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Evaluation of Utah's .05 BAC Per Se Law

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16. Abstract
In 2017, the Governor of Utah signed into law House Bill 155, modifying Utah Code §41-6a-502 to prohibit people 21 and over from operating noncommercial vehicles with blood alcohol concentrations (BAC) of .05 g/dL or greater, rather than the previous limit of .08 g/dL. The law established this as a per se offense and carried an effective date of December 30, 2018. With this legislation, Utah became the first State to adopt an impaired driving per se BAC limit lower than .08. This study examined the impacts of lowering Utah's BAC limit. A review of the legislative process indicated the motivation for the Utah .05 law was the belief that traffic safety would be improved in the State by the reduction in the BAC per se limit. The results of the State crash data analyses showed reductions (i.e., fewer crashes and lower alcohol involvement) for almost all of the crash and driver alcohol involvement measures for the 21 months after the law was passed, and for the 12 months after it went into effect. Many of these crash measures showed estimated reductions in the 10% to 25% range with some even higher. An examination of FARS revealed reductions in fatal crashes and overall numbers of people killed compared to 2016. In 2019, despite increased vehicle miles traveled (VMT), Utah recorded 225 fatal crashes and 248 fatalities, which were lower than the 259 fatal crashes and 281 fatalities for the year 2016. When VMT is considered, the fatal crash rate reduction from 2016 to 2019 in Utah was 19.8%, and the fatality rate reduction was 18.3%. In comparison, the rest of the United States showed a 5.6% crash rate reduction and 5.9% fatality rate reduction during the same time period. A survey conducted by the State found that in 2018, 26.6% of drinkers and 12.6% of the non-drinkers thought the limit was .05 even though the law had not yet taken effect. In 2019, 22.1% of drinkers indicated they had, in fact, changed their behaviors once the law went into effect. The most common behavior modification reported was making sure transportation was available when drinking away from home. The data reviewed for this study indicated none of the negative effects some projected were realized. In fact, alcohol sales and per capita consumption continued to increase, as did tourism and tax revenues. Likewise, DUI arrests for alcohol did not increase markedly after the law became effective.

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Executive Summary

Background and Objective

On March 23, 2017, Utah Governor Gary Herbert signed into law House Bill 155, modifying Utah Code §41-6a-502 to prohibit people age 21 and over from operating noncommercial vehicles with a blood alcohol concentrations (BACs) of .05 grams per deciliter (g/dL) or greater rather than the prior .08 g/dL law. The law established this as a per se offense and carried an effective date of December 30, 2018. With the passing of this legislation, Utah became the first State to adopt an impaired driving per se BAC limit lower than .08.

The goal of this project was to conduct a comprehensive evaluation of the impacts of the change in Utah's per se law from .08 to .05. The specific objectives were to

- Document the legislative process that resulted in the per se law change; and
- Examine whether any changes occurred within Utah after the law revision in terms of
    - Crashes and fatalities,
    - Impaired driving arrests,
    - Driver knowledge, perceptions, and attitudes toward drinking and driving,
    - State education or prevention strategies, or
    - Alcohol sales and other economic indicators.

Methods

Legislative Review. The study examined legislative testimony that included publicly available audio recordings and transcripts from these sources.

- 2017 General Session of the Utah House and Senate Committee Testimony and Debate regarding *House Bill 155 Driving Under the Influence and Public Safety Revisions*
- Utah House Law Enforcement and Criminal Justice Committee Hearing/Debate on February 10, 2017
- Utah Senate Transportation, Utilities, Energy and Technology Committee Hearing/Debate on March 1, 2017

Other information came from the National Transportation Safety Board's (2018) webinar, *From Safety Recommendation to Law - Lessons Learned from Utah's 0.05 BAC Legislative Journey*.

Crashes, Arrests, and Other Data. Complete State crash files (de-identified data only) for January 1, 2010, to December 31, 2019, were made available to this study for analysis. The National Highway Traffic Safety Administration's Fatality Analysis Reporting System (FARS) data, which include imputed alcohol data for drivers with missing BACs, were obtained for the same period. This allowed for an examination of how crash trends in the State were impacted for the 21 months after the law was passed (but not yet in effect), and the 12 months after the law went into effect. Given the extreme non-normalcy of 2020 because of the COVID-19 public health emergency, the study did not include 2020 crash data.

The Utah State Highway Safety Office (UHSO) provided the study with data on its grant-funded overtime enforcement efforts, paid media expenditures, and summary reports of surveys of driver knowledge and opinions commissioned before and after the law was passed. Publicly available data from the Utah Department of Alcoholic Beverage Control (DABC) were examined to see if alcohol sales were potentially impacted by the law. Similarly, publicly available data from the Utah Office of Tourism were examined to see if sales tax revenues from restaurant sales, rental cars, hotels, resorts, etc. were impacted by the law. Data on the number of air travelers to the State and visitors to national and State parks were also reviewed.

Results

Legislative Review. The legislative review indicated the motivation for lowering the BAC per se law from .08 to .05 was the desire to improve traffic safety. The majority of objections to the law were based on hypothesized negative effects on the economy, the belief that arrests for driving under the influence (DUI) would increase drastically for people who had "one or two drinks," and the assumption that no safety benefits would be realized.

Crashes. Time series analyses of the monthly State crash data showed reductions for almost all of the crash- and driver-level measures (i.e., there were fewer crashes and lower alcohol involvement) for the 21 months after the law passed, and the 12 months after it came into effect (Table ES-1) compared to what would be expected based on statistical projections from the baseline period. A negative value in the table represents a reduction in the average monthly crash rate or driver alcohol involvement measure for the period.

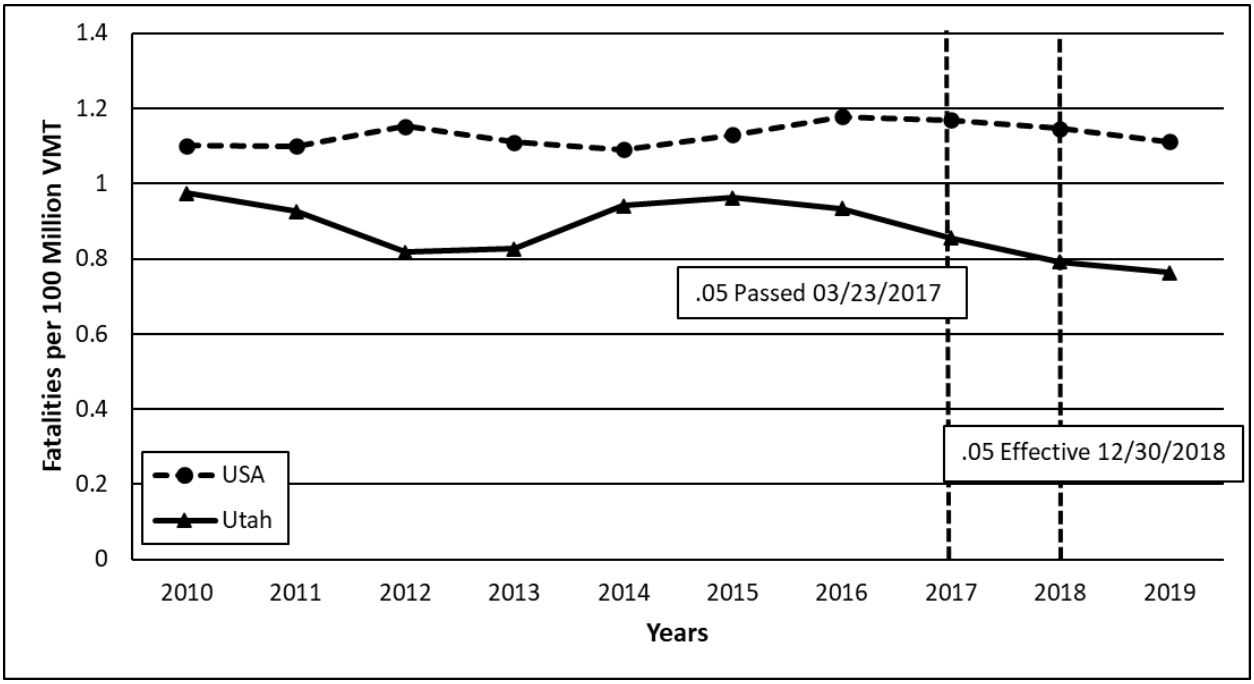
Table ES-1. Estimated Average Monthly Changes for Selected Crash and Driver Measures

Measure	After .05 Law Passage (21 months before effective) $\Delta_{\%}$	After .05 Law In Effect (12 months) $\Delta_{\%}$
Crashes		
Total per VMT†	-11.5*	-9.6*
Injury per VMT	-10.9*	-10.8*
Single Vehicle Nighttime per VMT	-12.3*	-7.8
Single Vehicle Nighttime Injury per VMT	-18.1*	-13.7*
Alcohol Positive per VMT	-5.8	-8.9*
BAC $\geq$ .05 per VMT	-24.0*	-14.7
BAC $\geq$ .08 per VMT	-23.3*	-13.7
BAC $\geq$ .15 per VMT	-23.9*	-9.1
Drivers		
% Suspected Alcohol	-3.7	-12.5*
% Alcohol Positive	-6.8	-14.6*
% BAC $\geq$ .05	-22.7*	-22.5*
% BAC $\geq$ .08	-19.5*	-22.9*
% BAC $\geq$ .15	-24.1*	-22.5*

$\Delta_{\%}$ = estimated percentage change. *$p < .05$, two-tailed ARIMA model. †VMT is per 100 million vehicle miles traveled.

An examination of FARS data for Utah revealed reductions in fatal crashes and overall numbers of people killed in 2019 (the first year the .05 law was in effect) compared to 2016 (the last full year before the law was passed). In 2019, despite increased vehicle miles traveled (VMT), Utah recorded 225 fatal crashes and 248 fatalities, which were lower than the 259 fatal crashes and 281 fatalities for 2016. When unadjusted VMT is considered (See Figure ES-1 for a plot of fatality rates for Utah versus the rest of the United States), the fatal crash rate reduction from 2016 to 2019 in Utah was 19.8%, and the fatality rate reduction was 18.3%. In comparison, the rest of the United States showed a 5.6% fatal crash rate reduction and 5.9% fatality rate reduction during the same time period. The other States in the region, Arizona, Colorado, and Nevada, that were examined did not show the same levels of improvement in fatal crash and fatality rates as Utah. The monthly fatal crash counts in Utah were too small to support time series analyses.

Figure ES-1. Fatalities per 100 Million VMT (FARS Data)



DUI Arrests. UHSO maintains detailed records by its fiscal year for both State and Federal expenditures related to overtime/grant-funded traffic safety enforcement efforts. The total amount of grant money spent in Utah on DUI enforcement increased in recent years, but UHSO indicated this increase in spending was not directly related to the passage of the .05 BAC law. The increased spending appears to have resulted in a corresponding increase in DUI enforcement shifts and total hours spent specifically on DUI-related activities. Subsequently, there was an increase in the annual number of grant-funded DUI arrests and arrests per shift. The rise, however, was due primarily to increases in DUI arrests for drugs other than alcohol. The number of drug and drug metabolite[1] arrests in 2018 and 2019 more than doubled compared to 2016. The annual number of grant-funded alcohol arrests did increase from 810 in 2016 to 1,126 in 2019, but the rate per shift dropped about 10.5% during that time period.

[1] Metabolites are a product of the human body breaking down the primary drug to excrete it from the body. Some metabolites remain active and can affect psychomotor skills. Other metabolites are inactive but are an indicator of recent drug consumption.

A more complete picture of DUI arrests is available from Utah's driver license records. The Utah Department of Public Safety (DPS) Driver License Division (DLD) maintains data on DUI arrests reported to it as part of the agency's driver license administration duties. Table ES-2 shows the annual numbers of DUI arrests by type as recorded in DLD's files. DUI arrests in Utah showed a sharp decline from 2009 to 2014 before leveling off. DUI arrests in 2019 (after the .05 per se law went into effect) were similar to the prior five years.

Table ES-2. DUI Arrest Types by Year

	Refused Alcohol Test N (%)	**Underage Drivers *Per Se* (.02+) N (%)**	***Per Se* .08/.05 N (%)**	**Drugs Only* N (%)**	**Drug Metabolite N (%)**
2009	1,758 (11.5)	864 (5.6)	12,493 (81.6)	N/A	175 (1.1)
2010	1,455 (9.8)	779 (5.2)	12,458 (83.8)	N/A	173 (1.2)
2011	1,300 (9.6)	676 (5.0)	11,362 (83.8)	N/A	198 (1.5)
2012	1,368 (11.0)	562 (4.5)	10,289 (82.5)	N/A	152 (1.2)
2013	1,298 (11.1)	509 (4.4)	9,415 (80.5)	54 (0.5)	186 (1.6)
2014	1,257 (11.8)	420 (4.0)	8,514 (80.1)	153 (1.4)	127 (1.2)
2015	1,258 (12.0)	382 (3.6)	8,479 (80.8)	120 (1.1)	217 (2.1)
2016	1,393 (12.7)	341 (3.1)	8,828 (80.3)	173 (1.6)	229 (2.1)
2017	1,398 (12.9)	341 (3.2)	8,543 (79.1)	203 (1.9)	292 (2.7)
2018	1,401 (13.9)	295 (2.9)	8,005 (79.4)	143 (1.4)	228 (2.3)
2019 †	1,517 (14.1)	342 (3.2)	8,512 (79.1)	190 (1.8)	147 (1.4)

†Start of .05 per se law.
*In 2013 DLD started using a new code to indicate a DUI arrest was for drugs other than alcohol.

Media. The State did not undertake any large-scale media activities related to the passage of the .05 BAC law. DPS posted a fact sheet to its website during March 2017 that described the types of physical and mental function losses that take place at a .05 BAC level, and explained the new law would not involve significant changes to the State's DUI enforcement approach. In preparation for questions from media outlets and the public, a Frequently Asked Questions document was developed, along with a short, straightforward video entitled *Business as Usual* (Utah DPS, n.d.).

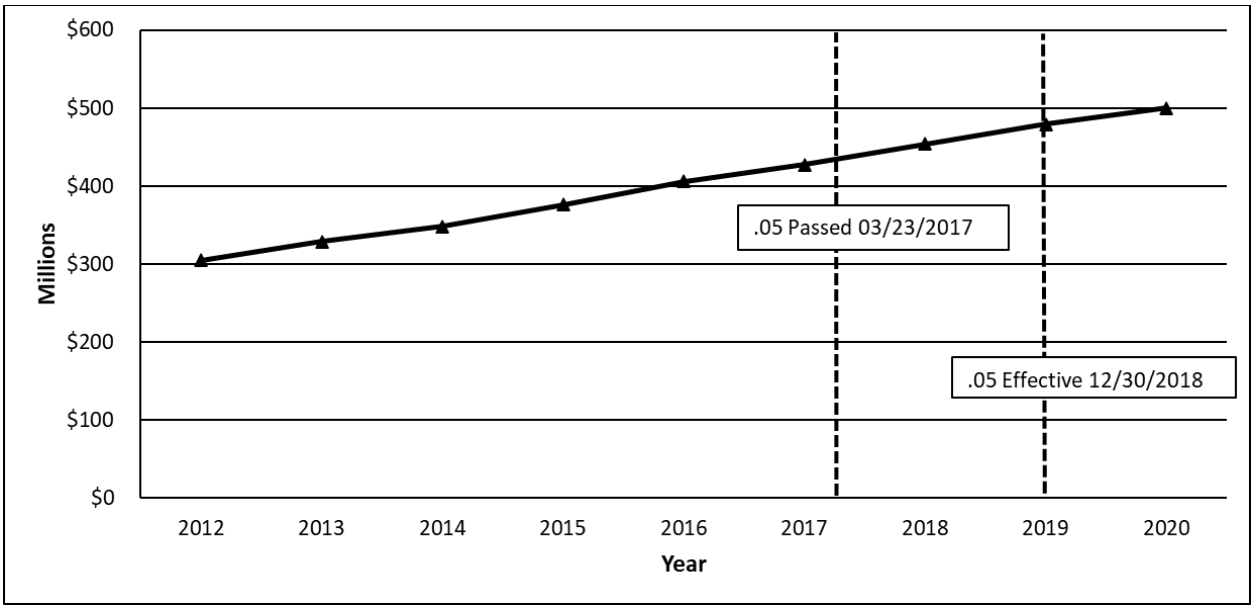
A number of local and national news outlets ran stories on the law change before and after it passed. The pieces that included opposition to the lower BAC limit focused on the potential impacts of the law change on food and beverage industry sales, the notion that no traffic safety benefits would be realized, or the belief the law would criminalize people who have one or two drinks and drive.

Public Awareness. Telephone surveys conducted by UHSO in 2018 and 2019 showed self-reported drinkers had a less favorable impression of the law change than non-drinkers. There was a notable increase in the percentage of drinkers who knew the correct new .05 BAC limit in 2019 (54.2%) versus those knowing the then correct .08 limit in 2018 (31.3%). Some of this difference may have been due to confusion over when the .05 law was effective because in 2018 26.6% of

drinkers and 12.6% of the non-drinkers thought the limit was .05 even though the law had not yet taken effect. The percentage of non-drinkers, however, knowing the correct BAC limit in 2019 (20.3%) stayed virtually the same as in 2018 (20.6%). In 2019 some 22.1% of drinkers indicated they had, in fact, changed their behaviors once the law went into effect. The most common behavior modification reported was making sure transportation was available when drinking away from home.

Alcohol Sales and Tourism. The Utah DABC issues annual reports to the public that include alcohol sales and consumption data for the items under its purview (Utah Department of Alcoholic Beverage Control, 2016, 2017, 2018, 2019, 2020). The data include wholesale dollar amounts and volumes for alcohol sold to State stores and retail licensees. Figure ES-2 shows DABC's annual dollar amount of alcohol sales net of taxes for the period 2012 to 2020. Sales in Utah from 2012 to 2020 increased at a steady pace. Similar patterns were observed for sales tax revenues from restaurant, rental car, hotel, and resort sales, as well as air travel to Utah and visitors to State and National parks.

Figure ES-2. Annual Alcohol Sales Net of Taxes



Discussion

The legislative review indicated the law change was motivated by a desire to improve traffic safety in Utah. Opposition to the proposed law was understandable and from expected sources but turned out to be unfounded. The results of the State crash data analyses showed reductions (i.e., fewer crashes and lower alcohol involvement) for almost all the crash and driver alcohol involvement measures for the 21 months after the law was passed and for the 12 months after it actually came into effect. Many of these measures showed reductions in the 10% to 25% range during the studied post-law periods. Separate analyses of FARS data showed the fatal crash rate reduction from 2016 to 2019 in Utah was 19.8%, and the fatality rate reduction was 18.3%. In comparison, the rest of the United States showed only a 5.6% crash rate reduction and 5.9% fatality rate reduction during the same time period. The other States in the region that were examined did not show the same levels of improvement in fatal crash and fatality rates as Utah during the time period of interest.

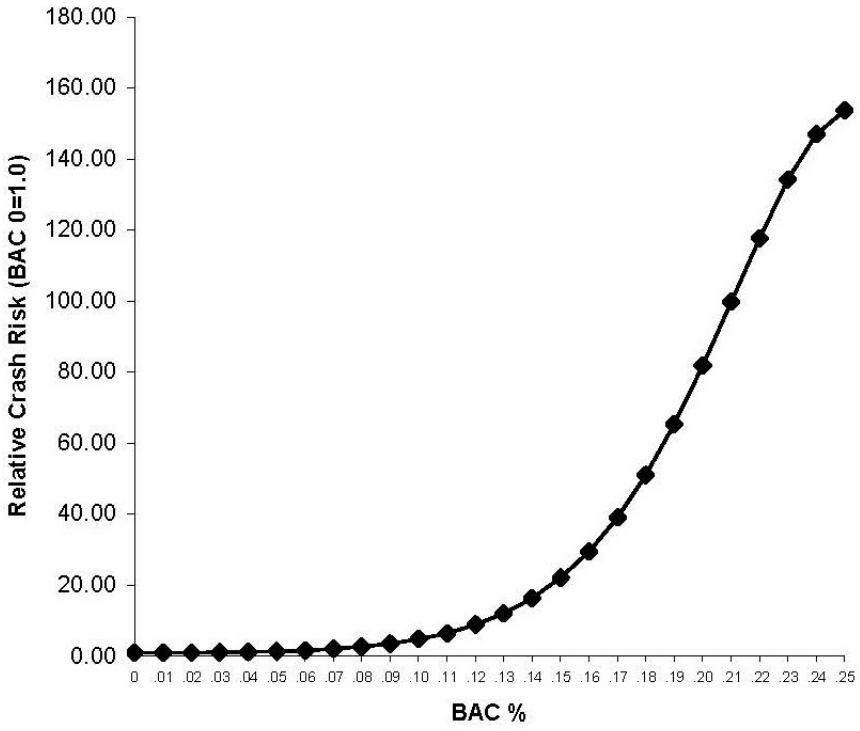
Focus groups and surveys conducted by the State showed that there was at least some increased awareness of the law, especially among drinkers, and that drinkers tended to have a less favorable view of the change than non-drinkers. Nevertheless, some drinkers reported altering their behaviors relative to the law because of an increased concern for being arrested for a DUI. The most common reported behavior change was making sure alternative transportation was available when out drinking.

Overall, the study's findings indicate that passage of the .05 *per se* law had demonstrably positive impacts on highway safety in Utah. The crash analyses demonstrated reliable reductions in crash rates and alcohol involvement in crashes associated with the new law that were consistent with, or greater than, those observed or predicted by prior research (e.g., Fell & Scherer, 2017). While the concerns about hurting the State's economy and increasing arrests were understandable, the data reviewed by this study indicate that none of the potential negative effects of concern came to fruition. In fact, alcohol sales and per capita consumption appeared to continue their increasing trends under the new law as did tourism and tax revenues. Similarly, DUI arrests for alcohol did not increase markedly after the law came into effect.

Introduction

Driver BAC has a well-documented relationship to the increase in the relative risk of being involved in a motor vehicle crash (e.g., Blomberg et al., 2009; Borkenstein et al., 1964). As shown in Figure 1, and further described in Blomberg et al., a person with a BAC of .05 has a relative risk of being in a crash of 1.38 compared to a person with a .00 BAC (negative BAC). This translates to a 38% increase in the risk of being in a crash at a BAC of .05. At a BAC of .08 the relative risk of a crash increases to 2.69 (169% increase in risk) compared to a negative BAC. Above a BAC of .08, the relative risk of being in a crash increases exponentially.

Figure 1. BAC and Adjusted Relative Crash Risk (From Blomberg et al., 2009)



Well before these crash risk studies, States had already adopted a variety of laws that made it illegal to drive while intoxicated by alcohol. With advances in technology that allowed for a rapid and accurate quantitative determination of a driver's BAC, States began to adopt per se impaired driving laws that made it illegal to drive at or above a specified BAC level, in and of itself, without the need to prove driver impairment.[2] The BAC limits used by States, however, varied for many years, with Utah in 1983 being the first State to lower its limit from .10 to .08. Other States soon followed, and the National Highway Traffic Safety Administration (NHTSA) wrote reports to Congress on the effectiveness of BAC limits (NHTSA, 1991; Snyder, 1992) and conducted studies to examine how lowering the per se limit from .10 to .08 affected highway

[2] To initiate an investigation of an impaired driving offense, an officer must have reasonable suspicion of the offense based on witnessed driving behavior or from interaction with the driver. The officer must then have probable cause such as the driver's results on the Standardized Field Sobriety Test (SFST) to make an arrest. Officers can make impaired driving arrests below the per se level; a per se law allows the driver's BAC to be evidence in and of itself of that specific offense.

safety in California (Research & Evaluation Associates, 1991) and Illinois (Voas et al., 2000; 2001).

Starting in 1998 the Federal government promoted the notion that all States should adopt a BAC per se limit of .08 (Rodriguez-Iglesias et al., 2001). In 2000 the Department of Transportation's Appropriations Act for Fiscal Year 2001 included the provision that a State must enact a .08 BAC per se law by 2004 or begin losing Federal highway construction funds . In response all 50 States enacted .08 BAC per se limits by 2004. In a review of the impacts of lowering BAC limits to .08, Fell and Voas (2006) found 14 independent studies in the United States that showed lowering the per se limit from .10 to .08 resulted in 5% – 16% reductions in alcohol-related crashes, fatalities, or injuries.

Despite the documented benefits of lowering BAC limits to .08 and substantial education and enforcement efforts by NHTSA and others to reduce alcohol-impaired driving across the country, impaired driving continues to be a major highway safety issue in the United States. In recent publications, NHTSA defined alcohol-impaired driving crashes as involving at least one driver or motorcycle operator with a BAC over .08 at the time of crash (NCSA, 2020). Analyses of data in FARS showed in 2019 there were 10,142 alcohol-impaired driving fatalities on the Nation's roadways, which was down from 10,710 in 2018 (NCSA, 2020). Other analyses have shown that over the last decade the number of alcohol-impaired driving fatalities per year has ranged from a low of 9,865 in 2011 to a high of 10,967 in 2016, with the rate per 100 million vehicle miles traveled (VMT) fluctuating between .36 and .33 during the same period (NCSA, 2019). In addition to the loss of human life, the economic costs associated with alcohol-impaired driving are enormous. Blincoe et al. (2015) estimated that for the year 2010 the annual economic cost of alcohol-involved crashes in the United States was upwards of $52 billion, with $44 billion of that attributable to drivers with BACs greater than .08.

