph)) was initially enacted as a energy conservation measure in response to fuel shortages caused by the 1973 Middle East oil embargo. In the year following its enactment, the number of traffic fatalities decreased nationwide, from 54,000 in 1973 to 45,000 in 1974 (NHTSA-FHWA, 1998). This was attributed to the decrease in speed limits, and in response, Congress passed Public Law 93–643, making the change in national speed limits permanent and changing the purpose of the measure from energy conservation to highway safety. Over time, however, political support for the NMSL softened. Consequently, it was altered in 1987 when states were allowed to raise the

speed limit to as high as 65 mph (105 kph) on certain rural Interstates, and then eliminated completely in 1995, so that states were again allowed to control speed limits within their borders.

Whereas the change to 65 mph in 1987 affected only certain stretches of rural Interstates, NMSL repeal allowed for speed limit increase not only on rural Interstates but also on urban Interstates and many stretches of uncontrolled-access non-Interstate highways as well. States were not uniform in their responses, variably raising speed limits immediately after NMSL repeal, after some delay, or not at all. In Utah, speed limits were increased on nearly all Interstate mileage, both urban (mostly to 65 mph, with a small proportion to 60 mph or 96 kph) and rural (mostly to 75 mph or 121 kph, with a small proportion to 70 mph or 112 kph). Speed limits were also increased on substantial mileage of non-Interstate, uncontrolled-access rural highways, mostly to 65 mph with a small proportion to 60 mph. Dates of changes in speed limit in Utah varied according to the type of highway. Interstate highways underwent speed limit change at fairly discrete points in time, posted in December 1995 for urban Interstate segments and May 1996 for rural segments.

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For non-Interstate highways, the change in speed limit was posted at various dates mostly spread throughout 1997; the majority of posted changes were accomplished by the middle of that year.

Available studies of the effect of increased speed limits following NMSL repeal on crash occurrence and severity are limited in scope and do not permit any firm conclusions. A NHTSA-sponsored study of Interstate crash occurrence in calendar year 1996 (the first year of NMSL repeal) estimated that increased speed limits resulted in 9% (about 350) more fatalities, and 4% more injuries, than predicted in states that increased speed limits, while rates did not differ from predicted in states where speed limits were unchanged (NHTSA-FHWA, 1998). The study contained several acknowledged weaknesses, in particular lacking exposure (traffic volume) data. In an analysis of data from the Fatality Analysis Reporting System,<sup>1</sup> it was estimated that after NMSL repeal and increase in speed limit, 10 of 36 states experienced an increase in rural Interstate fatalities, and 6 of 31 experienced an increase in urban Interstate fatalities; this implies that in the majority of states fatality rates were either unchanged or decreased, although the actual effect in these other states was not described (Balkin and Ord, 2000). Single-state studies are small in number but have not demonstrated an increase in crash rate or severity following speed limit increase on Interstate highways (Renski et al., 1999; Najjar et al., 2000). Additionally, the repeal of the NMSL, and the subsequent increase in speed limits in many states, does not appear to have significantly interrupted the steady downward trend in motor vehicle crash, injury crash, and fatal crash rates that have been ongoing in the United States for several decades (NHTSA, 2001).

## 2. Methods

This study was approved by the University of Utah Institutional Review Board.

### 2.1. Data sources

The research was conducted by analysis of the following existing datasets, containing statewide data for Utah.

#### 2.1.1. Crash file

The crash file is a compilation of police crash reports, containing data describing each crash including location,

data and time, road speed limit, directional nature of the crash, injury severity, alcohol involvement, etc. Reporting is required for crashes resulting in fatality or injury, or property damage of more than US\$ 750. There are roughly 50–60,000 reported crashes per year in Utah. The crash file is complete for years 1992–1999.

#### 2.1.2. Utah department of transportation (UDOT) traffic statistics

Data describing traffic volume are acquired at traffic recording stations, both permanent and temporary, throughout Utah. For the purposes of measuring and reporting traffic volume, each highway in the state is divided into a number of segments of varying length, typically of a few miles in length but ranging from less than 0.1 mile to as much as 80 miles. The number of segments for each highway obviously varies with length and type of roadway, ranging from one segment to as many as 200. Data are reported as average annual daily traffic (AADT) (average number of vehicles per day) for road segments. Data are available for 1991–1999.