Given the relatively steady number of alcohol-impaired driving fatalities in the last decade, there have been renewed calls for States to lower their BAC per se limits from .08 to .05 as one possible strategy to improve highway safety. The National Transportation Safety Board (NTSB) has recommended since 2013 that States lower their BAC per se limits to .05 (NTSB, 2013, 2019). In 2018, the National Academies of Science, Engineering, and Medicine (2018) echoed NTSB's call to States to lower per se limits, basing the recommendation on evidence that doing so would save lives. The supporting evidence comes from research such as that conducted by Fell and Voas (2006) that highlighted several international studies that showed lowering the per se limit from .08 to .05 further reduced alcohol-related fatalities. Fell and Scherer (2017) conducted a meta-analysis to estimate how many lives would be saved if all 50 States adopted .05 BAC per se laws. That analysis estimated 1,790 lives could be saved annually in the United States if all States adopted a .05 BAC limit. In 2021 NTSB reemphasized .05 laws in its *Most Wanted List* (NTSB, 2021).

Despite the expected safety benefits, States may be hesitant to proceed with reducing their BAC per se limit if they face opposition from organizations or individuals who fear such a law could have far reaching negative impacts that outweigh the potential safety benefits. Bills to lower the BAC per se limit to .05 were proposed in Delaware, New York, Oregon, Hawaii, Washington, and Utah within the last 10 years. To date, however, Utah is the only State that has approved lowering the BAC per se limit from .08 to .05. On March 23, 2017, the Utah Governor Herbert signed into law House Bill 155, modifying Utah Code §41-6a-502 to prohibit people 21 and over

from operating noncommercial vehicles with BACs of .05 or greater, rather than .08.[3] The law established this as a per se offense and carried an effective date of December 30, 2018. With the passing of this legislation, Utah became the first State to adopt an impaired driving per se BAC limit lower than .08 and thereby provided an opportunity to observe how enacting a lower BAC limit would impact highway safety and related economic measures in the United States.

[3] Utah also has a "zero tolerance" per se law for those under 21 years old that prohibits driving with "any measurable blood, breath, or urine alcohol concentration in the person's body." (Utah Code § 53-3-231)

Objectives

The goal of this project was to conduct a comprehensive evaluation of the impacts of lowering the BAC limit in Utah's per se law from .08 to .05. The objectives were to

- Document the legislative process that resulted in the per se law change; and
- Examine whether any changes occurred within Utah after the law revision in terms of:
    - Crashes and fatalities,
    - Impaired driving arrests,
    - Driver knowledge, perceptions, and attitudes toward drinking and driving,
    - State education or prevention strategies, or
    - Alcohol sales and other economic indicators.

Methods

The current study involved the collection of information from a variety of sources to assess not only the .05 BAC per se limit's impact on highway safety, but also how its adoption affected relevant parts of the Utah economy as well as the knowledge, opinions, and behaviors of Utah residents. The study also involved a detailed review of the legislative process that led to the passage of the law. Below is a description of the methods to gather each type of data included in the evaluation. More details on data analysis techniques and any special data considerations are provided in the results section for each topic area.

Legislative Review

Information came from the National Transportation Safety Board's 2018 webinar: *From Safety Recommendation to Law - Lessons Learned from Utah's 0.05 BAC Legislative Journey.* The study also examined legislative testimony that included publicly available audio recordings and transcripts from the:

- 2017 General Session of the Utah House and Senate Committee Testimony and Debate regarding *House Bill 155 Driving Under the Influence and Public Safety Revisions;*
- Utah House Law Enforcement and Criminal Justice Committee Hearing/Debate on February 10, 2017; and
- Utah Senate Transportation, Utilities, Energy and Technology Committee Hearing/Debate on March 1, 2017.

Crash Data

The study analyzed crashes of all severities using data provided by the State of Utah. Fatality data from FARS were analyzed separately because of differences in how BACs are recorded in the database versus how they are recorded by the State. Information about the data sources and specific analyses follow.

State Crash Data. The University of Utah manages the State's crash data system as part of the Utah Transportation and Public Safety Crash Data Initiative. State crash files (de-identified data only) for January 1, 2010, to December 31, 2019, provided by the university were used in the analysis.[4] The files contained data on all crashes on public roadways reported to the State, including property-damage-only, injury, and fatal crashes. For each incident, data were available concerning the crash (time, date, and location of crash), involved people (age, sex, behaviors, and BAC when reported), and involved vehicles (type, make, age). The State crash database contained alcohol involvement information from police crash reports (when the information was recorded on the reports) including suspected driver alcohol use, whether the driver was alcohol positive, and a quantitative BAC if reported. In many instances, a report may indicate a driver was suspected of alcohol use or was alcohol positive but not include a quantitative BAC. Utah does not use any mathematical imputations or other estimations of BAC in cases where the information was not obtained or reported. As these analyses include all crashes, with the majority of them not involving a fatality, they should be interpreted with caution because 96.5% of the crashes had no BAC recorded for any of the drivers. Similarly, 97.0% of the drivers involved in

[4] Given the extreme non-normalcy of 2020 because of the COVID-19 public health emergency, the study did not include 2020 crash data.

crashes had no BAC reported. In addition, due to low counts of fatal crashes in the State, fatal crashes were combined with non-fatal injury crashes to allow for valid statistical analyses of the combined injury/fatal crashes by month. Separate annual fatality data from NHTSA's FARS database were reviewed, as noted below.

Crash-Level Measures. Crash-level measures consider each crash as a single event regardless of how many vehicles or people were involved. To account for variations in driving exposure that occurred over time in the State, each of the measures below is expressed as a rate of crashes per 100 million VMT.[5]

- Total – Crashes at all severity levels (property-damage-only, injury, and fatality)
- Injury – Crashes in which an injury (including fatalities) was sustained by anyone involved in the crash
- Single-vehicle nighttime (SVN)[6] – Crashes at all severity levels involving a single vehicle and taking place from 8 p.m. to 4:59 a.m.
- SVN injury – Injury crashes (including fatalities) involving a single vehicle and taking place from 8 p.m. to 4:59 a.m.
- Alcohol positive[7] – Crashes at all severity levels involving at least one driver reported by police to have had a positive BAC (result of measured BAC may not have been recorded)
- Injury alcohol positive – Injury crashes (including fatalities) involving at least one driver reported by police to have had a positive BAC (result of measured BAC may not have been recorded)
- BAC $\geq$ .05[8] – Crashes at all severity levels involving at least one driver with a measured and recorded BAC $\geq$ .05
- Injury BAC $\geq$ .05 – Injury crashes (including fatalities) involving at least one driver with a measured and recorded BAC $\geq$ .05
- BAC $\geq$ .08 – Crashes at all severity levels involving at least one driver with a measured and recorded BAC $\geq$ .08
- Injury BAC $\geq$ .08 – Injury crashes (including fatalities) involving at least one driver with a measured and recorded BAC $\geq$ .08

[5] All VMT data came from the Federal Highway Administration's "Traffic Volume Trends" (TVT) monthly publications, www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm. At the time this study was conducting analyses, the best available 2019 monthly VMT data was located in the "revised" previous month's column in the 2019 monthly TVT reports. For calculation of annual crash rates, similar monthly data were pulled for prior years and summed to arrive at unadjusted annual VMT measures equivalent to what was available for 2019 at the time. Crash rate calculations may be different if alternative sources of VMT data are utilized (e.g., State reports), or if subsequently adjusted data are used from FHWA's later reports.

[6] SVN crashes are a commonly used surrogate for alcohol-involved crashes although the exact time periods used in their construction can vary from study to study (e.g., Gruenewald & Johnson, 2010; Voas et al., 2009).

[7] Utah's crash report form has a "Test Result" field with codes for alcohol positive, drug positive, both positive, negative, pending, not applicable. A crash/driver was coded as alcohol positive for this and other measures if police used either the code for alcohol positive or both positive, regardless of whether a BAC was reported in the separate BAC field on the crash report.

[8] A numerical BAC value must have been reported to DLD for any measures pertaining to BACs greater than or equal to a given value.

- BAC $\geq$ .15 – Crashes at all severity levels involving at least one driver with a measured and recorded BAC $\geq$ .15
- Injury BAC $\geq$ .15 – Injury crashes (including fatalities) involving at least one driver with a measured and recorded BAC $\geq$ .15.

The ratio of SVN to multi-vehicle daytime (MVD) crashes was also examined as a means of accounting for variations in driving exposure (Voas et al., 2009). This measure assumes without external influences the ratio would stay largely the same over time (with normal seasonal fluctuations) regardless of whether overall driving exposure was going up or down in an area. A lower ratio of SVN crashes to MVD after the law was passed or became effective would be suggestive of a reduction in alcohol-impaired driving after lowering the BAC limit.

- SVN to MVD – The ratio of all SVN crashes from 8 p.m. to 4:59 a.m. to crashes involving two or more vehicles from 7 a.m. to 5:59 p.m.
- SVN injury to MVD injury – The ratio of SVN injury crashes (including fatalities) taking place from 8 p.m. to 4:59 a.m. to injury crashes involving two or more vehicles from 7 a.m. to 5:59 p.m.

Person-Level Measures. The State crash files contained person-level information for each driver, passenger, or other party (e.g., pedestrian, bicyclist) involved in a crash. Variables of interest included whether a driver was suspected of alcohol involvement according to law enforcement or if the driver had a positive breath or blood alcohol test reported.

- Alcohol suspected – Percentage of drivers in all crashes who law enforcement suspected of having alcohol involvement whether a test was administered, refused, or results known
- Injury alcohol-suspected – Percentage of drivers involved in injury crashes (including fatalities) who law enforcement suspected of having alcohol involvement whether a test was administered, refused, or results known
- Alcohol positive – Percentage of drivers in all crashes reported by police to have had a positive BAC (actual BAC may not have been recorded)
- Injury alcohol positive – Percentage of drivers involved in injury crashes (including fatalities) who were reported by police to have had a positive BAC (actual BAC may not have been recorded)
- BAC $\geq$ .05 – Percentage of drivers in all crashes who had a measured and recorded BAC $\geq$ .05
- Injury BAC $\geq$ .05 – Percentage of drivers involved in injury crashes (including fatalities) who had a measured and recorded BAC $\geq$ .05
- BAC $\geq$ .08 – Percentage of drivers in all crashes who had a measured and recorded BAC $\geq$ .08
- Injury BAC $\geq$ .08 – Percentage of drivers involved in injury crashes (including fatalities) who had a measured and recorded BAC $\geq$ .08

- BAC ≥ .15 – Percentage of drivers in all crashes who had a measured and recorded BAC ≥ .15
- Injury BAC ≥ .15 – Percentage of drivers involved in injury crashes (including fatalities) who had a measured and recorded BAC ≥ .15.

Fatality Analysis Reporting System. NHTSA makes the FARS available to the public through an online query portal.[9] FARS data are collected annually on a voluntary basis through cooperative agreements between NHTSA and each of the 50 States, the District of Columbia, and Puerto Rico. The data set is a census of police-reported traffic crashes in which at least one person involved died within 30 days of the crash. Data are collected at the crash level (time, date, road type, number of vehicles involved), person level (position in crash, age, sex, behaviors), and vehicle level (type, make, age). FARS includes measured BAC information if it is reported. When a measured BAC is not reported, FARS imputes BACs for drivers based on a model that takes into consideration factors associated with the person and crash. This study obtained FARS crash, person, and vehicle files for all 50 States and the District of Columbia for January 1, 2010, to December 31, 2019.[10] Several annual measures were created to examine fatal crashes in Utah compared to the rest of the United States (49 other States and DC) and versus the surrounding States of Colorado, Nevada, and Arizona during the time periods of interest. Only descriptive comparisons were possible due to the small annual counts of fatal crashes in Utah.

Crash Level Measures. These measures consider each crash as a single event regardless of how many vehicles, occupants, and nonoccupants were involved or killed. All VMT measures are per 100 million VMT. This study analyzed the following.

- Total Crashes – All crashes with at least one fatality
- Total Crashes per VMT – All fatal crashes per VMT
- BAC ≥ .01 – Fatal crashes with at least one driver known or imputed to have a BAC ≥ .01
- BAC ≥ .01 per VMT – Fatal crashes with at least one driver known or imputed to have a BAC ≥ .01 per VMT
- BAC ≥ .05 – Fatal crashes with at least one driver known or imputed to have a BAC ≥ .05
- BAC ≥ .05 per VMT – Fatal crashes with at least one driver known or imputed to have a BAC ≥ .05 per VMT
- BAC ≥ .08 – Fatal crashes with at least one driver known or imputed to have a BAC ≥ .08
- BAC ≥ .08 per VMT – Fatal crashes with at least one driver known or imputed to have a BAC ≥ .08 per VMT
- BAC ≥ .15 – Fatal crashes with at least one driver known or imputed to have a BAC ≥ .15

[9] www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars
[10] Given the extreme non-normalcy of 2020 because of the COVID-19 public health emergency, the study did not include 2020 crash data.

- BAC ≥ .15 per VMT – Fatal crashes with at least one driver known or imputed to have a BAC ≥ .15 per VMT.

Person Level Measures. These measures include all people killed in a crash including drivers, passengers, pedestrians, and bicyclists. All VMT measures are per 100 million VMT. This study analyzed the following.

- Fatalities – All people who died in a crash
- Fatalities per VMT – All people who died in a crash per VMT
- BAC ≥ .01 – People who died in a crash with at least one driver known or imputed to have a BAC ≥ .01
- BAC ≥ .01 per VMT – People who died in a crash with at least one driver known or imputed to have a BAC ≥ .01 per VMT
- BAC ≥ .05 –People who died in a crash with at least one driver known or imputed to have a BAC ≥ .05
- BAC ≥ .05 per VMT –People who died in a crash with at least one driver known or imputed to have a BAC ≥ .05 per VMT
- BAC ≥ .08 –People who died in a crash with at least one driver known or imputed to have a BAC ≥ .08
- BAC ≥ .08 per VMT –People who died in a crash with at least one driver known or imputed to have a BAC ≥ .08 per VMT
- BAC ≥ .15 –People who died in a crash with at least one driver known or imputed to have a BAC ≥ .15
- BAC ≥ .15 per VMT – People who died in a crash with at least one driver known or imputed to have a BAC ≥ .15 per VMT
- Driver BAC ≥ .01 – Proportion of all drivers with a known or imputed BAC ≥ .01
- Driver BAC ≥ .08 – Proportion of all drivers with a known or imputed BAC ≥ .08
- Driver BAC ≥ .15 – Proportion of all drivers with a known or imputed BAC ≥ .15.

Driving Under the Influence Arrests

Grant-Funded Overtime DUI Enforcement. The UHSO maintains detailed records by its fiscal year ending June 30th for both State and Federal expenditures related to grant-funded overtime traffic safety enforcement efforts. UHSO provided this study with overtime DUI enforcement-related information for 2014 to 2019. This study prepared descriptive summaries of total grant (State and Federal combined) dollars spent, shifts worked, and counts of stops and arrests by type for each year.

Driver License DUI Arrest Records. The Utah DLD maintains data on DUI arrests as part of its driver license administration duties. DLD's database includes information on alcohol and drug DUI arrests made under Utah Code § 41-6a-502 and drug metabolite arrests under Utah Code § 41-6a-517. DLD provided this study de-identified data on DUI arrests covering the period January 1, 2009, to December 31, 2019.

Media Activities

State Media Efforts. The UHSO's annual media reports for 2012 to 2019 provided detailed descriptions of the State's paid highway safety media efforts and any earned media activities for each year. Research staff reviewed these reports and held discussions with UHSO staff to identify any State-sponsored media activities related to the .05 BAC law.

Opposition in the Media. Study staff conducted extensive internet searches to identify any media efforts that provided opposition to the .05 BAC law. Staff searched the internet and social media sites for news stories, videos, or other posts related to the .05 BAC law change for the period from January 1, 2012, to December 31, 2019.

Public Awareness, Attitudes, and Self-Reported Behavior

The UHSO funded focus groups and telephone surveys before and after the .05 BAC law came in effect to gather information on self-reported behaviors, public awareness, and perceptions related to the law change (Lighthouse Research & Development, Inc., 2018a 2018b, 2019a;, 2019b). Copies of the survey and focus group reports were provided to this study, and this report presents selected findings from those reports.

Alcohol Sales, Sales Tax Revenues, and Travel/Tourism

Alcohol Sales. Utah is a control State in which all alcohol sales other than "light beer"[11] are managed by the Utah DABC. DABC issues annual reports to the public that include alcohol sales and consumption data for the items under its purview (Utah DABC, 2016, 2017, 2018, 2019, 2020). The data include wholesale dollar amounts and volumes for alcohol sold to State stores and retail licensees. DABC's fiscal year runs from July 1 to June 30 each year. Because the .05 law went into effect on December 30, 2018, annual statistics for fiscal year 2019 include the 6 months before the law took effect and the 6 months after.

Sales Tax Revenues. Data on Utah State sales tax revenues were available from the Utah Office of Tourism website (n.d.). Researchers examined tax data for the first quarter of 2012 through the fourth quarter of 2019 relating to sales tax revenue gained from the following sources that theoretically could have been affected by the .05 law.

- Restaurant sales
- Transient room sales (e.g., hotels, motels)
- Rental car sales
- Resort communities (e.g., purchased rooms, items, and other services at resorts)

Travel/Tourism. Data on the amount of air traffic to Utah were available from the Utah Office of Tourism (n.d.) and included quarterly counts of passengers deplaning in Salt Lake City. Data on the number of visitors to Utah's State and National parks were also available from the Utah Office of Tourism (n.d.). Researchers examined data for the first quarter of 2012 through the fourth quarter of 2019.

[11] On November 1, 2019, the definition of light beer in Utah changed from 4.0% alcohol by volume to 5.0%.

Results

Summary of Changes to Utah's BAC Per Se Limit

In 1983 Utah was the first State to lower its BAC per se limit from .10 to .08. The 1983 law was recodified in 2005 as Utah Code § 41-6a-502. On December 30, 2018, the language in Utah Code § 41-6a-502 was amended to lower the BAC limit from .08 to .05 as shown in the underlined language in Figure 2. As such, a driver could now be arrested for DUI if a chemical test showed a BAC of .05 g/dL or greater. Other DUI provisions related to drugs other than alcohol, or other drugs in combination with alcohol, remained unchanged.

Figure 2. Amended BAC Law Effective December 30, 2018

41-6a-502, Driving under the influence of alcohol, drugs, or a combination of both or with specified or unsafe blood alcohol concentration -- Reporting of convictions.
(1) A person may not operate or be in actual physical control of a vehicle within this state if the person:
(a) has sufficient alcohol in the person's body that a subsequent chemical test shows that the person has a blood or breath alcohol concentration of .05 grams or greater at the time of the test;
(b) is under the influence of alcohol, any drug, or the combined influence of alcohol and any drug to a degree that renders the person incapable of safely operating a vehicle; or
(c) has a blood or breath alcohol concentration of .05 grams or greater at the time of operation or actual physical control.
(2) Alcohol concentration in the blood shall be based upon grams of alcohol per 100 milliliters of blood, and alcohol concentration in the breath shall be based upon grams of alcohol per 210 liters of breath.
(3) A violation of this section includes a violation under a local ordinance similar to this section adopted in compliance with Section 41-6a-510.
(4) Beginning on July 1, 2012, a court shall, monthly, send to the Division of Occupational and Professional Licensing, created in Section 58-1-103, a report containing the name, case number, and, if known, the date of birth of each person convicted during the preceding month of a violation of this section for whom there is evidence that the person was driving under the influence, in whole or in part, of a prescribed controlled substance.

Note: Underline emphasis added for this report.

In addition, it should be noted that under Utah Code § 41-6a-517 "a person may not operate or be in actual physical control of a motor vehicle within this State if the person has any measurable controlled substance or metabolite of a controlled substance in the person's body." Although not related specifically to alcohol, this section is relevant to this study when a driver is stopped for suspected impairment by both alcohol and drugs.

Legislative Timeline for Passing the .05 BAC Limit

The legislative process for the .05 law began as early as 2013 and continued up until it went into effect in late 2018. Key events in the timeline include:

May 14, 2013	NTSB issued a report recommending States adopt .05 BAC per se laws: *Reaching Zero*: *Actions to Eliminate Alcohol-Impaired Driving* (2013).
October 2013	Experts testify on the research behind the NTSB recommendation before two State legislative committees and the Utah Substance Abuse and Mental Health Advisory Council (a legislatively created coordinating group also referred to as the "DUI Committee").
January 2016	Representative Norman K. Thurston (R – District 64, Provo, UT) discussed critical traffic safety issues with the Utah Highway Patrol with a view toward using data-driven solutions to reduce impaired driving. The local American Automobile Association club suggested he contact NTSB for assistance.
January 2016	A stakeholders meeting was held in conjunction with the DUI Committee.
December 30, 2016	Representative Thurston issued a press release, *Press Release: Lowering Blood Alcohol Content Levels From .08 to .05* (2016), announcing his plan to sponsor legislation to lower the BAC per se limit from .08 to .05. State Senator J. Stuart Adams (R – District 22, Davis) co-sponsored the legislation.
January 23, 2017	*House Bill 155, Driving Under the Influence and Public Safety Revisions (2017 General Session)* (2017) was introduced in the House Rules Committee.
February 10, 2017	*Substitute H.B. 155* was enrolled adding the requirement that law enforcement agencies mandate that peace officers be trained on the current NHTSA Standardized Field Sobriety Tests. "Novice drivers" were removed from the definition of alcohol-restricted drivers. The effective date of December 30, 2018, was also codified.
February 10, 2017	Led by Representative Thurston, testimonies for and against were given in the House Law Enforcement and Justice Committee. The bill was passed favorably out of Committee with a 9-2-1 vote (in favor, opposed, absent).
February 23, 2017	*Substitute H.B. 155* was debated on the floor of the House of Representatives. Despite opposition to the bill by the Speaker of the House, the law was approved by a 48-26-1 vote.
March 1, 2017	Led by Senator J. Stuart Adams, testimonies for and against were given in the Senate Transportation, Public Utilities, Energy, and Technology Committee. The bill was passed favorably out of Committee by a 4-2-1 vote.

March 8, 2017	*Substitute H.B. 155* was debated on the floor of the Senate. The law was passed by a 17-12-0 vote.
March 23, 2017	The law was signed by Governor Herbert with an effective date of December 30, 2018, to provide a 21-month period to examine implications of the new law. The Governor asked Representative Thurston and the Senate Transportation Committee to study possible unintended consequences of the law. He asked the DUI Committee to explore potential "middle ground" options before the law went into effect.
April 2017	The DUI Committee explored middle ground options, but endorsed the bill without significant changes.
February 7, 2018	*H.B. 345*, *Driving Under the Influence Modification*s (Rep. K. Kwan), was introduced but not passed. This bill proposed to delay the .05 BAC law effective date by one year to December 30, 2019, along with other modifications.
February 19, 2018	*Senate Bill (SB) 210*, *Intoxicated Driving Limit Changes* (Senator J. Debakis), was introduced but not passed. This bill proposed to modify the effective date of *Substitute H.B. 155* contingent upon three other States passing .05 BAC laws before Utah's .05 BAC law would become effective.
December 30, 2018	The .05 BAC per se law went into effect in Utah.

Key Legislative Testimony

Much of the verbatim legislative testimony (see Appendix A) can be reviewed from publicly available audio recordings and transcripts. Other testimony is slightly edited, paraphrased, or summarized for brevity and clarity. The full audio recordings and/or reports can be found on the Utah Legislature's website (H.B. 155 Driving Under the Influence and Public Safety Revisions, n.d.). The most relevant recordings and reports were from the:

- 2017 General Session of the Utah House and Senate Committee Testimony and Debate regarding *House Bill 155 Driving Under the Influence and Public Safety Revisions* (Sponsors Rep. Norman K. Thurston and Senator J. Stuart Adams);
- Utah House Law Enforcement and Criminal Justice Committee Hearing/Debate on February 10, 2017; and
- Utah Senate Transportation, Utilities, Energy and Technology Committee Hearing/Debate on March 1, 2017.

State Crash Data

Visual inspections of the annual and monthly data suggested there were changes in trends for many of the outcome measures after the law was passed but before it went into effect. Additionally, some measures appeared to show even greater changes once the law became effective. When sufficient monthly counts of crashes or drivers were available for analyses, autoregressive integrated moving average (ARIMA) interrupted time series analyses on monthly measures were used to determine whether statistically reliable changes in the crash outcomes

occurred after the passage of the .05 BAC per se law and separately after the date the law became effective. This approach involved modeling temporal patterns for trends and seasonal fluctuations inherent in a time-based measure. This analysis approach controls for normal fluctuations and ensures any observed effects are likely attributable to the intervention rather than confounding variables. The hypothesized impacts of the law being passed and then coming into effect were modeled here as abrupt-permanent step-functions on the applicable dates.

Both the passage and effective date intervention points were entered into the same model. In this combined model, the "After .05 Passage" effect included the approximately 21 months after passage, up to just before the date the law went into effect. On December 30, 2018, a separate ".05 Effective" effect then replaced the law passage intervention and covered the 12 months after the law became effective. This approach quantified the impacts for each intervention portion separately relative to the baseline period (i.e., they are not additive).

Table 1 provides the annual crash and driver alcohol involvement summary data. An examination of the annual data shows decreases in yearly rates of crashes and driver alcohol involvement for some measures starting in 2017 when the .05 BAC law was passed. These annual measures, however, do not provide enough data points to support an ARIMA analysis to determine if the passage of the .05 BAC law reliably impacted crash rates and driver alcohol involvement in crashes. To provide the most accurate assessment of the effects of the law on measures of interest using ARIMA, the study therefore examined monthly crash and driver data. The monthly series provided sufficient data to support the ARIMA approach and to account for seasonal effects and prior trends in crash and driver alcohol involvement rates. As an example of the monthly data analyzed, Figure 3 provides a graphical representation of the SVN crashes per VMT for 2010 to 2019, with the law passage and effective dates indicated.