#### 2.1.3. UDOT road file

This data set is a description of all current speed limits on roads maintained by UDOT, and specifies the speed limit and effective date for every location on Utah highways. For purposes of describing the speed limit, each highway is divided into segments of varying length. Segments vary in length from less than 0.1 mile to more than 60 miles, and the number of segments per highway varies from one to more than 150. Highway segments used for speed limit definitions are defined differently from those used for reporting traffic volume; starting and ending points, segment lengths, and number of segments per highway are different in the two files.

## 2.2. Creation of dataset for analysis

### 2.2.1. Selection of highways for analysis

Highways were selected for analysis of crash rates if they were affected by speed limit changes occurring after NMSL repeal. All Interstate highways were selected. Non-Interstate roads were selected if they included segments of road that were affected by the speed limit changes, that is, if they currently have segments with speed limits of 60 or 65 mph. Separate datasets were created for non-Interstate roads and Interstate highways, and the two were analyzed separately.

### 2.2.2. Creation of vehicle mile traveled (VMT) file

Separate files were created for Interstate and non-Interstate highways. Traffic statistics from years 1991–1999 were combined into a dataset that contained AADT for each road segment for all years. AADT was converted to traffic volume, expressed as 100 million vehicle miles traveled annually (100 MVMT) for each segment. Then, the posted speed limit for each road segment was added to this file. The result of this process was a dataset that specified both

<sup>1</sup> The Fatality Analysis Reporting System (FARS) contains data on all fatal traffic crashes within the 50 states, the District of Columbia, and Puerto Rico. The data system was conceived, designed, and developed by the National Center for Statistics and Analysis (NCSA) to assist the traffic safety community in identifying traffic safety problems, developing and implementing vehicle and driver countermeasures, and evaluating motor vehicle safety standards and highway safety initiatives. Data on non-fatal crashes is not included. FARS data can be seen and queried on websites maintained by NCSA.

speed limit and annual traffic volume by year for every segment of highway.

### 2.2.3. Creation of final dataset for analysis

The two datasets created as described above were then combined in a join operation. The result of this operation was a dataset containing one record for every crash, specifying the highway, crash date, location, speed limit, severity of injuries received, and directional characteristics of the crash. Separate datasets were created for Interstate and non-Interstate highways.

### 2.2.4. Measurement of traffic speed

Limited data were available from UDOT on actual traffic speed relative to posted speed limits, expressed as the 85th percentile speed of free-flowing traffic, measured at a small number of reference points on various highways.

Crashes were categorized according to police assignment of accident severity as noted on the crash file (Table 1). Fatal crashes were identified as severity level 5, where at least one of the occupants of any vehicle was killed. Injury crashes were identified by the most severely injured person involved, and included severity level 3 (bruises and abrasions) or 4 (broken bones or bleeding wounds). A crash was not categorized as an injury crash for severity level 2 (possible injury).

Analysis of crashes on Interstate highways was done by aggregating roadway segments into rural and urban types. Urban segments were identified by current speed limits of 60 or 65 mph, and rural segments by current speed limits of 70 or 75 mph. This designation is reasonable for Interstate highways, since speed limits are assigned largely according to population density and traffic pattern. The Utah Interstate system is largely rural in nature. Urban segments lie in the state's population concentration, a north–south corridor roughly 80 miles in length, extending from Provo in the south to Ogden in the north, and centered around Salt Lake City, the state's largest city. Although it would be interesting to have detailed data by specific Interstate or even segment of Interstate, the numbers of crashes (and particularly, fatal crashes) were small for any such division of roadway, making meaningful analysis difficult.

Analysis of crashes on non-Interstate highways was done by aggregating segments into two types according to posted speed limit at the end of the study period: “55 mph”, and “high-speed”. (Rural/urban designation was not logical for non-Interstate highways, since speed limits are determined

based on a variety of factors in addition to population density, such as road width and condition, curves, grade, line of sight, etc.) Rural highways with posted speed limits of 55 mph both before and after NMSL repeal (i.e. where speed limits were unchanged after NMSL repeal) were designated as 55 mph. High-speed designation was given segments with a current speed limit of 60 or 65 mph; these segments had speed limits of 55 mph before NMSL repeal. Segments with speed limits of 50 mph or less were not analyzed.

### 2.3. Statistical analysis

Data were analyzed for the effect of speed limit increase using autoregressive integrative moving average (ARIMA) intervention time series analysis. A *P*-value of 0.05 was considered significant. Intervention time series analysis is a modification of the Box–Jenkins (ARIMA) procedure (Box et al., 1994) and is designed to test for the effect of an outside intervention at a single time point (in this case, an increase in posted speed limit) on a series of data across time (in this case, periodic measurements of crash rates). It takes into consideration trends across time (such as the ongoing decrease in crash rates in the US), using data from before an intervention point to predict data after the intervention, and then testing for whether the intervention has caused a difference from predicted values. In this analysis technique, the statistical model is not arbitrarily imposed on the data but is built empirically for each data series analyzed. The first step in an intervention time series analysis is to identify a model that fits the portion of the data from before the intervention. Model identification follows a three stage iterative procedure: identification, estimation, and diagnosis. To achieve a stationary time series it was sometimes necessary to use differencing and square root transformations. Once a model is identified, an intervention function is determined and the model is applied to the entire time series, before and after the intervention. In all models it was assumed that any effect of the change in speed limit was immediate and constant during the study period. This statistical method is regarded as appropriate for the analysis of the effect of speed limit changes on crash occurrence and has been extensively used for this purpose (Chang et al., 1991, 1993; Rock, 1995; Pfefer et al., 1991).

## 3. Results

### 3.1. Interstate highways

Table 2 shows mileage affected by speed limit change on Utah Interstates. The majority of all Interstate mileage underwent speed limit increase after NMSL repeal; a small amount of mileage that was at 65 mph before NMSL repeal remained at 65 mph. Traffic volume for calendar years on rural segments showed a steady and nearly linear increase

Table 1  
Accident severity

1	No injury
2	Possible injury
3	Bruises and abrasions
4	Broken bones or bleeding wounds
5	Fatal

Table 2  
Speed limits on Utah Interstate highways, mileage and date speed limit posted

Speed limit post-NMSL repeal (mph)	Speed limit pre-NMSL repeal (mph)	Mileage	Percentage
60	55	9	1
65	65	58	5
65	55	153	14
70	65	49	4
75	65	835	76
60 + 65 (urban)		219	20
70 + 75 (rural)		884	80

Current and pre-repeal of the national maximum speed limit law (NMSL).

of roughly 5% per year from 1991 to 1995, while urban segments showed a similar increase for 1991–1995, but an interruption in this pattern beginning in 1996. This is likely related to the major Interstate highway reconstruction project required prior to the 2002 Winter Olympic Games, ongoing in Salt Lake County beginning in April 1996 and extending through the rest of the study period. This project affected essentially all Interstate mileage in the county, with multiple diversions and closures of parts of the systems for periods measured in years. Salt Lake County includes Salt Lake City and is the largest metropolitan area in the state, and contains nearly half (about 46%) of all urban Interstate mileage in Utah.

Limited data were available describing actual vehicle speeds before and after the increase in posted speed limits. On rural Interstate segments, 85th percentile speed in early 1996 (posted at 65 mph) ranged roughly from

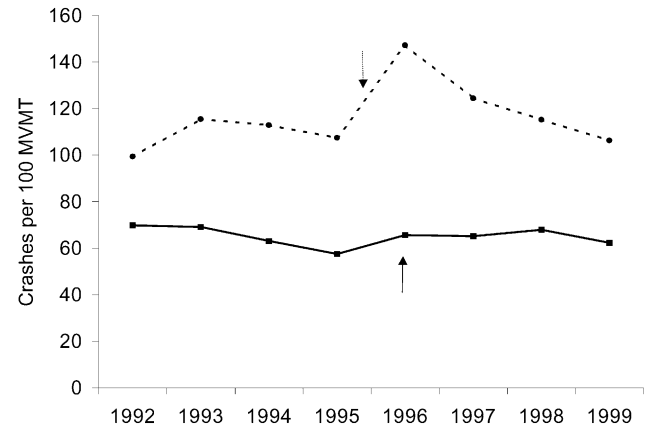


Fig. 1. Crash rate per 100 million vehicle miles traveled (MVMT) on Utah Interstate highways, 1992–1999. Broken line: urban Interstate segments (60–65 mph speed limit); solid line: rural Interstate segments (70–75 mph speed limit); arrows: timing of speed limit increases. Crash rate on urban segments significantly greater than predicted following speed limit increase ( $P = 0.039$ ); no significant effect on rural segments ( $P = 0.314$ ).