Table 1. Utah Annual Crash Measures (State Data)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Crash Measure										
Total per VMT	183.80	176.86	185.36	208.46	191.59	199.19	207.11	197.04	188.99	201.36
Injury per VMT	56.81	55.56	57.26	59.46	58.76	59.98	61.71	57.47	55.46	57.58
SVN per VMT	16.18	15.45	16.62	17.43	15.97	16.41	16.45	15.21	13.99	15.12
SVN Injury per VMT	4.80	4.37	4.64	4.39	4.50	4.43	4.69	3.90	3.71	3.90
Alcohol Positive per VMT	3.02	2.69	2.94	2.82	2.85	3.19	2.97	2.70	2.83	2.71
Injury Alcohol Positive per VMT	1.13	1.01	1.02	1.00	1.09	1.20	1.13	1.01	1.13	1.01
BAC $\geq$ .05 per VMT	1.91	1.69	1.88	1.74	1.70	1.80	1.51	1.29	1.32	1.47
Injury BAC $\geq$ .05 per VMT	0.75	0.63	0.67	0.61	0.70	0.66	0.53	0.46	0.52	0.56
BAC $\geq$ .08 per VMT	1.80	1.55	1.77	1.62	1.57	1.67	1.39	1.19	1.24	1.38
Injury BAC $\geq$ .08 per VMT	0.71	0.58	0.64	0.57	0.63	0.63	0.48	0.44	0.49	0.51
BAC $\geq$ .15 per VMT	1.16	1.00	1.22	1.04	1.00	1.12	0.95	0.74	0.85	0.95
Injury BAC $\geq$ .15 per VMT	0.44	0.37	0.44	0.33	0.38	0.43	0.33	0.26	0.29	0.34
Ratio SVN to MVD	0.18	0.17	0.18	0.16	0.16	0.15	0.15	0.14	0.13	0.14
Ratio SVN Injury to MVD Injury	0.17	0.16	0.16	0.14	0.15	0.14	0.14	0.13	0.12	0.13
Driver Measure										
% Suspected Alcohol	1.94	1.70	1.78	1.63	1.82	1.82	1.70	1.59	1.69	1.54
% Injury Suspected Alcohol	2.94	2.50	2.51	2.48	2.70	2.49	2.45	2.33	2.47	2.18
% Alcohol Positive	0.94	0.87	0.91	0.77	0.84	0.89	0.79	0.75	0.82	0.73
% Injury Alcohol Positive	1.10	0.99	0.98	0.92	1.01	1.06	0.96	0.92	1.07	0.91
% BAC $\geq$ .05	0.60	0.54	0.58	0.47	0.50	0.50	0.40	0.36	0.38	0.37
% Injury BAC $\geq$ .05	0.73	0.63	0.65	0.56	0.64	0.58	0.45	0.42	0.49	0.50
% BAC $\geq$ .08	0.56	0.50	0.54	0.44	0.46	0.46	0.37	0.33	0.36	0.35
% Injury BAC $\geq$ .08	0.69	0.57	0.62	0.52	0.58	0.56	0.41	0.40	0.46	0.45
% BAC $\geq$ .15	0.36	0.32	0.38	0.28	0.30	0.31	0.25	0.21	0.25	0.24
% Injury BAC $\geq$ .15	0.43	0.36	0.43	0.30	0.35	0.38	0.28	0.24	0.27	0.30

Note: VMT measures are per 100 million vehicle miles traveled. Monthly VMT data from TVT reports were summed to arrive at the unadjusted annual VMT for a year.

Figure 3. Utah Single Vehicle Nighttime Crashes per 100 Million VMT

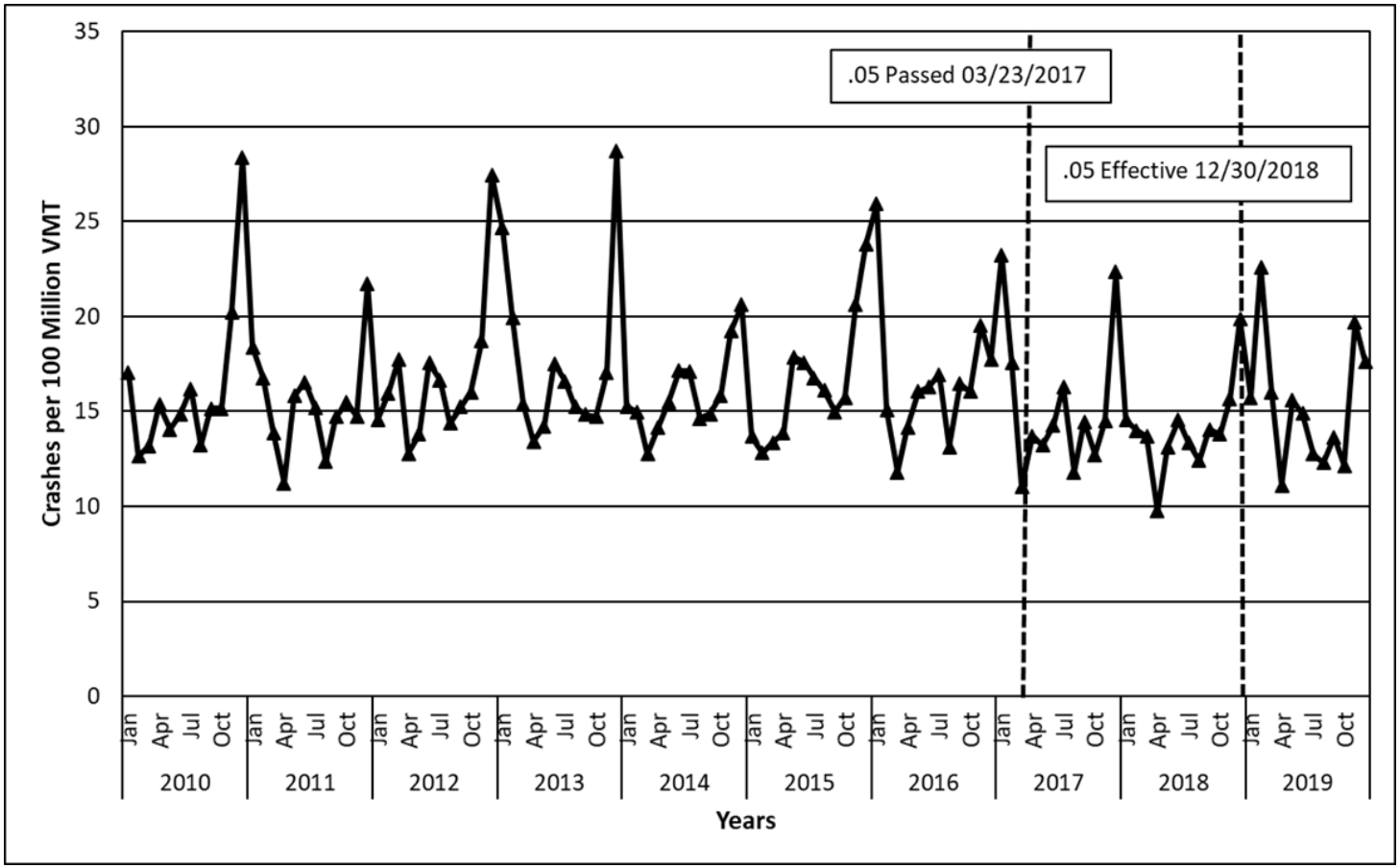


Table 2 provides the full results of the ARIMA analyses. The table includes the delta (Δ) for each measure which is the model's estimate of how much higher or lower the monthly measure was on average during the intervention period compared to what would be expected based on projections from the baseline data. The "delta percent (Δ%)" is the percentage change for the measure. Negative values indicate a decrease in crash rates, drivers, proportions, or ratios relative to what was projected from the modeling of the baseline data. For example, total crashes per 100 million VMT (line 1 of Table 2) showed an estimated average monthly reduction of 25.96 crashes per 100 million VMT for the 21-month period after the .05 law was passed but before it was effective. This represents an estimated 11.5% reduction in total crashes per 100 million VMT on average each month compared to the projection from the baseline period. The bulleted lists after the table provide a more detailed description of each measure along with its statistical significance.

Table 2. Utah ARIMA Results for Crash and Driver Alcohol Measures

	After .05 Passage (21 months before effective)				After .05 Law Effective (12 months)			
Measure	Δ	95% CI		Δ%	Δ	95% CI		Δ%
Crashes								
Total per VMT†	-25.96*	-40.30	-10.50	-11.5	-21.86*	-40.71	-1.12	-9.6
Injury per VMT	-7.01*	-9.89	-3.98	-10.9	-6.87*	-10.51	-2.97	-10.8
SVN per VMT	-2.25*	-4.00	-0.29	-12.3	-1.08	-2.85	0.97	-7.8
SVN Injury per VMT	-0.79*	-1.05	-0.51	-18.1	-0.61*	-0.94	-0.23	-13.7
Alcohol Positive per VMT	-0.14	-0.31	0.04	-5.8	-0.24*	-0.45	-0.02	-8.9
Injury Alcohol Positive per VMT	-0.02	-0.49	0.52	-0.7	-0.06	-0.17	0.07	-8.5
BAC ≥ .05 per VMT	-0.38*	-0.53	-0.20	-24.0	-0.21	-0.41	0.02	-14.7
Injury BAC ≥ .05 per VMT	-0.12*	-0.18	-0.06	-24.4	-0.06	-0.12	0.01	-14.8
BAC ≥ .08 per VMT	-0.34*	-0.49	-0.16	-23.3	-0.18	-0.37	0.04	-13.7
Injury BAC ≥ .08 per VMT	-0.11*	-0.16	-0.04	-23.1	-0.08	-0.15	0.02	-15.1
BAC ≥ .15 per VMT	-0.16*	-0.22	-0.09	-23.9	-0.06	-.16	0.05	-9.1
Injury BAC ≥ .15 per VMT	-0.09*	-0.13	-0.05	-32.9	-0.01	-.02	0.01	-11.2
Ratio SVN to MVD	-0.02*	-0.03	-0.01	-14.1	-0.02*	-0.03	-0.01	-13.8
Ratio SVN Injury to MVD Injury	-0.02*	-0.03	-0.01	-15.6	-0.02*	-0.03	-0.00	-13.9
Drivers								
% Suspected Alcohol	-0.06	-0.22	0.11	-3.7	-0.21*	-0.38	-0.02	-12.5
% Injury Suspected Alcohol	-0.05	-0.30	0.22	-2.1	-0.39*	-0.64	-0.10	-15.5
% Alcohol Positive	-0.06	-0.14	0.05	-6.8	-0.12*	-0.21	-0.01	-14.6
% Injury Alcohol Positive	0.01	-0.10	0.12	0.5	-0.12	-0.23	0.01	-12.2
% BAC ≥ .05	-0.10*	-0.15	-0.03	-22.7	-0.09*	-0.16	-0.01	-22.5
% Injury BAC ≥ .05	-0.12*	-0.18	-0.04	-23.7	-0.09	-0.18	0.01	-19.3
% BAC ≥ .08	-0.08*	-0.13	-0.01	-19.5	-0.09*	-0.15	-0.02	-22.9
% Injury BAC ≥ .08	-0.10*	-0.17	-0.02	-22.5	-0.09	-0.17	0.02	-19.7
% BAC ≥ .15	-0.06*	-0.10	-0.02	-24.1	-0.06*	-0.11	-0.01	-22.5
% Injury BAC ≥ .15	-0.10*	-0.13	-0.06	-32.4	-0.04	-0.10	0.03	-12.9

Notes: Δ = estimated average monthly change. 95% CI = 95% confidence interval for the change. Δ% = percentage change the delta represents. *p < .05, two-tailed ARIMA model. †VMT is per 100 million miles traveled.

The results reported in Table 2 show that during both periods of interest there were several statistically significant ($p < .05$) reductions in crash and driver level measures compared to the projections computed from the baseline period. Below is a summary of the information presented in Table 2 for the two time periods with statistically significant ($p < .05$) results in bold.

21 Months After .05 Passage but Before the Law Was Effective

Crash Level Measures (estimated percent change, statistical significance)

- **Total crashes per VMT (-11.5%, $p < .05$)**
- **Injury crashes per VMT (-10.9%, $p < .05$)**
- **SVN crashes per VMT (-12.3%, $p < .05$)**
- **SVN injury crashes per VMT (-18.1%, $p < .05$)**
- At least one driver reported alcohol positive in all crashes per VMT (-5.8%, $p > .05$)
- At least one driver reported alcohol positive in injury crashes per VMT (-0.7%, $p > .05$)
- **At least one driver with a BAC $\geq$ .05 in all crashes per VMT (-24.0%, $p < .05$)**
- **At least one driver with a BAC $\geq$ .05 in injury crashes per VMT (-24.4%, $p < .05$)**
- **At least one driver with a BAC $\geq$ .08 in all crashes per VMT (-23.3%, $p < .05$)**
- **At least one driver with a BAC $\geq$ .08 in injury crashes per VMT (-23.1%, $p < .05$)**
- **At least one driver with a BAC $\geq$ .15 in all crashes per VMT (-23.9%, $p < .05$)**
- **At least one driver with a BAC $\geq$ .15 in injury crashes per VMT (-32.9%, $p < .05$)**
- **Ratio of all SVN crashes to all MVD crashes (-14.1%, $p < .05$)**
- **Ratio of SVN injury crashes to MVD injury crashes (-15.6%, $p < .05$)**

Driver Level Measures (estimated percent change, statistical significance)

- Percentage of all crash drivers with alcohol suspected (-3.7%, $p > .05$)
- Percentage of injury crash drivers with alcohol suspected (-2.1%, $p > .05$)
- Percentage of all crash drivers reported as alcohol positive (-6.8%, $p > .05$)
- Percentage of injury crash drivers reported as alcohol positive (+0.5%, $p > .05$)
- **Percentage of all crash drivers with a measured BAC $\geq$ .05 (-22.7%, $p < .05$)**
- **Percentage of injury crash drivers with a measured BAC $\geq$ .05 (-23.7%, $p < .05$)**
- **Percentage of all crash drivers with a measured BAC $\geq$ .08 (-19.5%, $p < .05$)**
- **Percentage of injury crash drivers with a measured BAC $\geq$ .08 (-22.5%, $p < .05$)**
- **Percentage of all crash drivers with a measured BAC $\geq$ .15 (-24.1%, $p < .05$)**
- **Percentage of injury crash drivers with a measured BAC $\geq$ .15 (-32.4%, $p < .05$)**

12 Months After .05 Law Was Effective

Crash Level Measures (estimated percent change, statistical significance)

- **Total crashes per VMT (-9.6%, $p < .05$)**
- **Injury crashes per VMT (-10.8%, $p < .05$)**
- SVN crashes per VMT (-7.8%, $p > .05$)
- SVN injury crashes per VMT (-13.7%, $p < .05$)
- **At least one alcohol positive driver in all severity crashes per VMT (-8.9%, $p < .05$)**
- At least one alcohol positive driver in injury crashes per VMT (-8.5%, $p > .05$)
- At least one driver with a BAC $\geq$ .05 in all crashes per VMT (-14.7%, $p > .05$)
- At least one driver with a BAC $\geq$ .05 in injury crashes per VMT (-14.8%, $p > .05$)
- At least one driver with a BAC $\geq$ .08 in all crashes per VMT (-13.7%, $p > .05$)
- At least one driver with a BAC $\geq$ .08 in injury crashes per VMT (-15.1%, $p > .05$)
- At least one driver with a BAC $\geq$ .15 in all severity crashes per VMT (-9.1%, $p > .05$)
- At least one driver with a BAC $\geq$ .15 in injury crashes per VMT (-11.2%, $p > .05$)
- **Ratio of all SVN crashes to all MVD crashes (-13.8%, $p < .05$)**
- **Ratio of SVN injury crashes to MVD injury crashes (-13.9%, $p < .05$)**

Driver-Level Measures (estimated percent change, statistical significance)

- **Percentage of all crash drivers with alcohol suspected (-12.5%, $p < .05$)**
- **Percentage of injury crash drivers with alcohol suspected (-15.5%, $p < .05$)**
- **Percentage of all crash drivers reported as alcohol positive (-14.6%, $p < .05$)**
- Percentage of injury crash drivers reported as alcohol positive (-12.2%, $p > .05$)
- **Percentage of all crash drivers with a measured BAC $\geq$ .05 (-22.5%, $p < .05$)**
- Percentage of injury crash drivers with a measured BAC $\geq$ .05 (-19.3%, $p > .05$)
- **Percentage of all crash drivers with a measured BAC $\geq$ .08 (-22.9%, $p < .05$)**
- Percentage of injury crash drivers with a measured BAC $\geq$ .08 (-19.7%, $p > .05$)
- **Percentage of all crash drivers with a measured BAC $\geq$ .15 (-22.5%, $p < .05$)**
- Percentage of injury crash drivers with a measured BAC $\geq$ .15 (-12.9%, $p > .05$)

As noted earlier, the results involving BAC data should be interpreted with caution because of the overall small numbers of crash-involved drivers with reported BACs. It is also important to note having only 12 months of crash data for the period after the law was passed limits the statistical power of the analyses for that period.

FARS Data

The figures and tables in this section and Appendix B provide annual counts, rates, and proportions of fatal crashes and fatalities in Utah compared to the rest of the United States (other 49 States and DC combined), and for the surrounding States of Colorado, Nevada, and Arizona to support descriptive comparisons. The monthly counts of fatal crashes, total fatalities, and drivers in fatal crashes for Utah were too small to support meaningful statistical analyses. Similar to the Utah State data measures created for this study, the monthly VMT data from TVT reports were summed to arrive at unadjusted annual VMT for 2019 and prior years to create the crash and fatality rates presented here. Using VMT data from other sources (e.g., State reports), or adjusted annual VMT from subsequent FHWA publications could result in different crash rate calculations.

Figure 4 presents a plot of annual fatal crashes per 100 million VMT for Utah and the other 49 States plus DC combined. As seen in Figure 4, Utah's fatal crash rate hit its lowest point during the 10-year span in 2019 (.69 fatal crashes per 100 million VMT), the first year when the law was effective. This represents a 19.8% decrease from 2016 (the last full year before the .05 law was passed) when the rate of fatal crashes per 100 million VMT was .86. The rest of the country showed only a 5.6% reduction during the same time period going from 1.08 to 1.02 fatal crashes per 100 million VMT.

Figure 4. FARS Fatal Crashes per 100 Million VMT

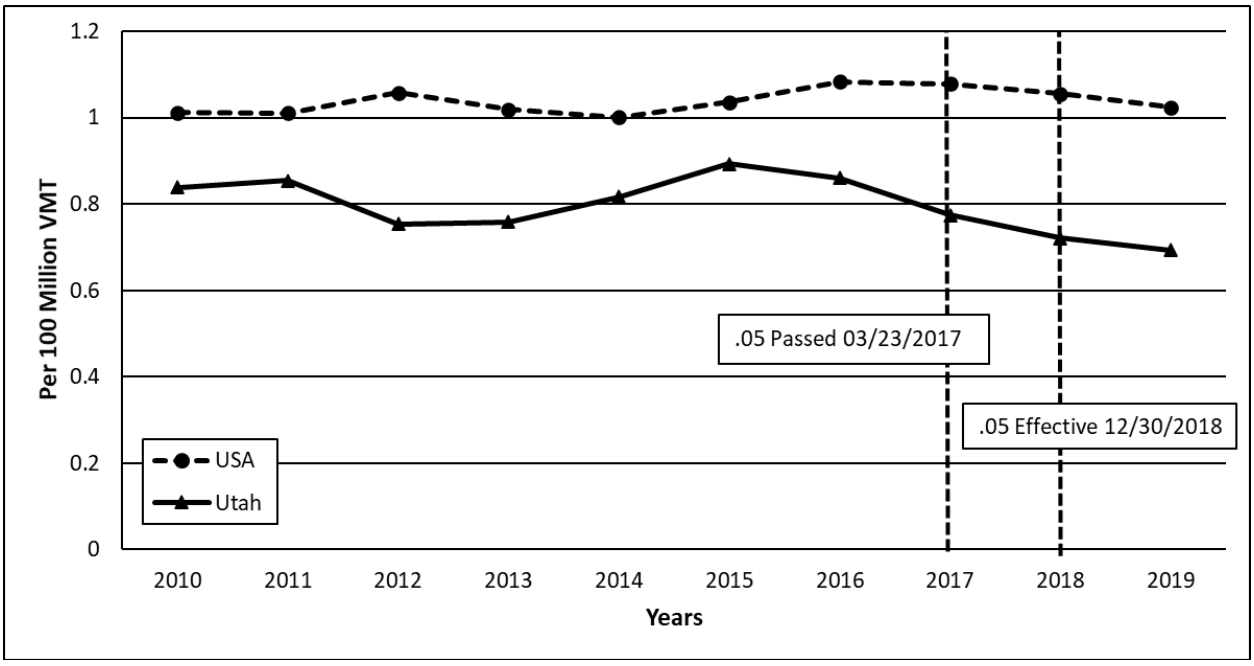
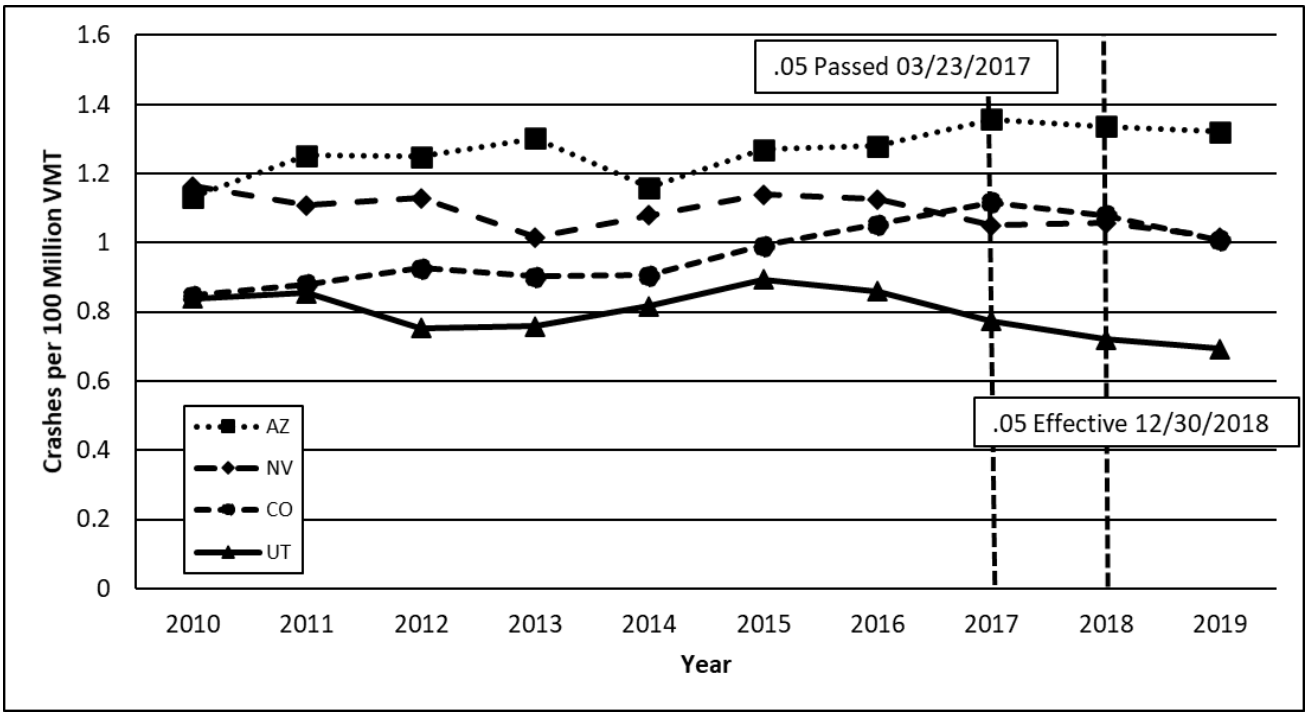


Figure 5 provides a plot of annual fatal crashes per 100 million VMT for Utah versus the surrounding States of Colorado, Arizona, and Nevada. Utah's 19.8% decrease in fatal crash rate from 2016 to 2019 was larger than the decreases observed for Colorado (3.8% rate reduction) and Nevada (9.7% rate reduction). Arizona saw a 3.1% increase in fatal crashes from 2016 to 2019.

Figure 5. Utah vs. AZ, CO, NV: FARS Fatal Crashes per 100 Million VMT



The annual values for the fatal crash measures in Utah (counts and rates of fatal crashes) for 2010 to 2019 are provided in Table 3. Equivalent data for the rest of the United States (other 49 States and DC) are also presented in Table 3, and data for Arizona, Colorado, and Nevada can be found in Appendix B.

As seen in Table 3, the rate of fatal crashes per 100 million VMT in Utah in which at least one driver had a BAC $\geq$ .01 (i.e., had a measured or imputed positive BAC) showed little variation from 2014 to 2018 before dropping to .14 in 2019, which was the lowest rate observed since 2012. A similar pattern was seen for other BAC cutoffs in 2019 with the fatal crash rate in Utah with at least one driver with a BAC $\geq$ .05 dropping to .13, BAC $\geq$ .08 dropping to .11, and BAC $\geq$ .15 dropping to .08. The rest of the country also showed reduced crash rates with drivers at or above BACs of .01, .05, .08, and .15 in 2019 (.33, .31, .29, and .19 respectively) – although the rates for the rest of the country were higher than those in Utah. Arizona, Colorado, and Nevada showed slight fluctuations in alcohol-involved fatal crash rates over time, but no large decreases in recent years (Appendix B).