67 to 73 mph depending on location. In 1997 (posted at 75 mph), the range for 85th percentile speed for the same locations was roughly 70–77 mph. For any given location, the 85th percentile speed appeared to have increased by about 5 mph after the 10 mph increase in posted speed limit.

As noted previously, speed limits were increased on urban Interstates in December 1995, and on rural Interstates in May 1996. Crash rates on urban segments were significantly higher than predicted after the speed limit change ( $P = 0.039$ ), while crash rates on rural seg-

Table 3  
Annual total, fatal and injury crashes on Utah Interstates by segment type, total number, rate per 100 MVMT, and percent of all crashes

	1992	1993	1994	1995	1996	1997	1998	1999
<b>Urban</b>								
Total crash rates per 100 MVMT <sup>a</sup>	99.4	115.5	112.9	107.4	147.2	124.4	115.2	106.3
Total crashes	3535	4322	4539	4573	6454	5424	4932	4670
Fatal crash rates per 100 MVMT	0.53	0.69	0.72	0.82	0.62	0.78	0.65	0.77
Fatal crashes	19	26	29	35	27	34	28	34
Percentage of all urban crashes with fatalities	0.5	0.6	0.6	0.8	0.4	0.6	0.6	0.7
Injury crash rates per 100 MVMT	16.33	15.98	15.67	13.86	19.16	17.85	13.92	13.31
Injury crashes	581	598	630	590	840	778	596	585
Percentage of all urban crashes with injuries	16.4	13.8	13.9	12.9	13.0	14.3	12.1	12.5
<b>Rural</b>								
Total crash rates per 100 MVMT	69.9	69.2	63.2	57.6	65.7	65.2	68.0	62.3
Total crashes	1749	1833	1778	1708	2013	2126	2343	2260
Fatal crash rates per 100 MVMT	2.40	1.85	1.46	1.52	1.99	2.21	1.57	1.93
Fatal crashes	60	49	41	45	61	72	54	70
Percentage of all rural crashes with fatalities	3.4	2.7	2.3	2.6	3.0	3.4	2.3	3.1
Injury crash rates per 100 MVMT	17.46	18.91	16.20	15.87	18.92	18.38	18.16	16.81
Injury crashes	437	501	456	471	580	599	626	610
Percentage of all rural crashes with injuries	25.0	27.3	25.6	27.6	28.8	28.2	26.7	27.0

After the increase in speed limit, there was a significant increase in total crash rate on urban Interstates; there was no significant change for any other variable. Percentage of all crashes is equal to the percent of all crashes on that segment type associated with fatality or injury. Speed limit increases posted 12/95 (urban segments) and 5/96 (rural segments).

<sup>a</sup> Crash rate greater than predicted after speed limit increase ( $P = 0.039$ ).

Table 4  
Mileage by speed limit on non-Interstate highways analyzed

Speed limit (mph)	Mileage	Percentage
25	0.4	0.0
30	32.1	1.3
35	52.7	2.1
40	111.6	4.5
45	73.4	3.0
50	79.6	3.2
55	403.3	16.3
60	145.7	5.9
65	1571.8	63.6
Total	2470.6	100

Highways selected for analysis if they contained segments with speed limit 60 or 65 mph.

ments showed no significant change (Fig. 1). The aforementioned Interstate reconstruction project in Salt Lake County may have confounded results for urban Interstates.

Fatal crash rates showed some year-to-year variation but no significant change from predicted after the increase in posted speed limits on either urban or rural segments (Table 3). The proportion of crashes that resulted in fatality showed no change over time for either urban or rural segments (Table 3).

Injury crash rates showed no significant change from predicted after the increase in posted speed limits on either urban or rural segments (Table 3). The proportion of crashes that resulted in fatality showed no change over time for either urban or rural segments (Table 3).

### 3.2. Non-Interstate highways

Table 4 shows mileage affected by speed limit change on the selected Utah non-Interstate highways. Speed limit increase for most of the affected mileage was from 55 to 65 mph; for a small proportion of affected roadway, the increase was from 55 to 60 mph. Traffic volume increased in a linear fashion by roughly 7% yearly for both high-speed and 55 mph segments over the 9-year period 1991–99.

Limited data were available describing actual vehicle speeds before and after the increase in posted speed limits. For high-speed non-Interstate segments, 85th percentile speed was roughly in the range 66–71 mph when the posted speed limit was 55 mph, with no discernible change after the posted speed limit was increased to 65 mph.

Crash rate on high-speed segments was not significantly different than predicted after the increase in posted speed limit during 1997 (Table 5). There was a progressive decline in the crash rate for both 55 mph and high-speed, and crash rates in the final year of the study, 1999, were the lowest encountered during the study period for all three types of road segments.

Fatal crash rates showed variation from year-to-year, and fatal crash rate on high-speed segments was significantly higher than predicted after the increase in speed limits ( $P = 0.039$ ; Fig. 2, Table 5). There was no significant change from predicted for 55 mph segments. The proportion of all crashes that were associated with a fatality did not change over time for either segment type (Table 5).

Injury crash rate on high-speed segments was not significantly different than predicted after the increase in posted

Table 5  
Annual fatal and injury crashes and crash rates on selected Utah non-Interstate highways by segment type, total number and percent of all crashes

	1992	1993	1994	1995	1996	1997	1998	1999
Speed at 55 mph								
Total crash rates per 100 MVMT <sup>a</sup>	249.0	248.4	236.2	187.1	191.4	179.8	158.8	157.5
Total crashes	1232	1371	1348	1132	1183	1159	1078	1106
Fatal crash rates per 100 MVMT	1.21	2.54	2.63	1.65	1.62	2.95	3.39	1.71
Fatal crashes	6	14	15	10	10	19	23	12
Percentage of all urban crashes with fatalities	0.49	1.02	1.11	0.88	0.85	1.64	2.13	1.08
Injury crash rates per 100 MVMT	44.7	43.5	39.7	35.9	38.8	34.9	29.9	30.1
Injury crashes	247	248	240	222	250	237	210	225
Percentage of all urban crashes with injuries	20	18	18	20	21	20	19	20
High-speed								
Total crash rates per 100 MVMT	173.7	144.2	150.3	136.4	138.8	139.4	139.0	126.7
Total crashes	1952	1981	2160	2081	2207	2286	2387	2246
Fatal crash rate per 100 MVMT <sup>a</sup>	3.65	4.15	4.59	3.54	3.15	5.24	4.89	3.72
Fatal crashes	41	57	66	54	50	86	84	66
Percentage of all rural crashes with fatalities	2.10	2.88	3.06	2.59	2.27	3.76	3.52	2.94
Injury crash rates per 100 MVMT	25.3	26.1	27.9	24.3	26.0	27.7	25.8	23.4
Injury crashes	348	375	425	386	427	475	457	437
Percentage of all rural crashes with injuries	18	19	20	19	19	21	19	19

Highways selected if they included segments of 60 or 65 mph speed limit. Increased speed limit posted throughout 1997 (high-speed segments only). After the increase in speed limit, there was a significant increase in fatal crash rate on high-speed segments; there was no significant change for any other variable.

<sup>a</sup> Fatal crash rate greater than predicted after speed limit increase ( $P = 0.039$ ).

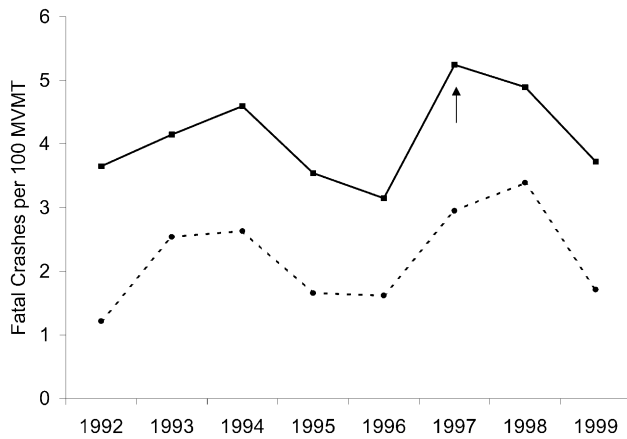


Fig. 2. Fatal crash rate per 100 million vehicle miles traveled (MVMT) on Utah non-Interstate highways, 1992–1999. Broken line: 55 mph segments; solid line: high-speed segments (60–65 mph speed limit); arrow: timing of speed limit increases. Fatal crash rate on high-speed segments was significantly greater than predicted after speed limit increase ( $P = 0.039$ ).

speed limit during 1997 (Table 5). There was a progressive decline in the injury crash rate for both 55 mph and high-speed segments. The proportion of all crashes that were associated with an injury did not change over time for either segment type (Table 5).