Table 3. FARS Crash Level Measures (All Crashes Involve at Least One Fatality)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Utah										
Total Crashes	218.00	224.00	200.00	202.00	222.00	258.00	259.00	247.00	237.00	225.00
Crashes per VMT	0.84	0.85	0.75	0.76	0.82	0.89	0.86	0.77	0.72	0.69
BAC ≥ .01	45.20	54.70	38.10	40.80	52.50	48.30	52.80	53.80	59.10	46.10
BAC ≥ .01 per VMT	0.17	0.21	0.14	0.15	0.19	0.17	0.18	0.17	0.18	0.14
BAC ≥ .05	43.50	51.90	33.90	38.10	49.00	42.60	51.20	48.60	53.90	40.60
BAC ≥ .05 per VMT	0.17	0.20	0.13	0.14	0.18	0.15	0.17	0.15	0.16	0.13
BAC ≥ .08	41.10	47.10	29.80	35.60	47.30	39.50	46.40	45.80	51.70	36.20
BAC ≥ .08 per VMT	0.16	0.18	0.11	0.13	0.17	0.14	0.15	0.14	0.16	0.11
BAC ≥ .15	26.00	29.10	21.80	24.00	35.20	29.60	32.00	28.80	34.70	24.50
BAC ≥ .15 per VMT	0.10	0.11	0.08	0.09	0.13	0.10	0.11	0.09	0.11	0.08
U.S. (Other 49 States and DC)										
Total Crashes	30,078.00	29,643	30,806.00	30,000.00	29,834.00	32,280.00	34,489.00	34,313.00	33,682.00	33,019.00
Crashes per VMT	1.01	1.01	1.06	1.02	1.00	1.04	1.08	1.08	1.06	1.02
BAC ≥ .01	10,799.00	10,437.10	10,946.40	10,764.80	10,617.00	11,008.10	11,661.90	11,561.50	11,338.50	10,798.10
BAC ≥ .01 per VMT	0.36	0.36	0.38	0.37	0.36	0.35	0.37	0.36	0.36	0.33
BAC ≥ .05	9,957.60	9,265.70	10,085.60	9,930.00	9,805.40	10,087.50	10,771.10	10,724.30	10,524.30	9,947.40
BAC ≥ .05 per VMT	0.33	0.32	0.35	0.34	0.33	0.32	0.34	0.34	0.33	0.31
BAC ≥ .08	9,206.50	8,950.30	9,347.10	9,134.90	9,001.90	9,271.20	9,864.40	9,871.30	9,689.60	9,199.80
BAC ≥ .08 per VMT	0.31	0.31	0.32	0.31	0.30	0.30	0.31	0.31	0.30	0.29
BAC ≥ .15	6,472.80	6,138.80	6,615.60	6,239.40	6,173.30	6,175.10	6,656.50	6,779.20	6,623.70	6,248.20
BAC ≥ .15 per VMT	0.22	0.21	0.23	0.21	0.21	0.20	0.21	0.21	0.21	0.19

Note: VMT measures are per 100 million vehicle miles traveled. Monthly VMT data from TVT reports were summed to arrive at the unadjusted annual VMT for a year.

Figure 6 shows a plot of fatalities (all people killed in crashes) per 100 million VMT for Utah and the balance of the country (other 49 States and D.C.) from 2010 to 2019. Figure 7 provides a plot of annual fatalities per 100 million VMT for Utah versus the surrounding States of Colorado, Arizona, and Nevada. The annual counts and the rates of fatalities for Utah versus the rest of the US are provided in Table 4. Equivalent data for Arizona, Colorado, and Nevada are provided in Appendix B.

As seen in Figure 6, Utah's overall fatality rate per 100 million VMT for 2019 (.76) was the lowest observed during the 10-year span. This represents an 18.3% decrease from 2016's rate of .93 fatalities per 100 million VMT. The rest of the country showed only a 5.9% crash rate reduction during the same time period going from 1.18 to 1.11 fatalities per 100 million VMT. Utah's 18.3% decrease in fatality rate from 2016 to 2019 was larger than the decreases observed for Colorado (4.3% rate reduction) and Nevada (11.5% rate reduction). Arizona's fatality rate was the same in 2019 as it was in 2016.

Figure 6. Fatalities per 100 Million VMT

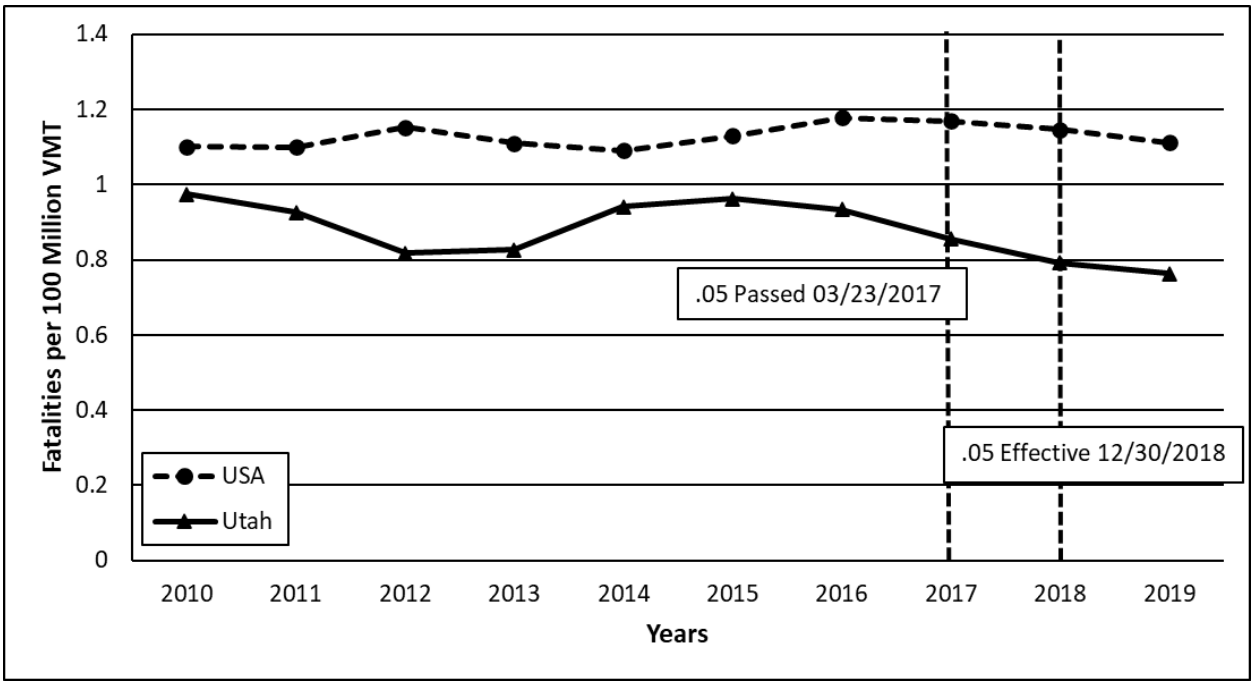
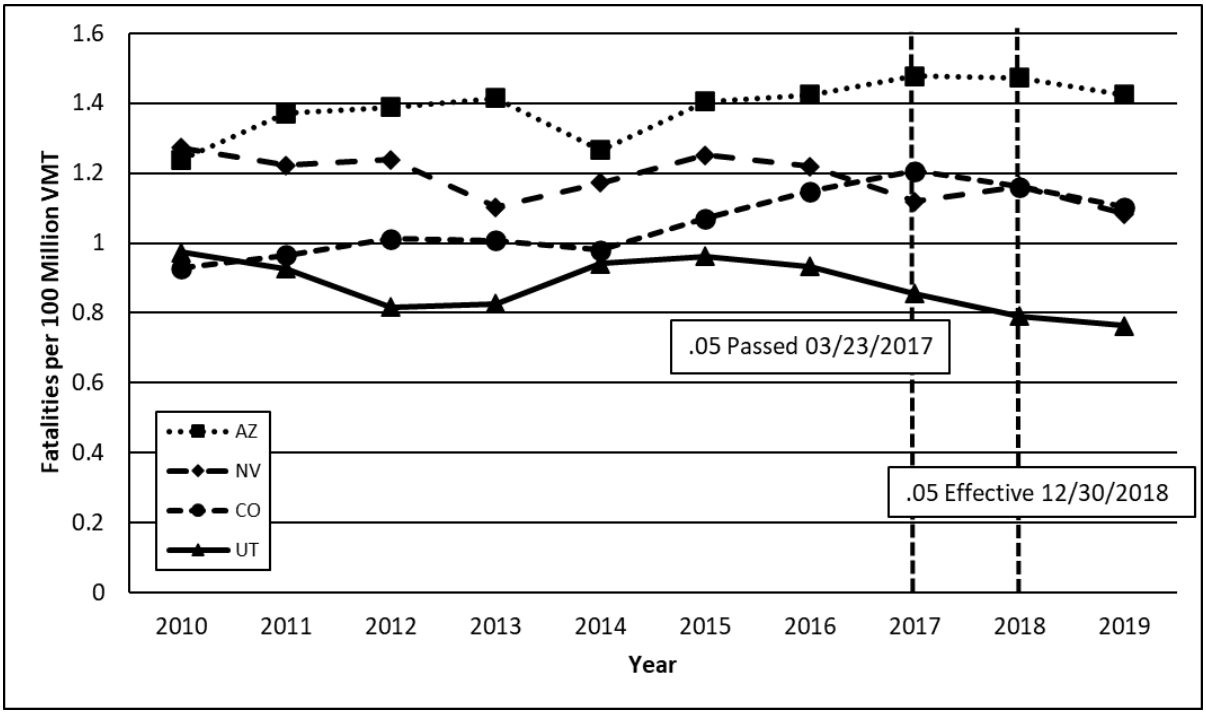


Figure 7. Utah Versus Arizona, Colorado, Nevada: Fatalities per 100 Million VMT



As shown in Table 4, Utah's fatality rate when at least one driver had a BAC ≥ .01 decreased to .15 in 2019, which was the lowest rate since 2012. A similar pattern was seen for other BAC cutoffs in 2019 with the fatality rate in Utah with at least one driver with a BAC ≥ .05 dropping to .13, BAC ≥ .08 dropping to .12, and BAC ≥ .15 dropping to .08. In 2019, the rest of the country also showed its lowest fatality rates per VMT during this time span for drivers at or above BACs of .01, .05, .08, and .15 (rates per VMT of .37, .34, .31, and .21, respectively), albeit at higher rates than observed in Utah. Arizona, Colorado, and Nevada showed slight fluctuations in alcohol-involved fatality rates over time, but no large decreases in recent years (Appendix B).

The percentages of all drivers in fatal crashes in Utah with BAC at or above .01, .05, and .08 cutoffs tended to fluctuate over time with no large decreases in the years after the law passed and was effective. The State's lowest percentage of drivers with a BAC ≥ .15 was in 2019 (7.05%) when the law was effective. The rest of the country also showed its lowest percentage of fatally injured drivers with a BAC at or above .15 in 2019 at 12.6%. Arizona, Colorado, and Nevada showed slight fluctuations in percentages of drivers at the various BAC thresholds over time, but no large decreases in recent years (Appendix B).

Table 4. FARS Person-Level Measures

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Utah										
Fatalities	253.00	243.00	217.00	220.00	256.00	278.00	281.00	273.00	260.00	248.00
Fatalities per VMT	0.97	0.93	0.82	0.83	0.94	0.96	0.93	0.86	0.79	0.76
BAC ≥ .01	50.40	62.30	40.20	43.00	62.80	55.60	59.40	60.00	70.90	48.50
BAC ≥ .01 per VMT	0.19	0.24	0.15	0.16	0.23	0.19	0.20	0.19	0.22	0.15
BAC ≥ .05	48.50	59.50	36.00	40.20	59.00	48.90	57.60	54.80	63.90	43.00
BAC ≥ .05 per VMT	0.19	0.23	0.14	0.15	0.22	0.17	0.19	0.17	0.19	0.13
BAC ≥ .08	46.10	53.70	31.90	37.10	57.00	45.80	52.70	52.00	61.60	38.50
BAC ≥ .08 per VMT	0.18	0.20	0.12	0.14	0.21	0.16	0.18	0.16	0.19	0.12
BAC ≥ .15	29.90	33.70	23.40	24.30	41.80	34.90	36.40	31.90	44.10	26.20
BAC ≥ .15 per VMT	0.12	0.13	0.09	0.09	0.15	0.12	0.12	0.10	0.13	0.08
% Driver BAC ≥ .01	14.35	16.62	13.12	14.67	15.31	11.96	13.38	14.05	16.30	14.01
% Driver BAC ≥ .05	13.80	15.76	11.63	13.38	14.21	10.57	12.99	12.66	14.84	12.41
% Driver BAC ≥ .08	13.06	14.03	10.24	12.51	13.62	9.67	11.77	11.92	14.26	11.09
% Driver BAC ≥ .15	8.36	8.62	7.42	8.40	10.06	7.21	8.06	7.42	9.60	7.05
U.S. (Other 49 States and DC)										
Fatalities	32,746.00	32,236.00	33,565.00	32,673.00	32,488.00	35,206.00	37,525.00	37,200.00	36,575.00	35,848.00
Fatalities per VMT	1.10	1.10	1.15	1.11	1.09	1.13	1.18	1.17	1.15	1.11
BAC ≥ .01	11,855.90	11,464.50	12,078.20	11,875.00	11,680.30	12,154.20	12,891.30	12,714.60	12,488.80	11,868.50
BAC ≥ .01 per VMT	0.40	0.39	0.41	0.40	0.39	0.39	0.40	0.40	0.39	0.37
BAC ≥ .05	10,915.10	10,559.20	11,106.60	10,933.90	10,784.00	11,131.20	11,902.20	11,774.90	11,572.90	10,928.00
BAC ≥ .05 per VMT	0.37	0.36	0.38	0.37	0.36	0.36	0.37	0.37	0.36	0.34
BAC ≥ .08	10,089.50	9,811.00	10,304.10	10,047.00	9,885.90	10,233.80	10,914.20	10,827.50	10,648.50	10,103.30
BAC ≥ .08 per VMT	0.34	0.33	0.35	0.34	0.33	0.33	0.34	0.34	0.33	0.31
BAC ≥ .15	7,080.70	6,724.00	7,251.70	6,845.20	6,823.40	6,825.90	7,383.40	7,424.90	7,277.50	6,845.30
BAC ≥ .15 per VMT	0.24	0.23	0.25	0.23	0.23	0.22	0.23	0.23	0.23	0.21
% Drivers BAC ≥ .01	25.66	25.01	25.20	25.35	25.23	23.76	23.73	23.30	23.50	22.54
% Drivers BAC ≥ .05	23.52	22.95	23.08	23.22	23.13	21.64	21.78	21.45	21.67	20.59
% Drivers BAC ≥ .08	21.58	21.24	21.27	21.20	21.09	19.76	19.82	19.62	19.80	18.90
% Drivers BAC ≥ .15	14.91	14.36	14.82	14.23	14.22	12.93	13.11	13.23	13.23	12.60

Note: VMT measures are per 100 million vehicle miles traveled. Monthly VMT data from TVT reports were summed to arrive at the unadjusted annual VMT for a year.

DUI Overtime Enforcement Activities

Table 5 provides information on grant-funded (State and Federal funding combined) DUI overtime enforcement activities for the State's fiscal years 2014 to 2019. Note that in any jurisdiction and across any time frame, it is difficult to interpret changes in numbers of arrests. The changes could be a result of more, or fewer, people exhibiting the suspected driving behavior. The changes could also be a result of increased, or decreased, law enforcement command emphasis (with associated funding) on a specific issue, or changes in numbers of available officers.

Table 5. Grant-Funded DUI Overtime Enforcement by State Fiscal Year

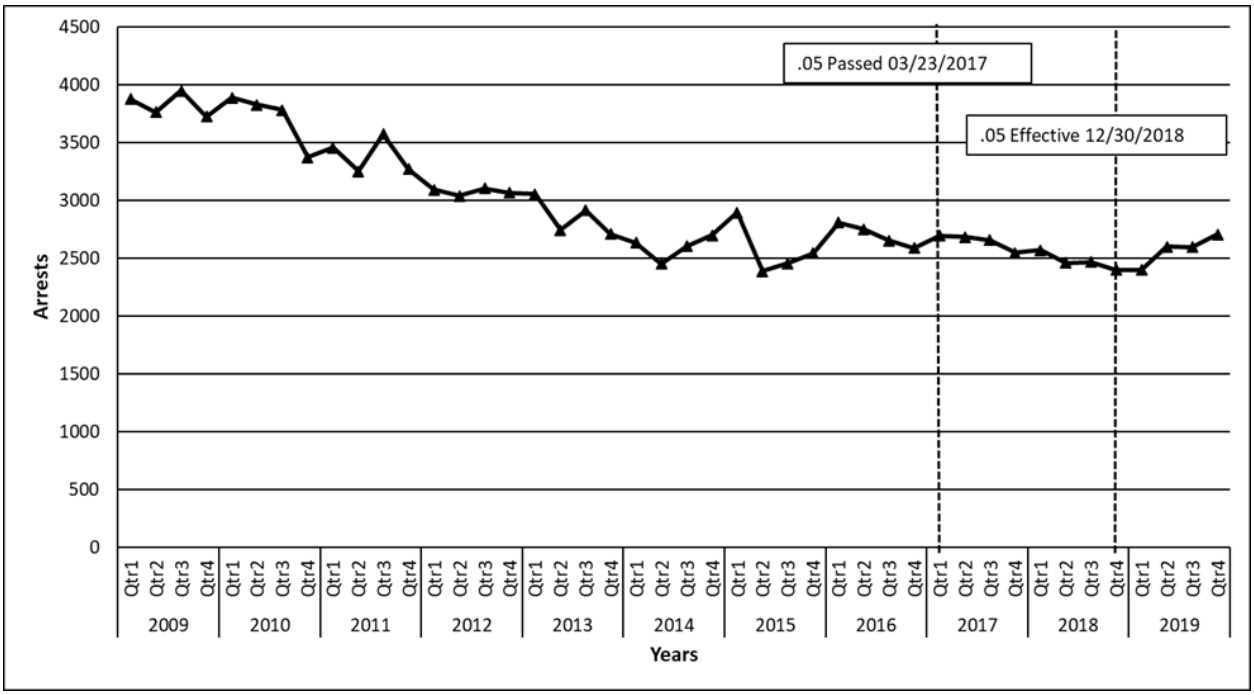
	2014	2015	2016	2017	2018	2019
Shift Labor						
Dollars spent	$1,017,634	$874,976	$843,640	$1,170,779	$1,351,371	$1,426,465
Agencies	179	202	191	200	169	184
Shifts	5,281	4,482	4,274	5,710	6,312	6,536
Hours	26,741.40	22,892.00	21,794.70	30,000.00	32,573.80	33,669.60
Stop Information						
Vehicles stopped	51,889	42,843	40,876	51,771	53,225	57,023
Stops per shift	20.05	19.94	20.27	20.78	18.67	19.09
Stops per hour	3.95	3.88	3.95	3.96	3.59	3.70
SFSTs conducted	3,292	2,715	2,192	2,900	3,045	3,085
Blood Test	668	636	744	1,059	1,182	1,221
Urine Test	253	213	270	390	500	554
DUI Arrests by Type						
Alcohol	1,201	940	810	1,023	1,091	1,126
Alcohol per shift	0.23	0.21	0.19	0.18	0.17	0.17
Other Drug	318	280	332	578	748	740
Drug per shift	0.06	0.06	0.08	0.10	0.12	0.11
Drug Metabolite	140	136	181	327	342	341
Metabolite per shift	0.03	0.03	0.04	0.06	0.05	0.05
Total	1,659	1,356	1,323	1,928	2,181	2,207
Total per shift	0.31	0.30	0.31	0.34	0.35	0.34
Other Arrests						
Youth Alcohol	653	467	512	749	664	609
Drug Felony	270	202	116	186	274	289
Drug Misdemeanor	805	719	977	1,637	2,008	2,166

As can be seen in the table, the total amount of grant money spent in Utah on DUI enforcement increased in recent years, but the UHSO indicated this increase in spending was not directly related to the passage of the .05 BAC law. The increased spending appears to have resulted in a corresponding increase in DUI enforcement shifts and total hours spent specifically on DUI-related activities. There was a large increase in the number of vehicles stopped in 2019 (the first year .05 was effective) compared to 2016 (the last full year before the .05 law was passed), but the rates of stops per shift and per hour declined in 2019 compared to 2016. While the number of SFSTs conducted fluctuated over time, the numbers of blood and urine tests conducted increased in recent years. The increase in overall DUI arrest counts during overtime enforcement appears to be related to increased arrests for drugs other than alcohol and drug metabolites, which more than doubled in 2018 and 2019 compared to 2016. Similarly, the number of drug misdemeanor arrests more than doubled from 2016 to 2019. The number of alcohol arrests did increase from 810 in 2016 to 1,126 in 2019, but the rate per shift dropped about 10.5% during the time period.

DUI Arrests – Driver License Data

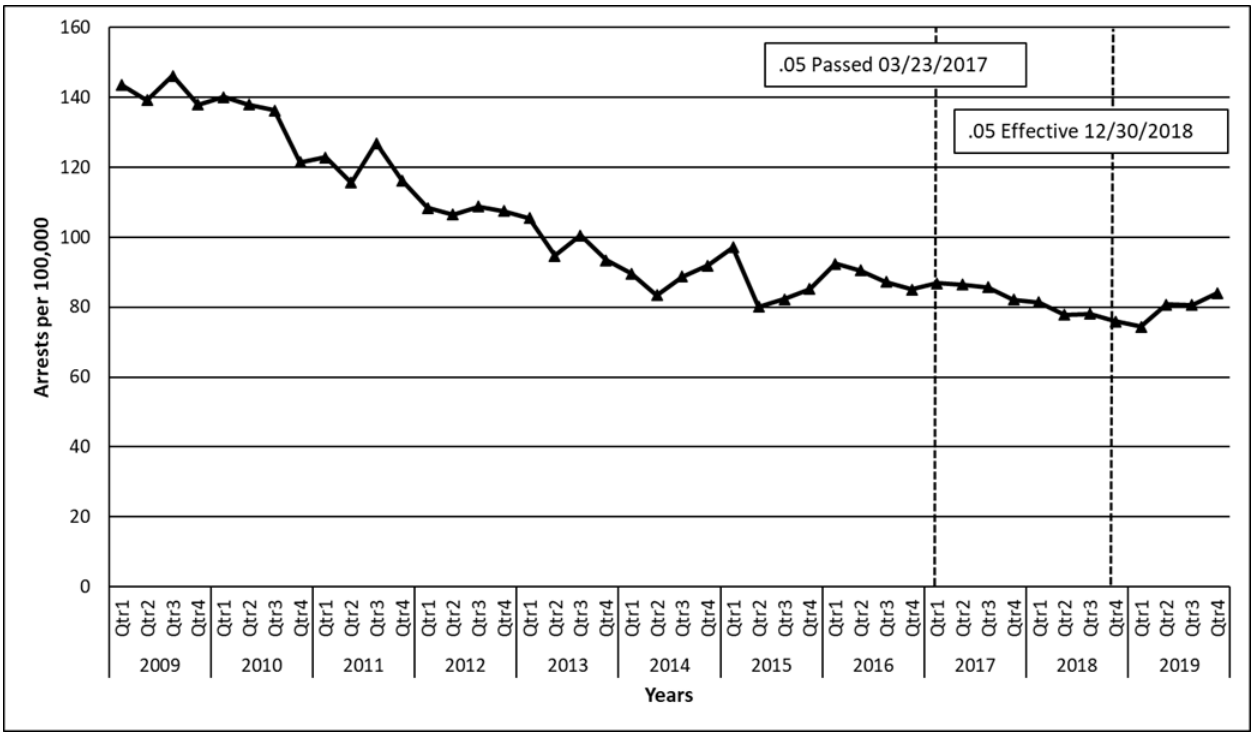
Figure 8 provides counts from driver license records of all DUI arrests by quarter for the covered period. The data show an overall decline in DUI arrests from 2009 to 2014. The number of arrests then fluctuates from 2015 through the first quarter of 2017. From the first quarter of 2017 (2,695 arrests) to the fourth quarter of 2018 (2,399 arrests) there was about an 11.0% decrease in arrests. The pattern then shifts in 2019 with arrests starting to increase again up to 2,707 in the fourth quarter of 2019 which is an increase of 12.8% from the fourth quarter of 2018.

Figure 8. Quarterly DUI Arrests



Because Utah's population has grown consistently in the last 10 years (approximately 20% from 2009 to 2019), it is also of interest to review population-based arrest rates. Figure 9 provides the quarterly rate of DUI arrests per 100,000 Utah residents.[12] The pattern of arrests per population is similar to that of the raw arrest counts in Figure 8. The quarterly arrest rate fell 12.6% from the first quarter of 2017 (87 per 100,000 population) to the fourth quarter of 2018 (76 per 100,000). Starting in 2019 the arrest rate began to rise again to 84 per 100,000 population in the fourth quarter which is a 10.5% increase from the fourth quarter of 2018.

Figure 9. Quarterly DUI Arrests per 100,000 Population



[12] The population-based rate was calculated by applying annual population data from the U.S. Census for each year to every quarter within that year.