#### 4. Discussion

In this study of the effect of increased speed limit on crash occurrence on Utah highways, we found: (a) on urban Interstate segments (current speed limit 60–65 mph), there was a significant increase in total crash rate after speed limit increase, but no significant change in fatality or injury crash rates; (b) on rural Interstate segments (current speed limit 70–75 mph), there was no significant change in rate for any category of crash; (c) on high speed non-Interstate highways (current speed limit 60–65 mph), there was a significant increase in fatality crash rate, but no change in total or injury crash rates; (d) on both Interstate and non-Interstate highways, there was no change in the likelihood of a crash being associated with injury or fatality.

Our study was observational in nature, analyzing changes in crash number, rate, and severity over a time period that included dates of speed limit change. It does not prove causation, however. Any changes or trends observed in crash rate, occurrence or characteristics were temporal associations, not necessarily direct results of speed limit increase.

##### 4.1. Interstate highways

The finding that total crash rates on urban Interstates were significantly greater than predicted after increased speed limits in 1996 is confounded by the major Interstate reconstruction project in urban Salt Lake County, which commenced in April 1996, and affected essentially all Interstate mileage

in this county during 1996–1999, with many lane closures. Clearly, road design and traffic flow may be markedly compromised during a major reconstruction project, conceivably causing an increase in crash frequency. It therefore cannot be concluded that the speed limit change was causative of the observed increase in total crash rate.

Rural Interstates have often been the focus of attention nationally as the effect of increased speed limits are considered, presumably because the highest posted speed limits are on these segments. However, in this analysis, the increase in speed limit from 65 to 70–75 mph on rural Interstates did not appear to have had an adverse affect on either the occurrence or severity of crashes. In comparing urban and rural Interstates, it is of interest that the fatality crash rate is much higher on rural than on urban Interstate segments. The contribution of higher speed limits to this difference is debatable, however, since the same pattern existed prior to speed limit change. Indeed, the fatality crash rate on rural segments when speed limits were 65 mph (before the speed limit change) is much higher than the rate on urban segments with current speed limits of 65 mph (after speed limit change). Fatal crash rate on rural Interstates must be influenced by factors other than, or at least in addition to, speed limit.

##### 4.2. Non-Interstate highways

Although high-speed roadways and Interstate highways are often considered to be more or less synonymous, the mileage of non-Interstate highways in Utah that underwent speed limit increase after NMSL repeal was roughly twice that of Interstates affected. Moreover, the total number of crashes, injury crashes, and fatal crashes on Interstates and rural non-Interstate highways were of the same order of magnitude. There was a significant increase in the rate of fatality crashes (total crashes and injury crashes did not change) on high-speed non-Interstate highways associated with the increase in speed limits, while, for purposes of comparison, 55 mph non-Interstate highways showed no change in fatality crash rate. It may be noteworthy, however, that the fatality crash rate on high-speed segments was higher than that on 55 mph segments even before the increase in speed limit, that is, when both types of segments had the same 55 mph speed limit; speed limits are obviously not the only factor influencing fatality crash rates on these rural non-Interstate highways.

##### 4.3. Potential weaknesses

This project is subject to several potential limitations. The period of observation after the speed limit change was fairly short, 3.5 years in the case of Interstate highways and only 2.5 years in the case of non-Interstate highways, possibly obscuring an effect on crash occurrence and rate. Also, numbers of crashes and particularly fatal crashes for subsets of highways were fairly small, and thus subject to random

variation that might have limited statistical power. Further, there is only incomplete data on actual vehicle travel speeds related to increase in posted speed limit. Finally, non-random forces were at work during the study period, notably the Interstate reconstruction project in the urban Salt Lake County, with obvious potential effects on crash occurrence.

We conclude that blanket alteration in speed limits may not be a very powerful way to influence rates of crashes and related injuries and fatalities. Admittedly, the causation of motor vehicle crashes and resultant injuries and fatalities is complex, and includes myriad factors such as alcohol, traffic density, road and weather conditions, driver experience and willingness to take risks, time of day, among many others. Control of factors other than speed limits (related to the vehicle, driver, or roadway itself) may be more profitable ways to improve safety on the public highways. Possibly more definitive conclusions about the effects of speed limits could be made by using larger datasets, either by studying data from additional years as they become available, or by aggregating data from several states that are similar with respect to geography, climate, and demographics.

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