As shown in Table 6, a large percentage of all DUI arrest cases reported to DLD for 2009 to 2019 did not include a measured BAC. The table also shows the level of BAC reporting has declined over time. While some number of cases would be expected to have no BAC reported (e.g., no search warrant obtained for a blood test after a breath test refusal), it is not known why such large percentages of DUI cases are missing BAC values each year. Regardless of the underlying reason for the low and changing BAC reporting rates, this pattern makes the interpretation of any changes in BAC levels of arrestees over time tenuous.

Table 6. Annual Percentage of DUI Arrests With BAC Reported

Year	Total DUIs	BAC Reported	% BAC Reported
2009	15,311	9,316	60.8
2010	14,870	8,415	56.6
2011	13,554	7,632	56.3
2012	12,303	6,643	54.0
2013	11,421	5,848	51.2
2014	10,389	5,021	48.3
2015	10,282	4,723	45.9
2016	10,804	4,463	41.3
2017	10,585	5,173	48.9
2018	9,899	5,171	52.2
2019	10,303	4,596	44.6

The following tables and figures describing BACs of arrestees include only cases where a numerical BAC value was recorded in DLD records. Table 7 provides the average annual reported BAC at arrest for 2009 to 2019.

Table 7. Annual Mean and Standard Deviation of BACs Reported to DLD

Year	*M*	(*SD)*
2009	.134	.064
2010	.136	.063
2011	.139	.064
2012	.144	.060
2013	.145	.059
2014	.146	.062
2015	.149	.061
2016	.149	.062
2017	.159	.069
2018	.164	.071
2019	.152	.072

Note: Only arrests with a BAC reported in the DLD data are included.

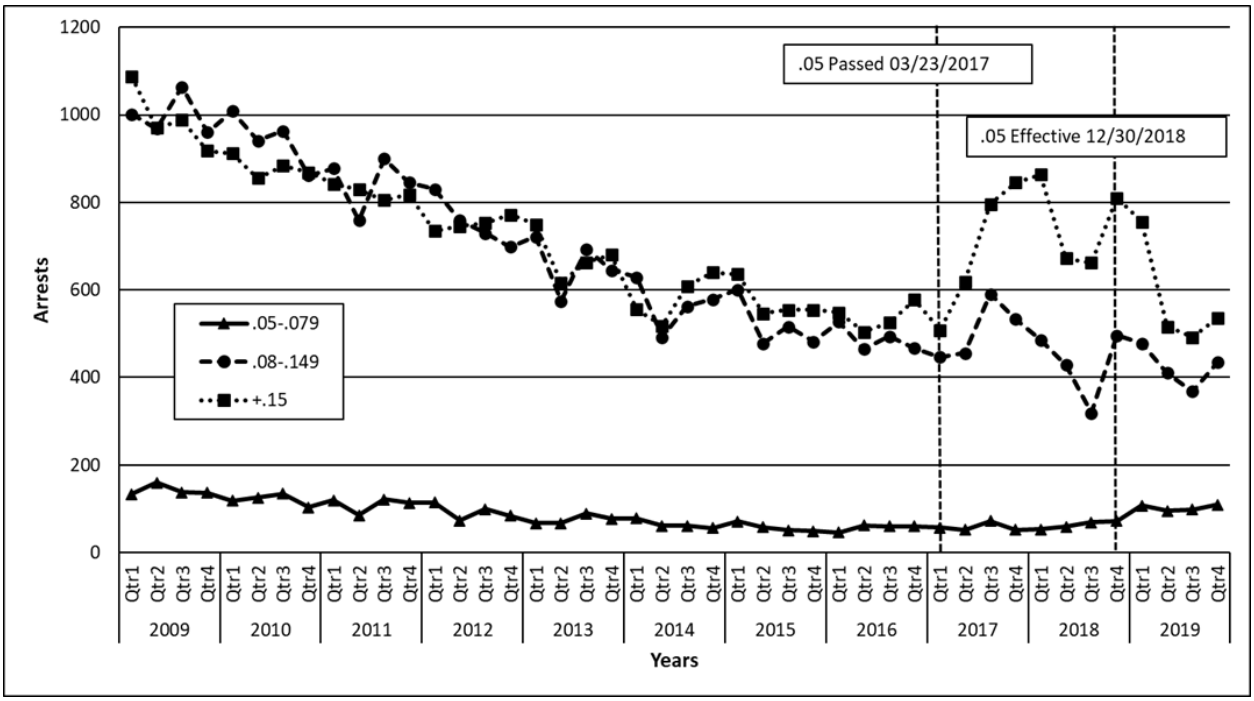
Table 8 and Figure 10 show the percentage of arrests in the .05 **to** .079 range increased in 2019 relative to prior years. The percentage of arrests for BACs .15 and above showed a noticeable increase in 2017 and 2018 before retreating to almost a pre-2017 level in 2019. Given the possible issues with BAC reporting discussed above, these results must be interpreted with caution.

Table 8. Annual Number and Percentage of BACs Reported in Each Range

Year	.00	.01-.049	.05-.079	.08-.149	.15+
2009	376 (4.0)	414 (4.4)	569 (6.1)	3,994 (42.9)	3,963 (42.5)
2010	277 (3.3)	361 (4.3)	481 (5.7)	3,775 (44.9)	3,521 (41.8)
2011	132 (1.7)	386 (5.1)	438 (5.7)	3,382 (44.3)	3,294 (45.2)
2012	18 (0.3)	232 (3.5)	370 (5.6)	3,017 (45.4)	3,006 (45.2)
2013	16 (0.3)	187 (3.2)	300 (5.1)	2,635 (45.1)	2,710 (46.3)
2014	18 (0.4)	163 (3.2)	256 (5.1)	2,262 (45.1)	2,322 (46.2)
2015	8 (0.2)	119 (2.5)	229 (4.8)	2,077 (44.0)	2,290 (48.5)
2016	11 (0.2)	116 (2.6)	228 (5.1)	1,953 (43.8)	2,155 (48.3)
2017	12 (0.2)	133 (2.6)	233 (4.5)	2,027 (39.2)	2,768 (53.5)
2018	2 (0.1)	178 (3.4)	253 (4.9)	1,730 (33.4)	3,008 (58.2)
2019	1 (0.1)	194 (4.2)	409 (8.9)	1,692 (36.8)	2,300 (50.0)

Note: Only arrests with a BAC reported to DLD are included.

Figure 10. Quarterly DUI Arrests by BAC Ranges



Note: Only arrests with a BAC reported to DLD are included.

Utah Traffic Code § 41-6a-502 encompasses DUI offenses arising from the use of alcohol and/or drugs. In its databases, DLD uses available information on an arrest to create a categorization of the type of DUI using the American Association of Motor Vehicle Administrators (AAMVA, 2017) codes and descriptions for alcohol and controlled substance violations. Table 9 provides the counts and percentages of the violations by type for 2009 to 2019. A single incident/arrest for an individual could have several codes applied and be counted in more than one category in the table below (e.g., per se alcohol offense and drug metabolite).

Table 9. DUI Arrest Types by Year

	Refused Alcohol Test N (%)	Underage Per Se (.02+) N (%)	Per Se .08/.05 N (%)	Drugs Only* N (%)	Drug Metabolite N (%)
2009	1,758 (11.5)	864 (5.6)	12,493 (81.6)	N/A	175 (1.1)
2010	1,455 (9.8)	779 (5.2)	12,458 (83.8)	N/A	173 (1.2)
2011	1,300 (9.6)	676 (5.0)	11,362 (83.8)	N/A	198 (1.5)
2012	1,368 (11.0)	562 (4.5)	10,289 (82.5)	N/A	152 (1.2)
2013	1,298 (11.1)	509 (4.4)	9,415 (80.5)	54 (0.5)	186 (1.6)
2014	1,257 (11.8)	420 (4.0)	8,514 (80.1)	153 (1.4)	127 (1.2)
2015	1,258 (12.0)	382 (3.6)	8,479 (80.8)	120 (1.1)	217 (2.1)
2016	1,393 (12.7)	341 (3.1)	8,828 (80.3)	173 (1.6)	229 (2.1)
2017	1,398 (12.9)	341 (3.2)	8,543 (79.1)	203 (1.9)	292 (2.7)
2018	1,401 (13.9)	295 (2.9)	8,005 (79.4)	143 (1.4)	228 (2.3)
2019	1,517 (14.1)	342 (3.2)	8,512 (79.1) †	190 (1.8)	147 (1.4)

†Start of .05 per se law.
*In 2013 DLD started using a new code to indicate a DUI arrest was for drugs other than alcohol.

State Media Efforts Associated With the .05 BAC Law

Media activities by Utah related to impaired driving and any changes associated with the .05 BAC law are summarized below.

Purpose of Initiatives

Across all years reviewed, the main goal of the paid media impaired driving initiatives was to provide general information and education to the public. Media efforts were often coordinated with law enforcement activities as part of high-visibility enforcement campaigns. During the 21-month period between passage of the .05 BAC legislation and when the law went into effect, the UHSO did not mount any special publicity campaigns about the law change.

Types of Media Used

From 2012 to 2017 traditional outdoor advertising (e.g., billboards) and radio ads were utilized in conjunction with non-traditional creative advertising such as creating 3-D images of prison visiting booths, zombies, use of 8-foot nutcracker statues, living saint statutes (designated drivers), decorated State liquor stores, and a holiday tree made of shattered glass and car parts.

More recently, the State began using digital billboards, online videos, social media influencers, streaming, and satellite radio to reach target audiences. Social media has been used to highlight campaigns on the Facebook News Feed, Instagram Feed, Facebook and Instagram Stories, and other media internet marketing outlets. None of these recent changes in media type use were prompted by the BAC law change.

Media Messaging

A wide variety of creative messages and strategies were used for campaigns over the years reviewed. In addition to locally created content, campaigns took advantage of material and content provided by the NHTSA national campaign*, Drive Sober or Get Pulled Over*. In more recent years (2017 and 2018), NHTSA's *Buzzed Driving Is Drunk Driving* messaging was featured with an emphasis on zero tolerance for any level of impairment. There was also a focus (2018 and 2019) on driving impairment from drugs other than alcohol with the *DUI Doesn't Just Mean Booze* campaign. This campaign's logo incorporated an image of pill capsules and a cannabis leaf.

In 2019 there was an overall shift in focus from campaigns targeting certain holidays and specific months to an "evergreen campaign," which was designed to work year-round to remind residents there is a constant police presence through the use of the "365 Days Per Year – We're Out There" message. This change in messaging was not prompted by the .05 law.

Specifically related to the .05 BAC law change, DPS posted a fact sheet on their website during March 2017. It described the types of physical and mental function losses that take place at a .05 BAC level and explained that the new law would not involve any significant changes to the DUI enforcement approach taken by the State. In preparation for questions from media outlets and the public, a Frequently Asked Questions (FAQ) document was also developed along with a short video entitled *Business as Usual* (Utah DPS, n.d.), featuring the Colonel Michael Rapich of the Utah Highway Patrol (Utah DPS, 2018). The video emphasized that law enforcement officers would continue to make arrests based on observed impairment, and that BAC level is only one element in determining driver impairment. The video was posted on the DPS website and on its Facebook page, and on YouTube.

Primary and Secondary Target Audiences

Although not always specifically cited in annual reports for all campaigns, the primary and/or secondary audiences targeted by DUI prevention media efforts in Utah included young men, young drivers of both sexes, high school and college students, customers of venues that serve alcohol, and purchasers of alcohol. Young men in the 21-to-39 and/or 17-to-34 age ranges were the most frequently targeted audiences for campaigns as well as young drivers and students (male and female) who drink at bars, concerts, and restaurants. There were instances of targeting specific audiences such as customers of certain businesses who co-sponsored campaigns. There were also general target audiences such as drivers on Interstate 215, downtown residents, and educators as intermediaries. Target audiences did not change after the .05 BAC law passed.

Targeted Locations

DUI campaign efforts targeted specific geographic areas of the State such as the Wasatch Front (Salt Lake City, West Valley City, Provo, West Jordan, Layton, and Ogden), Salt Lake City alone, and Sandy. Other targeted locations included Utah colleges, business types such as bars,

liquor stores, theaters/amphitheaters, and shopping malls. Ads were also placed in outdoor locations on highways, near parks and lakes, and on public transit. Targeted locations did not change relative to the .05 BAC law passage.

Funding Sources

Most of the funding for media came from the Utah DPS through the use of State and Federal funds. The Utah DABC and Department of Natural Resources also provided some funding for campaigns. In addition, Utah colleges funded some local activities. During this timeframe, a variety of private sponsors also sponsored media campaigns. The most frequent sources were local bars and restaurants, and three different advertising agencies. Other private sponsors included a rideshare company, two taxi companies, a book publisher, a national hardware store chain, a sporting goods store, a gas station, a movie theatre, and an auto exposition. Although not in recent years, three impaired-driving advocacy groups (Use Only as Directed, MADD, and Zombies Against Drunk Driving) each funded separate campaigns. No private funds were used for media campaigns in 2018 or 2019.

Opposition to the .05 BAC Law After It Passed

Legislative Opposition

After the .05 BAC law was passed and signed by Governor Herbert but not yet effective, there were two bills introduced attempting to delay implementation of the law. A House Bill was proposed to delay the .05 BAC law effective date by one year to December 30, 2019, along with other modifications. A Senate Bill proposed to modify the effective date of the law contingent on three other States passing .05 BAC laws before Utah's .05 BAC law would become effective. Neither bill passed.

As part of an education effort for legislators, two "wet labs" were conducted where volunteers drank to a measured .05 BAC. A qualified law enforcement officer then had participants complete the SFST that would normally be conducted if a driver was suspected of DUI. The legislators observed the SFSTs and interviewed the volunteers. All of the volunteers indicated they would not drive at their current level of impairment.

Opposition in the Media

A number of local and national news outlets ran stories on the law change before and after it passed. Most of the pieces that included some level of opposition to the lower BAC limit focused on the potential impacts of the law change on food and beverage industry sales, the notion that no traffic safety benefits would be realized, or that the law would criminalize people who have one or two drinks and drive. Many of the stories included references to alcohol impairment charts showing a BAC of .05 can be reached in as few as one or two drinks. Others included statements that distracted driving is more dangerous than driving at a BAC of .05, or that older adults are more dangerous than someone driving at low BACs. Still other stories focused on religion as a motivating factor for passing the law.

In July of 2017 an advocacy group ran a full-page advertisement in the *Salt Lake Tribune* (Stephenson, 2017) that included photos of Utah lawmakers over age 65, including the Governor, with the headline "Too Impaired to Drive?" (Figure 11). The advertisement claimed (incorrectly) older drivers are impaired "any time" on the road and asks if they too should go to jail, for

driving while older," if a person driving at a BAC of .05 could be arrested under the new law for[13] The advertisement also told readers to "Tell Utah legislators to repeal the misguided 0.05 BAC arrest law." The website listed in the advertisement is no longer active. Also shown in Figure 11 is an advertisement that ran in Idaho and Nevada that included the headline "Utah: Come on Vacation, Leave on Probation" with a mugshot of a woman holding a sign that reads "Crime: Had one drink with dinner" (Davidson, 2017).

Figure 11. Advertisements Against .05 BAC Law

Note: The information presented in these advertisements should not be taken as facts. The claims made in these types of advertisements are often not supported by valid and reliable research conducted by independent parties, or may include research findings taken out of context.

[13] The advertisement did not include a citation for the statement about drivers, age, and impairment.

Public Awareness, Attitudes, and Self-Reported Behaviors

Focus Groups

The first four focus groups conducted by Utah took place in November 2018 just before the law became effective, and four more were conducted in November 2019, which was 11 months after the law became effective (Lighthouse Research & Development, Inc., 2018b, 2019b). In both 2018 and 2019, two focus groups were composed of a mix of people who consumed alcoholic beverages and those who did not. The two other focus groups in each period included only people who consumed alcoholic beverages. A total of 25 participants were included in each year's focus groups. Table 10 provides some perceptions of the focus group participants regarding the benefits and drawbacks of the new .05 BAC law.

Table 10. Focus Group Perceived Benefits and Drawbacks of .05 BAC Law

	2018	2019
Perceived Benefits	• Cause people to be more aware of how much they drink while away from home • Potential increased safety on Utah's roads	• Increased cognizance of drinking • Potential to save lives • Drinkers will plan ahead • Good for the rideshare industry • Increased revenue for the State
Perceived Drawbacks	• Punishes casual drinkers • Negative impact on travel/tourism • Ties up law enforcement resources • Will not impact change	• DUIs for drivers who are not drunk • Bad for business • Places Utah in a negative light

Among those who drank alcoholic beverages, participants most frequently said they used a designated driver to return home, used Uber or Lyft, or used Trax (public transportation). Some, however, said they still drove themselves home when drinking outside their home. In 2019 five of the participants who drank alcoholic beverages reported making changes in their behaviors since the law took effect. These people indicated they changed their behaviors because they did not want to get a DUI and risk ruining their reputations. The most frequent response of those who had not made changes in their behaviors was that they already drank responsibly, and no adjustment was necessary.

In 2019 there were 10 participants who said they were aware of friends or family members who had altered their drinking and driving behavior since the change in the BAC law including:

- Decreasing alcohol consumption while away from home;
- Talking and planning more;
- Getting an Uber or Lyft; or
- Waiting a while for the alcohol to leave their system.

Telephone Surveys

Utah's computer-assisted telephone interviewing approach was used to gather information from a random sample of 808 Utah residents in November 2018 and 802 residents in October 2019 (Lighthouse Research & Development, Inc., 2018a, 2019a). Selected descriptive results by

survey topic based on information presented in the reports are presented below. The referenced Lighthouse reports to the State include more detailed results for the survey items.

Alcoholic Beverage Consumption. In 2018 there were 33.9% of the sample who indicated they personally consumed alcoholic beverages compared to 31.0% in 2019. There were virtually no differences between 2018 and 2019 in reported place of drinking (e.g., home, restaurant), frequency of drinking, number of drinks consumed per sitting, or transportation used to get home when drinking.

Knowledge of the Legal Limit. Participants were asked, **"**Do you know what the current blood alcohol content legal limit is in Utah while driving? If yes, what is the current blood alcohol content legal limit in Utah while driving?" As shown in Table 11, there was a notable increase in the percentage of drinkers who knew the correct new limit in 2019 versus 2018. The percentage of non-drinkers knowing the correct BAC limit in 2019 stayed virtually the same as in 2018. Some of the difference for drinkers may have been due to confusion over when the .05 law was effective because in 2018 26.6% of drinkers and 12.6% of the non-drinkers thought the limit was .05 even though the law had not yet taken effect.

Table 11. Respondents Knowing Correct BAC Limit by Year

	Drinkers		Non-Drinkers	
	2018	2019	2018	2019
	N=274	N=249	N=533	N=553
Knew Correct BAC Limit	31.3%	54.2%	20.6%	20.3%

Impression of the Change in the BAC Limit to .05. Respondents were read a statement telling them about the BAC law change from .08 to .05 and asked to "Please rate your impression of this change in the blood alcohol legal limit, using a scale of one to seven, where one is very negative and seven is very positive." As shown in Table 12, self-reported drinkers had a less favorable impression of the law change than non-drinkers both before and after the effective date with neither group changing much over time.

Table 12. Impressions of BAC Limit Change

	Drinkers		Non-Drinkers	
	2018	2019	2018	2019
	N=274	N=248	N=530	N=548
1 Very Negative	34.7%	32.3%	8.9%	4.6%
2	15.7%	10.1%	2.5%	2.4%
3	11.7%	14.1%	5.7%	5.1%
4	8.8%	12.9%	11.3%	10.6%
5	9.5%	10.5%	8.5%	11.5%
6	6.2%	4.8%	11.9%	11.7%
7 Very Positive	12.4%	14.9%	47.2%	49.1%
Don't Know	1.1%	0.4%	4.2%	5.1%

Changes in Drinking and Driving Behavior. In the 2018 survey drinkers were asked: "Do you plan to make changes to your behavior once the law changes?" For 2019, the question was changed to read: "Have you made any changes to your behavior since the law is now in effect?" In 2018, 14.6% of drinkers indicated plans to change behaviors as result of the impending new law. In 2019, 22.1% of drinkers indicated they had, in fact, changed their behaviors once the law went into effect. Table 13 shows the most common behavior modifications reported among the drinkers who indicated they were going to or had changed behaviors. A respondent could report more than one type of change in behavior.

Table 13. Self-Reported Planned or Actual Changes in Behaviors

	2018	2019
	N=40	N=55
Make Sure Transportation Is Available (Uber, Lyft, Designated Driver)	12.5%	25.5%
Only Drinking at Home / Not Drinking When Out	12.5%	23.6%
Decrease Amount of Alcohol Consumed	27.5%	20.0%
Be More Aware / Careful	20.0%	14.5%
Will Not Drink and Drive	12.5%	12.7%

Note: Table only includes drinkers who reported a change in behavior.

Social Media Comment Themes

Study staff searched Google, Facebook, Twitter, and YouTube for news stories, videos, or other posts related to the .05 BAC law change for the period January 1, 2012, to December 31, 2019, to identify themes in the posts. This search produced 27 links with relevant content resulting in the examination of 265 comments. The posting dates ranged from March 1, 2017, to April 5, 2019. Depending on the platform, users could comment directly or reply to other users' comments. Twelve main themes emerged with examples shown in Table 14. A single comment could contain several themes. Each comment was also coded as to whether it was generally positive, negative, or neutral in tone with respect to the change in Utah's law.

Table 14. Social Media Comment Themes and Examples

Theme	Description	Examples
Objective/Factual	Provides objective information	• Might be the strictest in the nation, but .05 BAC legal limit is the most common worldwide. • Studies from countries who went from .08 to .05 saw reduced crashes at all levels, including above .08. They estimated that the stricter law was a deterrent for all drivers who might have driven impaired.
Not Addressing Public Safety/DUI	Enforcement does not really address the problem or will have a negative impact on the public	• Make more people criminals. • Give police more reasons to interfere with liberty. • Give more work to attorneys. Marginally promote safety.
Limit Too High/Low	Specific mention of the numerical value of the per se limit being high or low	• This is pointless, no one is impaired at .05. • Nice to see a State finally taking DUIs seriously. Should be .01.
Political Motives	Law was politically motivated	• I view the .05 law as an attempt to drive a political career.
Religion	Religion as the motivating factor	• It's the Mormon Church playing politics.
Mothers Against Drunk Driving (MADD)	Specifically mentions MADD	• This is a measure pushed by MADD, which has morphed into a neo-prohibitionist organization run by professional fundraisers and is dedicated to reducing the consumption of alcohol.
Believe to be Effective	Law will have a positive effect	• Good, will save some lives.
Believe to be Ineffective	Law will have no effect or a negative effect	• The new Utah law makes NO DIFFERENCE to Utah driving safety. The new law is posturing; not deterrence.
Increased Revenue for State	Law was passed for revenue reasons	• Seems to me that Utah just wants to make sure they can suck fines and court fees out of an even larger percentage of the population. That's all this is designed to do. • What a stupid idea. They must be desperate for revenue, and don't want to raise taxes. It's about fining drivers, not safety.
Negative Effect on Businesses/Economy	Local businesses will be adversely affected	• Bad business for all dining and drinking establishments.
Setting an Example for Others	Utah as an example for others	• This is great! All States need to follow this example.
Expressing Personal Opinion	Personal opinion about drinking and driving	• I think you should lose your license permanently for any alcohol content!

Overall, 58.9% of the comments expressed a negative view of the new .05 BAC law, 24.9% a positive view, and 16.2% a neutral view. Table 15 provides the counts of comments that contained each theme described above.

Table 15. Number of Comments Containing Each Theme

Theme	n	%*
Objective/Factual	13	4.9
Not Addressing Public Safety/DUI	66	24.9
Limit Too High/Low	32	12.1
Political Motives	7	2.6
Religion	36	13.6
MADD	11	4.2
Believe to be Effective	15	5.7
Believe to be Ineffective	52	19.6
Increased Revenue for State	41	15.5
Negative Effect on Businesses/Economy	17	6.4
Setting an Example for Others	13	4.9
Expressing Personal Opinion	59	22.3

*The total of the percentages exceeds 100% because some comments contained several themes.

Alcohol Sales, Sales Tax Revenues, and Travel/Tourism

Alcohol Sales

Figure 12 shows DABC's annual dollar amount of alcohol sales net of taxes for the fiscal years 2012 to 2020. Sales in Utah had been increasing at a steady pace and continued that trend through FY 2020. The increase in sales at DABC stores in FY 2020 is notable given the law adopted in November 2019 allowing heavy beer sales outside of DABC stores (e.g., at grocery and convenience stores) for the first time. Gross profit and sales tax collected continued to increase through FY 2020 (Table 16 and Table 17). Cases sold had been increasing as well through FY 2019, but the change in the heavy beer law likely affected the total number of cases sold specifically in DABC stores in FY 2020.

Figure 12. DABC Annual Alcohol Sales Net of Taxes FY 2012 - 2020

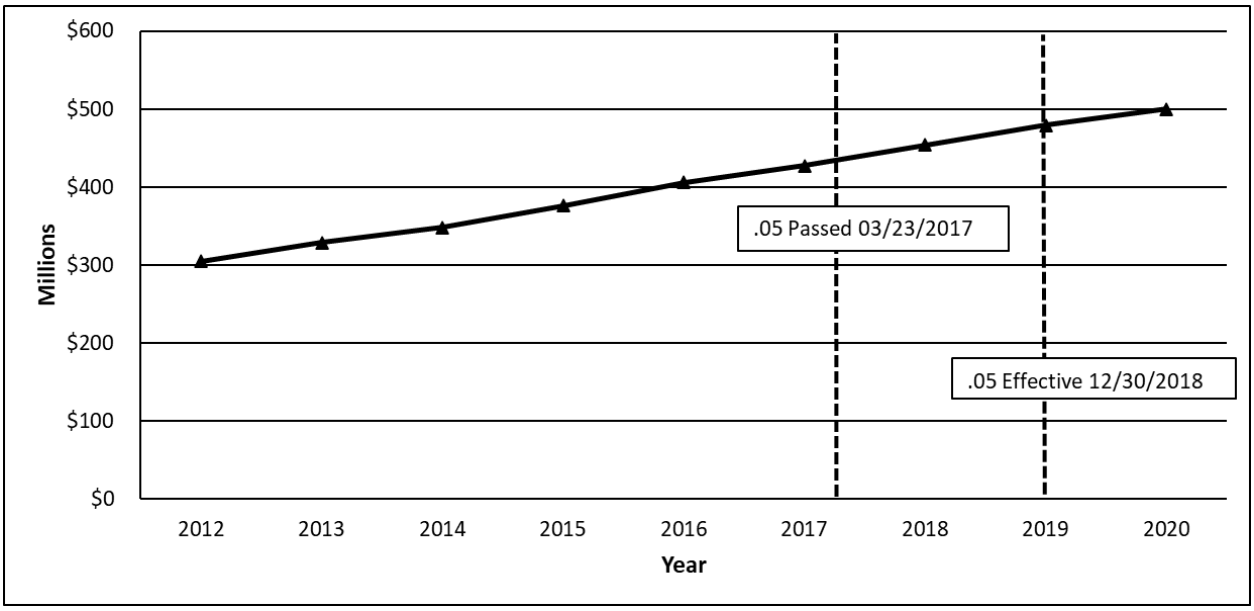


Table 16. Measures of Utah DABC Alcohol Sales for FY 2012 - 2020

Measure	2012	2013	2014	2015	2016	2017	2018*	2019*	2020*
Sales Net of Taxes ($)	304,883,697	328,912,217	348,453,487	376,238,719	405,911,384	427,606,013	453,689,000	479,324,000	500,212,000
Gross profit	140,812,503	154,008,906	162,281,115	173,068,079	186,732,544	194,527,614	209,137,000	220,054,000	229,517,000
Other Income ($ for Permits, Licenses, Fees)	3,129,636	3,996,107	3,656,219	3,520,511	3,597,916	3,776,720	4,355,000	4,622,000	5,388,000
Sales Tax ($)	17,087,011	17,882,083	18,751,649	20,187,202	21,747,746	23,152,093	24,458,000	26,532,000	29,594,000
Cases Sold	2,814,454	2,932,249	3,057,085	3,230,925	3,418,914	3,518,742	3,663,000	3,913,000	3,810,000

*Rounded to nearest thousand dollars in DABC reports.

Table 17. Percent Change in Alcohol Sales From Prior Year for FY 2013 - 2020

Measure	2013	2014	2015	2016	2017	2018	2019	2020
Sales Net of Taxes	7.88%	5.94%	7.97%	7.89%	5.34%	6.10%	5.65%	4.36%
Gross profit	9.37%	5.37%	6.65%	7.90%	4.17%	7.51%	5.22%	4.30%
Other Income (Permits, Licenses, Fees)	27.69%	-8.51%	-3.71%	2.20%	4.97%	15.31%	6.13%	16.57%
Sales Tax	4.65%	4.86%	7.66%	7.73%	6.46%	5.64%	8.48%	11.54%
Cases Sold	4.19%	4.26%	5.69%	5.82%	2.92%	4.10%	6.83%	-2.63%

Annual per capita consumption of spirits and flavored malt beverages, as estimated by DABC, continued to increase through FY 2020 (Table 18). Per capita consumption of wine began leveling off in FY 2016. Per capita consumption of heavy beer sold at DABC stores had been increasing through FY 2019, but as the heavy beer sales law affected DABCs sales at its stores, subsequent per capita estimates based on those sales went down in FY 2020. Similarly, the total per capital alcohol consumption estimate likely was affected in FY 2020 by lower heavy beer sales at DABC stores.

Table 18. Annual Per Capita Consumption (Gallons) by Beverage Type

Beverage Type	2012	2013	2014	2015	2016	2017	2018	2019	2020
Wine	1.065	1.088	1.101	1.129	1.158	1.183	1.163	1.154	1.168
Spirits	0.913	0.925	0.935	0.962	0.987	1.032	1.025	1.049	1.126
Heavy Beer	0.514	0.520	0.541	0.584	0.622	0.656	0.679	0.713	0.534
Flavored Malt Beverages	0.052	0.063	0.077	0.084	0.082	0.070	0.064	0.091	0.109
Total	2.544	2.596	2.654	2.759	2.849	2.941	2.931	3.007	2.937

Sales Tax Revenue

Figure 13 provides quarterly revenue data for restaurant and transient room sales taxes for the entire State. Both restaurant and transient room tax revenues continued their upward trends after the law was passed.

Figure 13. Tax Revenue From Restaurant and Transient Room Sales

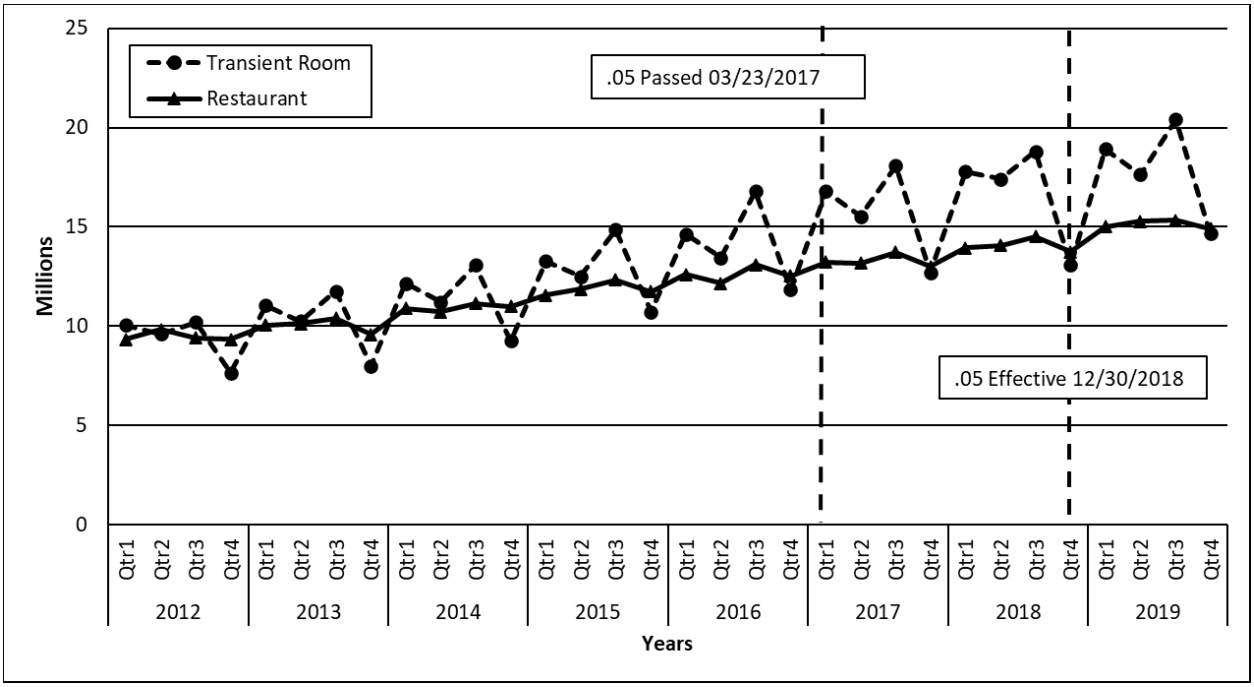
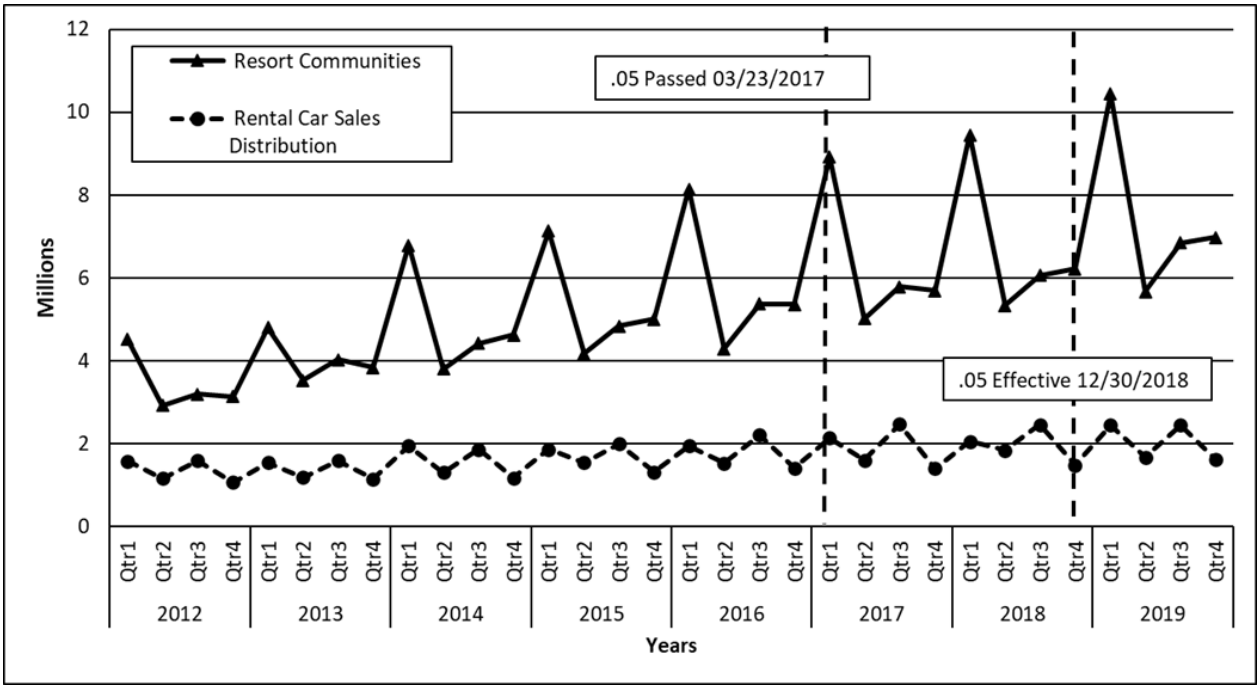


Figure 14 provides data on quarterly sales tax revenue data from rental car and resort community sales. As can be seen in the figure, both continued their upward trends after the .05 law was passed.

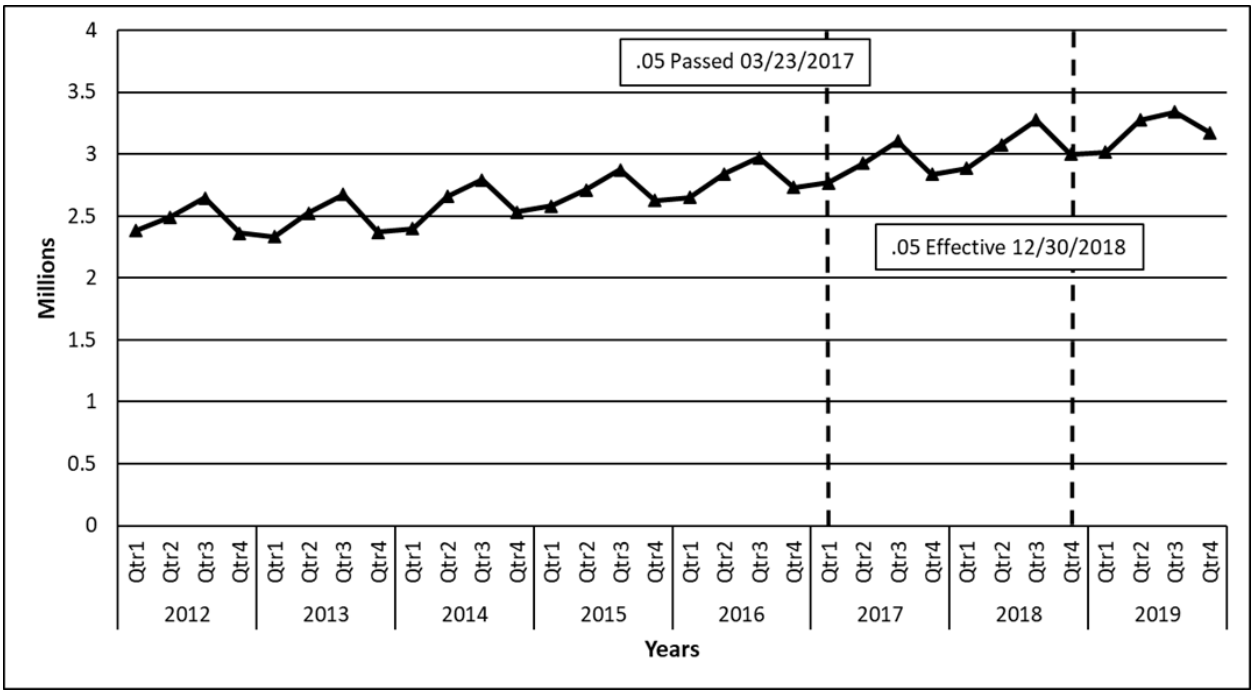
Figure 14. Tax Revenue From Rental Car and Resort Communities Sales



Domestic Air Travel to Salt Lake City

As shown in Figure 15, the upward trend in passengers flying to Salt Lake City continued after the law was passed.

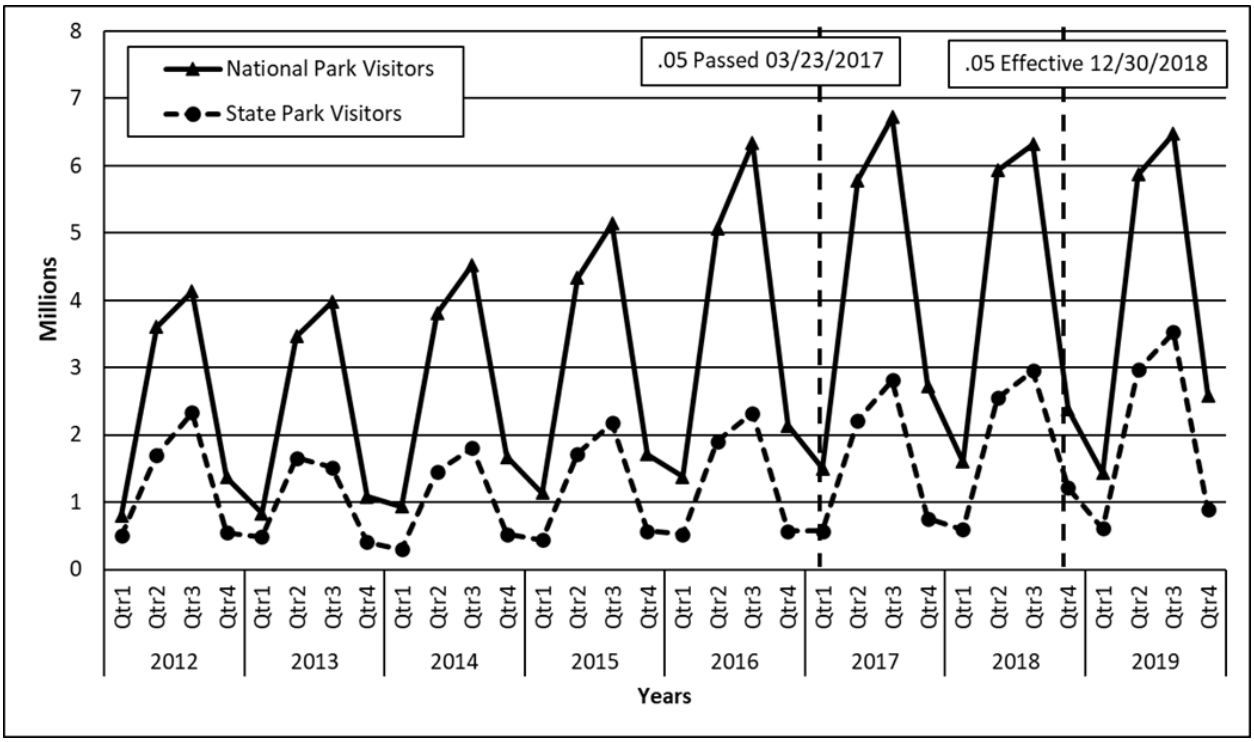
Figure 15. Domestic Travel to Salt Lake City



State and National Park Visitors

Figure 16 shows the number of visitors to State and National parks in Utah continued to increase after the .05 BAC law passed.

Figure 16. State and National Park Visitors



Discussion

On March 23, 2017, Utah became the first State in the United States to pass a .05 BAC per se law. The law became effective December 30, 2018. This study documented the legislative process that led to the passage of the law. It also included an evaluation of the effects of the passage of Utah's .05 BAC per se law on the State's motor vehicle crashes, alcohol involvement in crashes, law enforcement activities (e.g., DUI arrests), public knowledge/opinions of the law, and relevant economic indicators (e.g., alcohol sales, tourism).

The legislative review indicated the motivation for the Utah .05 law was the belief traffic safety would be improved in the State if the .08 BAC per se limit for drivers over the age of 21 was lowered to .05. The majority of objections to the law were based on hypothesized negative effects on the economy, the belief that arrests for DUIs would increase drastically for people who have "one or two drinks," and the assumption that no safety benefits would be realized. None of these concerns appear to have materialized. On the contrary, traffic safety appears to have benefitted (i.e., lower crash rates and alcohol involvement in crashes), the relevant economic indicators examined continued to show growth after the law was passed, and DUI arrests showed no large spikes after the law was passed and became effective.

There is no single number providing a comprehensive understanding of impact of the .05 law on crashes in Utah. The study examined non-fatal and fatal crashes, crashes across segmented BAC ranges, and crashes relative to VMT in Utah. Perhaps most notably, the results of the State crash data analyses showed reductions for almost all the crash and driver alcohol involvement measures for the 21 months after the law was passed and for the 12 months after it actually became effective. Many of these measures showed reductions in the 10% to 25% range with some even higher. An examination of FARS data for Utah revealed reductions in fatal crashes and overall numbers of people killed in 2019 (the first year the .05 law was effective) compared to 2016 (the last full year before the law was passed). In 2019, despite increased VMT, Utah recorded 225 fatal crashes and 248 fatalities, which are lower than the 259 fatal crashes and 281 fatalities for 2016. When VMT is considered, the fatal crash rate reduction from 2016 to 2019 in Utah was 19.8%, and the fatality rate reduction was 18.3%. In comparison, the rest of the United States showed only a 5.6% crash rate reduction and 5.9% fatality rate reduction during the same time period. The other States in the region that were examined did not show the same levels of improvement in fatal crash and fatality rates as Utah during the time period of interest.

These findings suggest a positive effect on highway safety began as soon as the law was passed, but the improvement in some of the driver alcohol involvement measures (e.g., percent suspected of alcohol, percent reported alcohol positive) did not appear until the law actually became effective. These findings are not entirely surprising because much of the media coverage was generated around the time the law was being debated in the State legislature and when the law was passed. Further, UHSO's survey that was conducted before the law became effective showed some people thought the .05 BAC per se limit was already in effect during the 21-month post-passage waiting period. These delayed effects for some of the alcohol involvement measures could be a function of a variety of factors such as the highest risk drinking drivers not changing behavior until the law became effective, a lag in the effect itself, or a result of providing law enforcement the added ability to arrest for a per se violation risky drivers who were operating a vehicle in the .05 to .079 BAC range. This ability to make an arrest at a BAC of .05 could even be associated with the observed increase in DUI arrests related to the use of drugs

other than alcohol. Knowledge of this enhanced enforcement ability may also serve as a deterrent for those individuals who drive while impaired.

Information on DUI arrests came from Utah's driver license files and from data reported under grants funded by UHSO. A review of the driver license data showed no noticeable "spikes" in overall DUI arrests or arrests per population relative to the passage of the law. There were some unusual patterns in the reported BACs of arrestees (when BACs were reported) after the law was passed. In the 21 months after the law was passed but before it was effective, there was an increase in the annual average BAC, and in the proportion of arrestees with BACs greater than .15. However, there was a drop in the proportion of arrests between .08 to .149 BAC. It is not entirely clear why these unusual patterns occurred. One possible explanation is that there was, in fact, a reduction in people driving and subsequently being arrested at BACs lower than .15. The residual drinking drivers may have been the most egregious offenders, which would lead to higher average annual BACs overall and a greater percentage of arrestees with BACs above .15. The finding could also be a data anomaly arising from the extensive missing measured BAC data, or the result of some factor making it more likely that law enforcement would obtain and report BACs for those drivers with high BACs after the law was passed.

The driver license data for the 12 months after the law became effective showed an increase in the number and proportion of arrests of drivers with BACs between .05 and .079 relative to the prior few years. Such an increase is reasonable, however, given that the .05 law gave law enforcement another tool to make an arrest for a per se offense when a driver's BAC was between .05 and .079. Prior to the passage of the .05 per se law an officer may have been less willing to arrest below the per se .08 limit. Alcohol-impaired-driving arrests did not climb sharply after the law went into effect, as some had feared. In 2016, the last full year before Utah changed its law, 8,828 arrests were made. Under the new law in 2019, 8,512 arrests were made. Impaired driving arrest numbers in Utah have remained fairly consistent in recent years, except for a dip in 2018.

The UHSO DUI grant data recorded slightly fewer DUI arrests per shift after the new .05 law was passed compared to prior years. The grant data, however, showed a large increase in blood and urine tests of arrested drivers during grant-funded activities. These increases in blood and urine testing coincided with increases in recent years for grant-funded DUI arrests related to drugs other than alcohol. The UHSO grant data and the driver license data did not contain sufficient information to form a reliable measure of whether there were changes over time in DUIs for combined alcohol and other drug use. As such, it is not possible to determine if the observed increases in the number and proportion of arrests in the .05 to .079 BAC range noted above were related to increased polysubstance use (use of several impairing substances at the same time).

It is important to note that Utah did not undertake any major media or enforcement efforts specifically related to the new .05 per se limit. In fact, the theme of the small-scale messaging done by the Utah DPS was that DUI enforcement and prosecution would continue as usual with no changes in arrest or prosecution procedures because of the lower BAC limit. What little media was circulated by the State focused on the idea that officers would continue to make arrests based on observed impairment and that BAC level was only one element in determining driver impairment.

Regarding the knowledge and opinions of the public, the focus groups and surveys conducted by the State showed that there was at least some increased awareness of the law, especially among drinkers, but that drinkers tended to have a less favorable view of the changes than non-drinkers. Nevertheless, some drinkers reported altering their behaviors because of an increased concern for being arrested for DUI. The most common behavior modification reported was making sure transportation was available when drinking away from home.

Overall, the study's findings indicate that passage of the .05 per se law had demonstrably positive impacts on highway safety in Utah. The crash analyses highlighted reliable reductions in crash rates and alcohol involvement in crashes associated with the new law that were consistent with, or greater than, those observed or predicted by prior research (e.g., Fell & Scherer, 2017). While the concerns about the State's economy were certainly understandable, the data reviewed by this study indicate that none of the potential negative effects that were of concern came to fruition. In fact, alcohol sales and per capita consumption appeared to continue their increasing trends under the new law as did tourism and tax revenues. Similarly, DUI arrests for alcohol did not climb sharply after the law became effective as some feared.

Utah was the first State to lower its BAC per se limit from .08 to .05, and it is also a State known for its strict alcohol serving laws and a history of temperance activities. Therefore, if additional States decide to adopt a .05 BAC per se limit, evaluations similar to the one conducted here will be appropriate to determine whether the highway safety benefits observed for Utah are replicated elsewhere. It would also be beneficial to track traffic safety data in Utah for several years in the future to see if the positive effects associated with the passage of the .05 law persist. It is acknowledged, however, that at least the year or two immediately following the timeframe analyzed by this study are likely be affected by the COVID-19 pandemic and therefore subject to showing atypical patterns.

Limitations

This study relied on archival data from a wide variety of sources. As such, the data are subject to potential biases associated with how they were originally collected and processed. The study did not include any collection of roadside measures of alcohol prevalence among all active drivers or among drivers involved in crashes. All statistical analyses focused on whether reliable changes in the outcome measures were observed relative to the dates of the passage of the law and coming into effect. While focusing on changes in crash rates per vehicle mile traveled and proportions of drivers testing positive for alcohol compensates to some extent for some major potential confounds such as changes in driving exposure, the analyses could not control for a wide variety of other factors (e.g., new driver assistance technologies) that could be impacting impaired driving on a local, State, or national level. Also, using another source for VMT data, or subsequently adjusted/updated VMT data, could result in crash and fatality rates different than those reported in this study. Another issue is whether Utah is somehow anomalous when it comes to alcohol-impaired driving and, specifically, the effects of a lowered per se DUI limit because of the makeup of its population and its low level of alcohol-impaired crashes relative to other States.

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Appendix A: Selected Legislative Testimony

Much of the legislative testimony presented here is recorded verbatim from publicly available audio recordings and transcripts. Some testimony (noted) is slightly edited, paraphrased, or summarized for brevity and clarity. The full audio recordings and/or reports can be found on the Utah Legislature's website (H.B. 155 Driving Under the Influence and Public Safety Revisions, n.d.). The most relevant recordings and reports were from the:

- 2017 General Session of the Utah House and Senate Committee Testimony and Debate regarding *House Bill 155 Driving Under the Influence and Public Safety Revisions* (Sponsors Rep. Norman K. Thurston and Senator J. Stuart Adams);
- Utah House Law Enforcement and Criminal Justice Committee Hearing/Debate on February 10, 2017; and
- Utah Senate Transportation, Utilities, Energy and Technology Committee Hearing/Debate on March 1, 2017.

It is important to note that some of the testimony below represents the personal opinions of the speakers and may not be factually correct.

House Law Enforcement and Criminal Justice Committee

Substitute H.B. 155 - Driving Under the Influence and Public Safety Revisions
Sponsor: Representative Norman K. Thurston
February 10, 2017

House Committee Testimony in Support of H.B. 155

Representative Thurston explained the genesis of the bill. He was interested in pursuing data driven ideas that work. After talking to the Highway Patrol about their main issues (speeding, seat belts, and drinking drivers), he pursued impaired driving after seeing the National Transportation Safety Board's (NTSB) data driven research on lowering the per se BAC law from .08 to .05.

Representative Thurston introduced the first speaker in support of the law, Dr. Bella Dihn-Zaar, explaining that the NTSB is an independent agency, not a partisan group, whose mission is driven by science and data. A .05 BAC Fact Sheet was distributed.

Dr. T. Bella Dihn-Zaar, Vice-Chair of the NTSB.

The NTSB is an independent Federal agency and we investigate accidents in all modes of transportation. We are the people you see combing through the wreckage trying to find the Black Box. Our job is simply to find out what happened and make recommendations to prevent these tragedies from happening again. When I usually visit a State, it's sometimes because of a tragedy that's occurred. So, I'm very glad to be here today in Utah in support of a solution that can prevent tragedies before they happen, and that solution is having a .05 BAC limit. How does a BAC law of .05 prevent crashes, deaths, and injuries? Not by increasing DUI arrests, but by preventing people from driving after they've been drinking.

When we discuss lowering the BAC, sometimes we focus a little bit too narrowly on that group of drivers with BACs between .05 and .079, but we can't forget that drivers at those BAC levels also cause deaths such as the tragic death of Sergeant (Douglas) Weddleton (2010) who was hit by a drunk driver with a .07 BAC in Massachusetts. And we can't forget that people are still impaired at these lower levels. In fact, drivers between .05 and .079 are seven times more likely to be in a single-vehicle fatal crash than drivers without any alcohol in their system.

But it's the much, much bigger effect—the effect of lowering the BAC has on the entire population of drinkers on people at all levels of BAC high and low; people who are discouraged from driving after they've been drinking. A .05 BAC law works to prevent deaths and injuries because it reminds people to separate drinking from driving. That's why in 2013 the NTSB recommended that all 50 States lower their illegal BAC per se limit to .05 or lower and that's why we concluded that .05 BAC is an effective tool to reduce impaired driving.

It has been proven in many other countries that simply having a lower BAC changes behavior by preventing impaired drivers from getting behind the wheel. One hundred countries have .05 BAC or lower, but their citizens drink more per capita and yet there are fewer deaths on the road. Opponents are wrong when they say .05 is about drinking; it is about separating drinking from driving. It is about preventing deaths, not drinking. A .05 BAC law is a proven way and a majority of Americans support it.

Utah already does have one of the lowest DUI rates in the country, but there is concern because alcohol-involved deaths increased from 12% in 2005 to 22% in 2014. An .05 BAC law can help move towards zero deaths in Utah. Nationwide, there would an 11% decrease in fatal crashes or 1,800 lives saved.

I called a retired State trooper that I rely on for feedback and asked if he had any reservations about a .05 BAC level, and he replied, “None.” He elaborated that even if it is more work (which it has not been in other jurisdictions), it is worth it not to have to deliver a death notification.

Representative Thurston

There are over a hundred countries that have .05 BAC as their standard. There are many countries that have a lower BAC than that. There is CDC data on what impairment at .05 looks like. I'm assuming that many of you don't know what it feels like to be at .05 BAC. It would take three standard alcoholic drinks. There are only two places in Europe left that are not .05 or lower; parts of the United Kingdom and Malta. The rest of Europe, France, Spain, Italy, Germany; some of the world's best drinking countries.

I have two main points: 1) This bill does not actually ask law enforcement to do anything different. He talked to law enforcement and determined that this change will not require any change for peace officers. They will continue to observe and collect evidence exactly as they do today and turn it over to prosecutors. One line has been added to Substitute Bill 155 to state that law enforcement agencies shall ensure that peace officers receive training in the current NHTSA standards for Standard Field Sobriety Tests (SFSTs). 2) The effective date of the law is December 30th of 2018. That date was carefully chosen for two reasons. It gives key stakeholders almost two years to work out any issues with implementation. It also allows them to maximize and capitalize on the message of the bill. It will be the day before New Year's Day weekend, one of the busiest drunk driving weekends of the year.

Concerned Citizen

A .05 law says don't drink and drive. You don't tell your kids to have one or two drinks and then drive. Utah should be leading the nation in sending the message that says don't drink and drive.

Concerned Citizen (summarized)

- We normalize the consequences of drunk driving. We adjust our plans because we are worried about being on road. We have accepted this lower standard of living.
- Taxpayers pay the tab for alcohol harms.
- As a society, we minimize the harm, all in name of money and tourism.
- We don't think about individuals who suffer.
- We have a collective responsibility for a clear and consistent message: No drinking and driving.

Utah American Automobile Association (AAA) Representative (summarized)

- AAA supports the bill along with NTSB, the American Medical Association (AMA), the World Health Organization (WHO), and Association for the Advancement of Automotive Medicine (AAAM).
- For the last two years, the AAA Foundation for Traffic Safety annual nationwide survey shows that 63% of the public support a .05 BAC law. This is not an alien idea.
- 41% of alcohol-related fatal crashes in Utah are for people under the age of 29, so these are novice drinkers and drivers.
- This law sets the limit because people don't know their limit. It creates a better culture of safety.

House Committee Testimony Opposed to H.B. 155

Utah Association of Criminal Defense Lawyers Representative (summarized)

- There is a need to balance individual freedom and protectionism. The #1 cause of fatalities is speeding. We could lower the speed limit to 35 mph, but yet we don't do that because it is not the right balance.
- There could be a significant effect on tourism so why not delay the law until we can find out? We don't have data from other countries that have a .05 law about the effect on tourism.
- According to the NHTSA website, one drink for a woman and two drinks for a man could lead to an arrest.
- Uber is not a good option for some locations, like Park City.
- The SFSTs give clues about impairment, but if you are in the .05-.08 range, the police have to arrest for DUI. The only difference is no 48 hours in jail. There is also the loss of license for 120 days and potential job loss. If charged with impaired driving instead, you can keep your license. It is better to educate the public than to lose jobs.

Response from House Committee Members (summarized)

- Losing your license for 120 days is much less of a burden than 18 Utahns lost lives.
- Although a majority of DUI offenders lose their license for 120 days, offenders can request an administrative hearing to get their license back and most who apply do get their license back.
- Life is more important than tourism.
- You have to fail the SFST first. If you are not a lawyer, however you don't know if the SFSTs were done right.

Libertas Institute Representative (summarized)

- In the Utah annual Commission on Criminal and Juvenile Justice (CCJJ) report, the average BAC for DUI is .15 which is almost twice the existing BAC limit. We should focus on these offenders and give them serious penalties instead of unnecessarily criminalizing people who are not driving recklessly.

Senate Committee Testimony in Support of H.B. 155

Representative Thurston, H.B. 155 Sponsor

This bill is about preventing negative behaviors. It's about making sure that people who choose to drink also make the decision to not drive. The bill is based on research and evidence. It's based on experience across both the US and the world. One of the problems that we have in our State is with the .08 standard, and I can show you the emails that I'm getting from people who oppose this bill who think it's okay to drink and drive. They're telling me I don't like your bill because if your bill passes I won't be able to have a couple of drinks and go drive anymore. This is the problem with our current laws that sends the message that that you can drink up to a certain point and then drive, but the evidence shows that impairment begins with the first drink. And by the time you get to .05, you are significantly impaired. At .05, the risk of any type of a crash is more than double the risk of a fatality involving just the driver, so that a driver killing themselves is 7 to 21 times higher.

This is a map of the world that shows you where .05 is the standard; where 85% of the world's population lives in a country with a BAC limit of .05 or lower including essentially all of Europe, all of Canada except for Quebec, and Australia. Essentially all of Asia, all of South America except for Peru and Venezuela and most of Africa. So, we are in a worldwide category where it's the U.S. and parts of Africa, and so it's time for us to consider that maybe these other countries have actually figured something out that we ought to take a take a look at that.

Dr. Dihn-Zaar (summarized)

The NTSB has the same sense of urgency about the importance of a .05 BAC law as when there is a crash tragedy that requires us to activate our investigative Go Team.

What a .05 BAC law does not do:

- Does not reduce drinking
- Does not place a burden on police
- Does not increase arrests
- Does not criminalize people

What a .05 BAC law does do:

- Prevents all types of people from drinking and driving; heavy and light drinkers
- Broad deterrent effect. Basic prevention.
- See the 2013 NTSB report and .05 Fact Sheet.
- Studies show that .05 separates drinking from driving.
- AAA found 63% Americans support .05 in all States.
- 100 countries around the world have .05, but drink more per capita but die less in alcohol-related crashes.
- Would reduce 11% fatal crashes nationwide; 1,790 lives saved each year.

Representative Thurston (summarized)

- It is important for us in Utah to understand because maybe not everyone in the room is familiar with drinking and driving or even drinking. For an average person at 160 pounds, it would take 56 ounces (4.5 cans) of Utah beer (3.2% alcohol content) in an hour, or 2/3 of bottle of wine to reach .05.
- Police officers do not even measure BAC unless the driver is demonstrably impaired with SFSTs.
- Dispelling Myths:
    - H.B. 155 does not criminalize responsible drinkers. Responsible drinkers don't drink to .05 and drive.
    - H.B. 155 will damage the tourism industry. No studies show negative effects on tourism or the economy. Think of Paris, Rome, all of Canada except Quebec, have a .05 BAC; Stockholm has .02,
    - H.B. 155 will not stretch peace officer resources away from real crime. The procedures for .05 will be the same as they are now. The bill requires that peace officers be trained on current NHTSA standards (SFSTs).
- The law works because of the messaging and broad deterrent effect. It will not burden peace officer or jails or the criminal justice system.
- Dozens of studies illustrate the reduction of risk by 11%.
- People less likely to drink and drive and that's how it saves lives.

Question from the Committee Chair

It does not seem like changing the blood level changes the statistics. I have had a lot of emails I have received recently in the last two days. Other countries have bigger fines. Why does that not work here that we do it that way instead of limiting what we charge or the alcohol limit in the blood?

Dr. Dihn-Zaar

So, this is not an either/or policy. We know that this policy in and of itself will save lives. We don't have to couple it with anything else to save lives. We can have a greater effect with .05,

Question from Senator Adams

Is there impairment at .05?

Representative Thurston

See the NTSB fact sheet. We actually have evidence here from both CDC and NHTSA who studied this extensively. They give people alcohol, they measure their BAC, they give them tests to see what they can and cannot do. It shows impairment at .02. At .02 they have decline in visual functions. They have difficulty with rapid tracking of moving targets. They have a decline in the ability to perform two tasks at the same time such as driving and listening to the radio. At .05, there is significant impairment really involving reduced coordination, reduced ability to track moving objects, difficulty steering, reduced response to emergency driving situations, and it just gets worse. It gets exponentially worse the higher the alcohol gets, so there is evidence that it starts with the very first drink, which is .02. And so anybody who thinks that you can drink and responsibly drive and as the Colonel (from Utah Highway Patrol) [Michael Rapich] said, that part of the problem is that you do not know because you are now making the decision after your judgment has been impaired. And so that is part of the reason why the message needs to be don't drink and drive because you don't know how impaired you are and you're making the decision based on that impaired status when you already have affected judgment.

Utah Substance Abuse Advisory Council, Utah County

There is nothing wrong with being first. Where would we rather spend our tax payer dollars on law enforcement, treatment, or prevention? Working with county commissioners, we often talk about prevention policy. We lead out economically and we are proud of that. When potential business comes before the county, they don’t ask about alcohol laws, they ask about the quality of the workforce and the environment for their business. Utah is top pick for travel, scenery, skiing, hikers and legal alcohol is readily available. This bill is a prevention policy that reduces harm.

Utah Highway Patrol Representative

As the superintendent of the agency that is responsible for investigating highway traffic deaths and also the interdiction, apprehension and prevention of DUI drivers, we are very much in support of this effort and I will just put a little bit of a qualifier as to why I think you could probably guess that this would be something we'd be in support of we're looking for anything that is going to reduce traffic deaths on the highways. I would really like to get a point out that I

hate the word *fatality*. I always use the word *deaths* because when someone dies as a result of an automobile crash, it's violent. It's horrible. It affects many lives. It affects everybody directly involved in that crash, everybody that sees that crash and that devastating effect extends out to many people who weren't involved in that crash. We get to see that every day. It's a responsibility we take very seriously we get to see the devastating effects that impaired drivers have when they result in a crash. Over 2,000 crashes in 2015 involved an impaired driver. Over 1,000 of those crashes involve someone being seriously injured. Some of those injuries are very serious. 37 people lost their lives in 2015 as a result.

I absolutely hope this will reduce the number of DUI arrests and reduce the number of DUI-related traffic fatalities or deaths that we investigate. I hope it is an opportunity to have someone that they are going to preemptively make the conscious decision ahead of time to know that if I am going to decide to drink I either know I can only drink a very small amount before I drive or I have a pre-planned for driving if we're going to be drinking more than that. I hope that this is going to preemptively convince people to not make a bad decision.

And that's the thing that DUI related or alcohol-related impaired related deaths on the freeway or on the highways are 100% preventable. They are the result of bad decisions and we hope that this will help people make better decisions. We very much support this. We don't arrest based on a .08 standard. We arrest based on impairment and impairment has been described before happens well before .08. We've seen that firsthand on the roadside. We've seen that during training where we do controlled testing using known alcohol levels with control subjects. Impairment happens before .08. At what levels depends on the individual. We arrest based on .08 and a lot of times we arrest people who made a bad decision because they made that decision after they have already become impaired. Hopefully this gets people to make the decision before alcohol has an impairing effect and then once judgments already been just diminished, now trying to make the decision whether or not to drive.

Concerned Citizen

With all due respect Senator Debakis, there is no weirdness factor in this bill. Companies don't come to Utah and say, drink and drive. Companies have always pushed the message, do not drink and drive. Tourists don't come to Utah to drink. This is not the issue. The issue is we are trying to develop a message or send the message, do not drink and drive. You don't tell your kids to drink one or two drinks and drive, right? You don't tell your family to have one or two drinks and drive. You don't tell the citizens of Utah or anybody coming to this State to drink and drive. We want to send the message do not drink and drive. This bill will save almost 20 lives in Utah a year. This is an important bill and I want to emphasize something really, really important; responsible drinkers do not drink and drive.

Utah Medical Association Representative

We think that this is a great bill and one of the things that it does best is simplify the message. We say don't drink and drive, but .08 says don't drink too much and drive. That judgment then is being made by someone who has had a drink or maybe two whose judgment is impaired and then is considering, can I drive? .05 simplifies the message. It truly says, don't drink and drive. If you've had a drink you might be over .05. Don't drink and drive. It just simplifies the message and I would just like to add that this is really an opportunity for leadership and dare I even say

this might be something that is progressive. That Utah could do that could improve things and I would just suggest that this is something where Utah could lead out in a very helpful way.

Utah Eagle Forum Representative

There are a lot of the things that I've heard lately as people found out where I was on this position. I've heard over and over about the freedom issue. (People say) Well, you're always for freedom. You are right, I am for freedom, but I don't think that going from .08 to .05 has anything to do with freedom. If this was about freedom, then .08 is wrong and 1.0 would be wrong because we're taking away people's freedom to drink and drive. That's not what this is about. They have the freedom to drink, but they don't have the freedom to drive and thank goodness they don't have the freedom to drive when they're drinking because my children are out there on the roads. And we have heard about well, we're weird. You know, there's a lot of people in this room, people think they are weird, but that's okay. It is okay to be weird and if we're afraid of sending a message, I'm afraid if a business won't come here because of the weirdness, because we have .05 then do we want that business? Are we going to be held hostages by businesses that threaten us based on our weirdness, based on the decisions that we make to protect our own families?

And I think we should be first and I'm really disappointed that you have postponed this for a whole year, so we won't be first. It's the right thing to do and shouldn't we always be first with the right thing to do? You talked about the message. What kind of message will we send if we pass this, around the country, in New York Times headlines if we do this? But what kind of message do we send if we don't pass this to the people here in Utah who are on those roads with their babies? We need to worry about the message we send to the Utah people that we want to protect them. We want to take care of them. I want you to pass this because my grandchildren are out there and we all know somebody that's been through this horror of a drunken driver who's hit their family and killed their babies. So, let's send the right message. Let's send the proper message because those people are children. Look at your own family. They are the real people and there on those roads and let's take the drunk drivers off the road and let's send the right message.

Executive Director of the Utah Commission on Criminal and Juvenile Justice

My office does not generally support bills that seem to simply be a tough on crime approach because those bills are often not helpful in addressing the problems that they are seeking to address. My office supports this bill because we are convinced by the evidence that it actually will prevent harmful behavior and actually will reduce deaths caused by driving while under the influence. It is important to remember that we're talking about impairment here and we're talking about preventing driving while impaired. It's also important to remember that the research is quite clear that impairment begins well before .08; that impairment begins even before .05. We are not talking about creating a new class of criminals. We are talking about establishing a threshold at which in fact beyond which impairment begins so that we can have safe drivers on the roads and more importantly so that people can make informed decisions about their driving.

I am glad to know that Mr. Burton reads the reports that are produced by my office including the DUI report. It is important to understand that driving while under the influence at any level can result in devastating consequences. So, it is not just those who have high BACs that result in crashes and fatalities and it is not just those who are repeat offenders that can end up causing

crashes and fatalities. Any level of impairment can result in that harmful behavior. We are fortunate that in Utah, we have been able to make very good progress and lower the fatality rate. From calendar year 2014 to 2015, which is the last period that we measured, our DUI crash rate increased significantly, so there is still a significant amount of work that we have to do in the State of Utah. We' are convinced that the evidence demonstrates that this kind of law will reduce harmful conduct and that does not happen very often in the realm of criminal law. It is not very often that you have hard data that suggests that a preventive measure will actually decrease the harmful behavior. We certainly need to address consequences of harmful behavior as well, but that doesn't mean that we avoid addressing the prevention aspect. We certainly need to address all kinds of harmful behavior. All kinds of distracted driving but that certainly doesn't mean that we refuse to move forward on this bill.

Senate Committee Testimony Opposed to H.B. 155

Senator Jim Debakis Question

So, the recommendation (by NTSB) was made in 2013 and yet you haven't been successful in convincing one State yet that this is something they ought to do.

Dr. Bella Dihn-Zaar Response

Oh, that's actually a short time Senator. We make recommendations to Boeing and to other governments in States about aviation and about trains. Sometimes it takes up to 10 years. I think that the first step is to make the recommendation and to show all the science and then in the two or three years following to provide information to the wise members of legislators such as yourself so that they can make the decision based on science. I mean our only focus is safety. So, we have no other interests other than safety and sometimes it takes a few years for the information to be fully processed.

Senator Debakis Question

You spoke very specifically that 11% of the deaths (would be prevented). How confident are you?

Dr. Bella Dihn-Zaar Response

The research was done by Jim Fell who's one of the leading researchers in this type of research. And the reason it is 11%; it is a conservative measure. We do not really know. I mean that is a projection. It's a hope; it's never been done in the United States. So, it is an estimate based on other countries where it has been done.

Senator Debakis Question

I would like to say to the presenter that as somebody who probably doesn't drink I'm assuming so, whatever you may think, 56 ounces of Utah beer maybe a lot in volume, but there is not a lot of alcohol in Utah beer. You could probably drink a lot more than that and still be fine. Let me ask you about perceptions about, like it or not, a weirdness factor in Utah. Speaker Lockhart used to talk about it that we have a weirdness factor and that it hurts us. It hurts us in tourism as we compete against Colorado and other skiing destinations and it hurts us in attracting the kind of jobs that we want; the call center jobs, the Adobe jobs, and the other big jobs. People have a

perception of us and we do not like to admit it, but if you dig into the research you see we have this perception. And it costs our children good jobs. It costs them the opportunity because people fly here, and you can get a drink, but they hear stories and the lore comes before whether it is the Zion curtain or whether when we had private clubs or whatever. My question is, is it a good thing? Is it worth paying the price to be the pioneer, to be the first to have the headlines be everywhere in the country, everywhere in the world. Well, finally one State is moving forward. Is that a badge of honor or should we let some other States go and experiment around and see if it even works and then be the third or fourth State so that we don't reinforce a very, very, very harmful perception that cost us millions, perhaps billions of dollars in both economic growth as well as in tourism. Why be the first? Why not just let another State or two to move ahead?

Representative Thurston Response

That's a very fair question and the bill addresses that. I am glad that you agree with me on this. We have a delayed implementation date of December 30th, 2018. I fully anticipate that by the time this bill actually goes into effect, we won't be first. Hawaii is actively considering it; they will probably beat us to the punch. Washington is actively pursuing it; they will beat us to the punch. And you have heard that Dr. Dinh-Zaar is meeting with 47 other States and the District of Columbia over the next two years. We probably won't be the first and if you are still worried about it next year, you could come in and say well let's put this off another six months because we don't want to be first. I think that was part of the purpose of having that delayed implementation date, but if we get to the next session and it looks like we're still going to be first, which I highly doubt, we could push it off. We could move that implementation date.

Senator Debakis

I may not know a lot about a lot of things but something I know a lot about is headlines. And I am telling you it is not realistic to think it is not going to make the front page of the New York Times. But what will make it is if we pass it and we are the first State in the United States and it will send a message. There will be ripples and there will be rolling eyes and there will be problems the next time Adobe is deciding whether to come here. In the Silicon Valley as people go, you know, it is Utah weed. I'm not sure we want to go there. We've got these problems. So, whatever you do on the implementation, believe me, it doesn't matter if we pass this bill. There will be broad and systemic and deep implications for our State and I'm saying fine. Let's let somebody else pass it (first) and let's see how it works. That would be my recommendation.

There is a clash of cultures. Lots of people don't drink and don't understand. I talk to people who say we are not coming to Utah; young creative people won't come. There is a whole entertainment center in Salt Lake City that is full of terrific thriving fun young people that enjoy having a beer or they enjoy having a drink. We have heard of a lot of cultures perhaps not the culture that you participate in, but we are in a State. And we need to make sure that we are not imposing our values and ideas on others and I fear this is over the line. So, until the science is there; we have heard a lot about theoretical algorithms and what they're going to do and what they're going to say and projections but there is no State with this. We don't know. A dangerous spot for Utah to be the pioneer. We have the lowest DUI rate in country. There is not enough evidence that this will make a difference. What is not theoretical, is what the media around the world will put out. We know this is not good for economy and tourism. Wait for another State for real evidence.

Utah Restaurant Association (summarized)

- For most of the statistical data relating to the success of a lower BAC in European countries, they combine the strict enforcement of DUI laws, improved road safety, and safer cars in combination with enhanced education and rehab programs. There is no report that concludes that .05 BAC all by itself has resulted in lower DUI violations in European countries, or any other country.
- It's important to remember that Utah already has the lowest DUI rate in the nation at .08.
- It is important to know the real cause of accidents on Utah highways. Data should be collected on impaired driving accidents to include texting, prescription drugs other medications, etc.
- Utah must be willing to mandate interlock devices on cars, mandatory jail sentences of three to six months, loss of license, plate revocation, and loss of vehicle. All of these laws and penalties are strictly enforced in European countries and are combined with .05 to reduce DUI violations.
- If .05 was a stable solution for reducing DUI violations, the federal government would mandate it, and confiscate States matching funds for not passing an .05 BAC *per se* law.

American Beverage Institute Representative

I am a parent. Everybody wants to save lives on our roadways. To the point about a losing a 747 every week is terrible but that is a result of texting and driving, speeding, a whole host of factors. It is a much smaller percentage that is related to drunk driving. The safety of our customers is a paramount concern and if we thought this law would make them or any of us safer we would support it. But there is no evidence that further lowering the legal limit will save lives. Instead, it will make criminals out of many of our responsible customers. And when you talk about James Fell (impaired driving researcher) and the woman from the NTSB who put out the notion that all these lives would be saved. I debate Jim Fell all the time. This guy is an anti-alcohol activist. He has been promising for decades that these stricter laws against responsible and moderate consumption would save lives and it doesn't happen. The percentage of lives saved as it relates to overall traffic fatalities has remained exactly the same; right around 29 and 30 percent, even when we lowered the legal limit to .08,

.08 is already reasonably low. In fact, research shows that the driver is more impaired talking on a hands-free cellphone than he is at .08. Furthermore, this law would disproportionately affect women. It is so low that a hundred-and-twenty-pound woman could get arrested for little more than one drink. Do you think that a woman should get a DUI and receive all the penalties that come with it including the installation of an ignition interlock for behavior that is less dangerous than talking on a hands-free cellphone? This law would have little impact on drunk driving deaths because very few accidents occur below the .08 threshold. Only around 1% of traffic fatalities occur between .05 and .08. The vast majority of alcohol-related fatalities happen at very high levels. In Utah, over 77% of alcohol-related fatalities occur at .15 or above. The average BAC of somebody in an alcohol-related fatality is .20; more than twice the legal limit.

There is no reason to believe proponents claim that lowering the legal limit will have an impact on these hardcore drunk drivers who already openly flout the law. It is also important to note that Mothers Against Drunk Driving (MADD), the largest anti-drunk driving advocacy organization

that represents victims, has declined to endorse this legislation. They have gone on the record a number of times saying that the science supports .08 and that is where the per se legal limit should be kept. Furthermore, MADD founder, Candy Lightner, has called moving to .05 impractical and a waste of time to advocate for lowering the legal limit. Others in this room often point to the idea that most of Europe and other countries have already moved to .05. It's true, but many of these countries including Germany, Switzerland, the United Kingdom (UK) also allow teenagers to drink at 16, 17, and 18. The United States stands among only a handful of nations that has a 21-year- old age limit.

Last week I testified on an identical bill in Washington State. Their legislation included a lengthy fiscal note, which determined that the administrative costs alone would cost their State $4.6 million dollars in the first two years. Nobody's brought up the cost of implementing something like this, but there would be a cost associated. So, we ask the members to reject H.B. 155 which criminalizes this perfectly responsible behavior and instead to focus on opportunities to strengthen laws that target these hardcore drunk drivers that represent over 77% of these Utah fatalities. For example, ignition interlock laws that target high BAC repeat offenders are proven to reduce traffic fatalities yet only a small percentage here in the State install the interlock as ordered. By focusing on improving compliance rates among those ordered to install an ignition interlock, you could have a far more positive impact on traffic safety.

Concerned Citizen

A prior statement made that restaurants do not look at alcohol laws when deciding if they want to come to Utah is absolutely untrue. I've been in the industry here for 25 years and the laws absolutely do deter restaurants from coming to the State of Utah because of our quirky and weird laws. We do have a stigma of being quirky and weird. While in no way do I think that drinking and driving is acceptable, this law does 100% target responsible drinkers.

Concerned Citizen

I am just a normal citizen, not affiliated with anyone. I’m in no way advocating drunk driving, however, I'm very concerned that H.B. 155 would have a significant negative effect on a large number of responsible citizens in Utah. The most recent statistics I could find from NHTSA from 2014 States that 3% of the 256 traffic fatalities in Utah were associated with .01 to .07 BAC with no breakdown provided between .05 and .07 being considered. I’m concerned that an evening out for an average citizen who may have had a beer could cause them to have a criminal record. It could cost an additional $10,000, loss of job, loss of license, and higher cost of insurance. This is a small group of accidents, but yet it could be a large group of people affected. I just think this is going too far and goes against a lot of people that aren't really harming anyone.

Criminal Defense Association (The speaker is a criminal defense attorney, former prosecutor, and part-time small claims court judge.)

As a group, we probably benefit from the law, but we are opposed to it. We work with real people who have been charged and convicted of DUI. What we're doing with this bill is catching those people that are driving with a .05 to .08 instead of focusing on those people who are two or three or four times the legal limit. The statistic is the average alcohol level for fatalities is .20; more than twice the legal limit. That's where our focus should be. The CCJJ report States that 70% are first-time DUI offenders; only 30% are repeat offenders. 70% make a mistake and never

do it again. So that statistic means to me that 70% of the time when somebody gets a DUI they say, oh my goodness, that was a mistake. I had no idea. I was violating the law and I'll never do it again. This is one of the very few laws that someone can break without having a way to know for sure whether or not they're breaking it. There are not breathalyzers in cars. There are not breathalyzers in restaurants. Somebody can feel completely safe to drive and think that they are being completely responsible but be in violation of the law. .05 to .08 simply exacerbates that affect. We are punishing those people who are intending to comply with the law but unintentionally breaking the law.

In Utah, you can be arrested for being in physical control of the vehicle. I believe this is a flaw in the .08 law. If you feel too impaired to drive and get in the back seat of the car instead of driving, you can be found guilty of DUI because you are in control of vehicle. So, if we send the message, you can't drink and drive, and people start doing that and start saying, okay. I'm too far away. I can't get a hold of a taxi or an Uber, so I'm just going to hang out in the back seat of my car. I want to be smart about this. They will be charged with DUI.

If the .05 bill goes forward, we need a comprehensive approach for a DUI law and changes. In Utah, there is no provision for a work permit. You lose your license for 120 days and maybe loss of a job; and it is harder to get to treatment. You have to pay for an attorney, fines, classes, supervision. All those Costs come by implementing additional criminal penalties for people with the least amount of risk. We should be focusing on the second time DUIs or those two or three times the legal limit DUIs. That's where the most good will be done. In fact, I believe that texting has now surpassed DUI for youth deaths. It's much more dangerous than somebody who gets a DUI. So, if this is going to pass we also need to implement work permits.

We need to implement ways for people to get to work and treatment if we're going to essentially criminalize these people who are very low risk.

Senator Adams called on the ABI representative because she indicated a need to respond regarding his question about impairment at different levels.

The impairment level of texting and driving is equivalent to being at .20 so nobody thinks that you should be able to drive at .20. That's not what we're talking about. You are extremely impaired when you are texting and driving, equal to the most extreme levels of impairment for DUI. We are talking about a very low level at .05, again you are more impaired driving talking on a hands-free cell phone than you are at .08. Everybody keeps getting up here and talking about like, well, there's more impairment, you are impaired .02. Do you know what the impairment level is of having music on in the car, of driving in the dark, of being over the age of 50? No offense to anybody. You are 11 times more impaired if you are just upset. So, we have to keep these things in context.

Appendix B: Additional FARS Data for Arizona, Colorado, and Nevada

Table B-1. FARS Crash Level Measures for US, UT, AZ, CO, NV

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Utah										
Total Crashes	218.00	224.00	200.00	202.00	222.00	258.00	259.00	247.00	237.00	225.00
Crashes per VMT	0.84	0.85	0.75	0.76	0.82	0.89	0.86	0.77	0.72	0.69
BAC ≥.01	45.20	54.70	38.10	40.80	52.50	48.30	52.80	53.80	59.10	46.10
BAC ≥.01 per VMT	0.17	0.21	0.14	0.15	0.19	0.17	0.18	0.17	0.18	0.14
BAC ≥ .05	43.50	51.90	33.90	38.10	49.00	42.60	51.20	48.60	53.90	40.60
BAC ≥ .05 per VMT	0.17	0.20	0.13	0.14	0.18	0.15	0.17	0.15	0.16	0.13
BAC ≥ .08	41.10	47.10	29.80	35.60	47.30	39.50	46.40	45.80	51.70	36.20
BAC ≥ .08 per VMT	0.16	0.18	0.11	0.13	0.17	0.14	0.15	0.14	0.16	0.11
BAC ≥ .15	26.00	29.10	21.80	24.00	35.20	29.60	32.00	28.80	34.70	24.50
BAC ≥ .15 per VMT	0.10	0.11	0.08	0.09	0.13	0.10	0.11	0.09	0.11	0.08
US (Other 49 States and DC)										
Total Crashes	30,078.00	29,643	30,806.00	30,000.00	29,834.00	32,280.00	34,489.00	34,313.00	33,682.00	33,019.00
Crashes per VMT	1.01	1.01	1.06	1.02	1.00	1.04	1.08	1.08	1.06	1.02
BAC ≥.01	10,799.00	10,437.10	10,946.40	10,764.80	10,617.00	11,008.10	11,661.90	11,561.50	11,338.50	10,798.10
BAC ≥.01 per VMT	0.36	0.36	0.38	0.37	0.36	0.35	0.37	0.36	0.36	0.33
BAC ≥ .05	9,957.60	9,265.70	10,085.60	9,930.00	9,805.40	10,087.50	10,771.10	10,724.30	10,524.30	9,947.40
BAC ≥ .05 per VMT	0.33	0.32	0.35	0.34	0.33	0.32	0.34	0.34	0.33	0.31
BAC ≥ .08	9,206.50	8,950.30	9,347.10	9,134.90	9,001.90	9,271.20	9,864.40	9,871.30	9,689.60	9,199.80
BAC ≥ .08 per VMT	0.31	0.31	0.32	0.31	0.30	0.30	0.31	0.31	0.30	0.29
BAC ≥ .15	6,472.80	6,138.80	6,615.60	6,239.40	6,173.30	6,175.10	6,656.50	6,779.20	6,623.70	6,248.20
BAC ≥ .15 per VMT	0.22	0.21	0.23	0.21	0.21	0.20	0.21	0.21	0.21	0.19

Note: VMT measures are per 100 million vehicle miles traveled. Monthly VMT data from TVT reports were summed to arrive at the unadjusted annual VMT for a year.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Arizona										
Total Crashes	695.00	755.00	738.00	782.00	708.00	811.00	856.00	917.00	918.00	910.00
Crashes per VMT	1.13	1.25	1.25	1.30	1.16	1.27	1.28	1.36	1.34	1.32
BAC ≥.01	223.90	226.80	240.50	243.10	220.70	282.60	261.40	293.30	312.80	278.60
BAC ≥.01 per VMT	0.37	0.38	0.41	0.40	0.36	0.44	0.39	0.43	0.46	0.40
BAC ≥ .05	206.60	202.60	219.10	223.40	202.60	254.60	240.20	268.90	286.00	253.30
BAC ≥ .05 per VMT	0.34	0.34	0.37	0.37	0.33	0.40	0.36	0.40	0.42	0.37
BAC ≥ .08	188.20	184.50	204.40	203.90	180.30	236.40	213.20	241.80	265.90	233.00
BAC ≥ .08 per VMT	0.31	0.31	0.35	0.34	0.30	0.37	0.32	0.36	0.39	0.34
BAC ≥ .15	130.40	124.10	153.40	148.40	124.90	162.30	135.30	172.30	187.10	154.20
BAC ≥ .15 per VMT	0.21	0.21	0.26	0.25	0.20	0.25	0.20	0.25	0.27	0.22
Colorado										
Total Crashes	411.00	407.00	434.00	432.00	451.00	507.00	558.00	600.00	588.00	544.00
Crashes per VMT	0.85	0.88	0.93	0.90	0.91	0.99	1.05	1.12	1.08	1.01
BAC ≥.01	127.00	154.70	153.20	151.60	167.10	162.40	178.00	195.30	204.10	182.60
BAC ≥.01 per VMT	0.26	0.33	0.33	0.32	0.34	0.32	0.34	0.36	0.37	0.34
BAC ≥ .05	119.10	146.10	132.30	137.30	157.60	146.30	161.60	179.20	190.50	166.10
BAC ≥ .05 per VMT	0.25	0.32	0.28	0.29	0.32	0.29	0.31	0.33	0.35	0.31
BAC ≥ .08	110.40	141.30	121.90	126.20	146.10	136.60	147.20	162.60	177.10	150.00
BAC ≥ .08 per VMT	0.23	0.31	0.26	0.26	0.29	0.27	0.28	0.30	0.33	0.28
BAC ≥ .15	80.20	102.60	83.90	92.20	102.10	88.90	111.50	108.80	132.00	111.90
BAC ≥ .15 per VMT	0.17	0.22	0.18	0.19	0.21	0.17	0.21	0.20	0.24	0.21
Nevada										
Total Crashes	235.00	223.00	238.00	245.00	268.00	297.00	304.00	292.00	299.00	285.00
Crashes per VMT	1.16	1.11	1.13	1.02	1.08	1.14	1.13	1.05	1.06	1.02
BAC ≥.01	78.50	84.40	86.40	85.00	100.20	106.90	105.30	86.80	100.00	103.50
BAC ≥.01 per VMT	0.39	0.42	0.41	0.35	0.40	0.41	0.39	0.31	0.35	0.37
BAC ≥ .05	67.50	72.80	82.80	78.60	90.50	94.80	98.20	82.50	91.80	89.60
BAC ≥ .05 per VMT	0.33	0.36	0.39	0.33	0.36	0.36	0.36	0.30	0.32	0.32
BAC ≥ .08	63.50	64.40	75.70	75.10	82.90	90.10	93.30	77.00	83.10	84.00
BAC ≥ .08 per VMT	0.31	0.32	0.36	0.31	0.33	0.35	0.35	0.28	0.29	0.30
BAC ≥ .15	43.30	38.70	54.90	54.10	56.50	66.80	52.00	55.70	50.80	61.50
BAC ≥ .15 per VMT	0.21	0.19	0.26	0.22	0.23	0.26	0.19	0.20	0.18	0.22

Note: VMT measures are per 100 million vehicle miles traveled. Monthly VMT data from TVT reports were summed to arrive at the unadjusted annual VMT for a year.

Table B-2. FARS Person Level Measures for US, UT, AZ, CO, NV

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Utah										
Total Fatalities	253.00	243.00	217.00	220.00	256.00	278.00	281.00	273.00	260.00	248.00
Fatalities per VMT	0.97	0.93	0.82	0.83	0.94	0.96	0.93	0.86	0.79	0.76
BAC ≥.01	50.40	62.30	40.20	43.00	62.80	55.60	59.40	60.00	70.90	48.50
BAC ≥.01 per VMT	0.19	0.24	0.15	0.16	0.23	0.19	0.20	0.19	0.22	0.15
BAC ≥ .05	48.50	59.50	36.00	40.20	59.00	48.90	57.60	54.80	63.90	43.00
BAC ≥ .05 per VMT	0.19	0.23	0.14	0.15	0.22	0.17	0.19	0.17	0.19	0.13
BAC ≥ .08	46.10	53.70	31.90	37.10	57.00	45.80	52.70	52.00	61.60	38.50
BAC ≥ .08 per VMT	0.18	0.20	0.12	0.14	0.21	0.16	0.18	0.16	0.19	0.12
BAC ≥ .15	29.90	33.70	23.40	24.30	41.80	34.90	36.40	31.90	44.10	26.20
BAC ≥ .15 per VMT	0.12	0.13	0.09	0.09	0.15	0.12	0.12	0.10	0.13	0.08
% Driver BAC ≥ .01	14.35	16.62	13.12	14.67	15.31	11.96	13.38	14.05	16.30	14.01
% Driver BAC ≥ .05	13.80	15.76	11.63	13.38	14.21	10.57	12.99	12.66	14.84	12.41
% Driver BAC ≥ .08	13.06	14.03	10.24	12.51	13.62	9.67	11.77	11.92	14.26	11.09
% Driver BAC ≥ .15	8.36	8.62	7.42	8.40	10.06	7.21	8.06	7.42	9.60	7.05
US (Other 49 States and DC)										
Total Fatalities	32,746.00	32,236.00	33,565.00	32,673.00	32,488.00	35,206.00	37,525.00	37,200.00	36,575.00	35,848.00
Fatalities per VMT	1.10	1.10	1.15	1.11	1.09	1.13	1.18	1.17	1.15	1.11
BAC ≥.01	11,855.90	11,464.50	12,078.20	11,875.00	11,680.30	12,154.20	12,891.30	12,714.60	12,488.80	11,868.50
BAC ≥.01 per VMT	0.40	0.39	0.41	0.40	0.39	0.39	0.40	0.40	0.39	0.37
BAC ≥ .05	10,915.10	10,559.20	11,106.60	10,933.90	10,784.00	11,131.20	11,902.20	11,774.90	11,572.90	10,928.00
BAC ≥ .05 per VMT	0.37	0.36	0.38	0.37	0.36	0.36	0.37	0.37	0.36	0.34
BAC ≥ .08	10,089.50	9,811.00	10,304.10	10,047.00	9,885.90	10,233.80	10,914.20	10,827.50	10,648.50	10,103.30
BAC ≥ .08 per VMT	0.34	0.33	0.35	0.34	0.33	0.33	0.34	0.34	0.33	0.31
BAC ≥ .15	7,080.70	6,724.00	7,251.70	6,845.20	6,823.40	6,825.90	7,383.40	7,424.90	7,277.50	6,845.30
BAC ≥ .15 per VMT	0.24	0.23	0.25	0.23	0.23	0.22	0.23	0.23	0.23	0.21
% Driver BAC ≥ .01	25.66	25.01	25.20	25.35	25.23	23.76	23.73	23.30	23.50	22.54
% Driver BAC ≥ .05	23.52	22.95	23.08	23.22	23.13	21.64	21.78	21.45	21.67	20.59
% Driver BAC ≥ .08	21.58	21.24	21.27	21.20	21.09	19.76	19.82	19.62	19.80	18.90
% Driver BAC ≥ .15	14.91	14.36	14.82	14.23	14.22	12.93	13.11	13.23	13.23	12.60

Note: VMT measures are per 100 million vehicle miles traveled. Monthly VMT data from TVT reports were summed to arrive at the unadjusted annual VMT for a year.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Arizona										
Total Fatalities	759.00	826.00	821.00	849.00	773.00	897.00	952.00	998.00	1011.00	981.00
Fatalities per VMT	1.24	1.37	1.39	1.41	1.27	1.40	1.42	1.48	1.47	1.42
BAC ≥.01	243.50	260.30	271.80	263.40	249.40	321.40	301.20	327.50	348.70	309.20
BAC ≥.01 per VMT	0.40	0.43	0.46	0.44	0.41	0.50	0.45	0.48	0.51	0.45
BAC ≥ .05	224.60	231.00	247.30	241.10	231.00	285.90	275.20	300.60	320.20	281.80
BAC ≥ .05 per VMT	0.37	0.38	0.42	0.40	0.38	0.45	0.41	0.44	0.47	0.41
BAC ≥ .08	205.70	211.70	229.90	220.50	199.70	266.80	243.50	270.00	298.00	260.40
BAC ≥ .08 per VMT	0.34	0.35	0.39	0.37	0.33	0.42	0.36	0.40	0.43	0.38
BAC ≥ .15	141.30	143.00	169.00	157.40	140.00	183.50	159.50	187.50	209.40	175.50
BAC ≥ .15 per VMT	0.23	0.24	0.29	0.26	0.23	0.29	0.24	0.28	0.30	0.25
% Driver BAC ≥ .01	23.19	21.17	23.40	21.43	22.50	24.23	20.91	22.60	23.96	21.79
% Driver BAC ≥ .05	21.40	18.91	21.28	19.67	20.36	21.52	19.06	20.55	21.82	19.67
% Driver BAC ≥ .08	19.51	17.19	19.59	17.82	18.02	19.90	16.95	18.43	20.11	17.99
% Driver BAC ≥ .15	13.24	11.51	14.36	12.93	12.33	13.48	10.68	12.79	13.93	11.67
Colorado										
Total Fatalities	450.00	447.00	474.00	482.00	488.00	547.00	608.00	648.00	632.00	596.00
Fatalities per VMT	0.93	0.97	1.01	1.01	0.98	1.07	1.15	1.21	1.16	1.10
BAC ≥.01	139.00	173.20	170.30	170.50	185.20	178.10	198.20	210.30	222.30	200.10
BAC ≥.01 per VMT	0.29	0.37	0.36	0.36	0.37	0.35	0.37	0.39	0.41	0.37
BAC ≥ .05	129.90	164.60	145.30	153.20	172.70	160.80	179.70	194.20	206.50	181.60
BAC ≥ .05 per VMT	0.27	0.36	0.31	0.32	0.35	0.31	0.34	0.36	0.38	0.34
BAC ≥ .08	119.90	159.80	133.50	139.90	159.70	151.00	163.10	176.60	191.70	163.50
BAC ≥ .08 per VMT	0.25	0.35	0.29	0.29	0.32	0.30	0.31	0.33	0.35	0.30
BAC ≥ .15	86.90	111.70	90.80	103.50	112.40	100.50	119.20	117.60	141.40	120.60
BAC ≥ .15 per VMT	0.18	0.24	0.19	0.22	0.23	0.20	0.23	0.22	0.26	0.22
% Driver BAC ≥ .01	21.91	27.61	24.89	24.98	25.28	22.09	21.19	21.39	24.10	22.17
% Driver BAC ≥ .05	20.53	25.96	21.50	22.68	23.57	19.33	19.14	19.54	22.30	19.90
% Driver BAC ≥ .08	19.03	25.09	19.83	20.61	21.83	18.04	17.27	17.64	20.51	17.81
% Driver BAC ≥ .15	13.81	17.79	13.39	14.82	15.23	11.67	12.89	11.70	15.12	13.13

Note: VMT measures are per 100 million vehicle miles traveled. Monthly VMT data from TVT reports were summed to arrive at the unadjusted annual VMT for a year.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Nevada										
Total Fatalities	257.00	246.00	261.00	266.00	291.00	326.00	329.00	311.00	329.00	304.00
Fatalities per VMT	1.27	1.22	1.24	1.10	1.17	1.25	1.22	1.12	1.16	1.08
BAC ≥.01	84.60	91.20	100.30	93.60	112.40	118.00	116.50	95.70	109.90	113.40
BAC ≥.01 per VMT	0.42	0.45	0.48	0.39	0.45	0.45	0.43	0.34	0.39	0.40
BAC ≥ .05	72.60	78.60	92.00	86.20	100.40	103.90	106.40	91.40	98.40	97.70
BAC ≥ .05 per VMT	0.36	0.39	0.44	0.36	0.40	0.40	0.39	0.33	0.35	0.35
BAC ≥ .08	68.60	70.10	84.90	80.60	92.80	99.10	101.50	84.70	87.90	91.60
BAC ≥ .08 per VMT	0.34	0.35	0.40	0.33	0.37	0.38	0.38	0.30	0.31	0.33
BAC ≥ .15	47.30	41.10	59.80	57.40	64.60	74.30	55.10	62.70	53.80	65.80
BAC ≥ .15 per VMT	0.23	0.20	0.28	0.24	0.26	0.29	0.20	0.23	0.19	0.23
% Driver BAC ≥ .01	24.39	25.91	25.38	23.45	25.53	25.41	24.38	19.69	23.79	24.07
% Driver BAC ≥ .05	20.32	22.38	24.32	21.23	22.86	22.18	22.35	18.53	21.76	20.76
% Driver BAC ≥ .08	19.10	19.82	22.28	20.21	20.84	20.84	21.08	17.16	19.35	19.29
% Driver BAC ≥ .15	12.86	11.86	15.77	14.15	14.02	14.79	11.55	12.32	11.45	13.81

Note: VMT measures are per 100 million vehicle miles traveled. Monthly VMT data from TVT reports were summed to arrive at the unadjusted annual VMT for a year.

Appendix C: Utah DPS .05 Fact Sheet

.05 BAC Fact Sheet

Commissioner Keith D. Squires
Utah Department of Public Safety

The presence of alcohol, even at a level under the .08 BAC limit, presents a danger on Utah Roadways.

- Between 2006 and 2015, there were 23 fatal crashes in Utah involving a BAC between .05 and .07.[1]
- Data gathered by the National Highway Traffic Safety Administration (NHTSA) shows that an individual with a .05 BAC is more than two times more likely to be involved in a crash than an individual with no alcohol in their system.[2]

The goal of DUI enforcement efforts will continue to be the detection and removal of impaired drivers from Utah roadways.

- The Utah Highway Patrol provides significant training on DUI enforcement to troopers and members of other law enforcement agencies across the state.
- The current training dictates that law enforcement officers should make DUI arrest decisions based on impairment detected during the entire investigation (or, in other words, the driver's inability to safely operate a vehicle).[3]
- Currently significant changes in the approach to training are not anticipated in light of the newly passed .05 BAC limit; the focus will remain on the detection of impaired drivers. This allows officers to identify impaired drivers, whether the impairment is caused by alcohol or drugs.

Reduced legal BAC limits have occurred before. Utah was the first to change to .08.

- In the early 90's several states, including California, reduced the legal limit from .10 BAC to a .08 BAC. NHTSA investigated the impact this had in California.[4]
- Although there were public concerns, the reduction had minimal impact on law enforcement training, policies, and procedures. People were arrested for impairment prior to and after the implementation of the law.[5]
- The lowering of the legal limit did not create significant increases in convictions or appeals rates.[6]
- Arrests between the old BAC and the new BAC remained a very low proportion. In other words, California did not start arresting huge numbers of people at the lower BAC.[7]
- However, following the reduction from .10 to .08, alcohol-related fatalities dropped by 12%.[8]

- This study also found that due to the law change: 1) drinking habits did not significantly change, and 2) people were much less likely to drive after drinking.[9]
- European nations that changed levels to .05 did see decreases in alcohol-related fatalities of 8-12%, according to the National Transportation Safety Board (NTSB).[10]

The amount of alcohol it takes to reach a .05 BAC may be more than people realize.

- There have been adverse reactions to .05 limit, some of which may be based on misconceptions of how many drinks it takes to get to a .05 BAC.
- The amount of alcohol it takes to reach .05 is not as relevant as the increased risk of crashing after consuming alcohol. The message remains the same: If you have anything drink, we urge you not to drive.
- While it is true that individuals have differing metabolisms and tolerance levels, during the course of a **two-hour** dinner an average man would consume 4 drinks before exceeding .05 BAC. [11] [12]
    - The CDC lists the average man in the U.S. as 5'9" and 196 pounds.[13]
    - A drink consists of 12 ounces of 4% beer, 1.25 ounces (a single shot) of 80 proof liquor, or 5 ounces of 10% wine.
- Many apps and online resources are available for these estimations. Please remember to include the time since the start of drinking when attempting to calculate a BAC.

[Editor's Note: The original of this fact sheet contains 13 footnoted sources, as shown in the text above. However, many of this sources were incorrectly reported and contained significant errors. The corrected citations appear below in place of the original footnotes.]

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[1] Mower, G. (2017). *Lowering BAC*. Utah Highway Safety Office.

[2] Compton, R. P., & Berning, A. (2015). *Drug and alcohol crash risk* (Traffic Safety Facts Research Note. Report No. DOT HS 812 117). National Highway Traffic Safety Administration. www.nhtsa.gov/staticfiles/nti/pdf/812117-Drug_and_Alcohol_Crash_Risk.pdf

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[10] National Transportation Safety Board. (2013*). Reaching zero: Actions to eliminate alcohol-impaired Driving,* (Safety Report NTSB/SR-13/01). https://interlockciim.org/wp-content/uploads/2018/08/NTSB_Saftey-Zero_2013.pdf

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