

POINT/COUNTERPOINT

Potential Statements and Questions by Opponents of .05 BAC Laws Countered by Scientific Facts

POINT: How would lowering per se BAC laws to .05% reduce alcohol-involved crashes?
How many lives will be saved and injuries prevented by lowering the per se BAC?

COUNTERPOINT: When states lowered the per se BAC limit from .15 BAC to .10 BAC, these laws served as a general deterrent to drunk driving. Many drivers perceived the law change as the government getting tougher on drunk driving. Consequently, fewer drivers drove drunk and alcohol-related fatal crashes decreased. The same deterrent effect took place when the BAC limits were lowered from .10 BAC to .08 BAC. Drivers at all BAC levels (.01+; .08+; .15+) got the message and reduced their impaired driving.

One study of the effects of the .08 BAC laws in the United States estimated that .08 BAC laws prevent 360 deaths per year and that lowering the BAC limit even further to .05 would prevent an additional 538 deaths per year (Wagenaar, Maldonado-Molina, Ma, Tobler, & Komro, 2007).

A meta-analysis of .08 BAC laws in 19 states indicated a 14.8% reduction in drinking drivers in fatal crashes associated with the passage of .08 BAC laws. This analysis suggested that .08 laws saved 947 lives each year. Lowering the BAC limit from .08 to .05 should have a similar effect.

A NHTSA-sponsored (50-state) study estimated that 590 lives would be saved if all states lowered their BAC limit from .10 to .08 (Voas, Tippetts, & Fell, 2000).

One study in Australia found a 7% to 14% reduction in serious injury crashes associated with the passage of .05 BAC laws. It is difficult to estimate how many serious injuries would be avoided due to .05 BAC laws in the United States, but it would be in the thousands.

A recent study conducted under a grant from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) found from a meta-analysis of studies around the world that lowering the BAC limit to .05 or lower was associated with an 11% decrease in alcohol-impaired driving fatal crashes. That study estimated that 1,790 lives could be saved each year if all states adopted a .05 BAC limit (Fell & Scherer, 2017).

An evaluation of the .05 BAC law in Utah showed a 19.8% decrease in the fatal crash rate after the adoption of the .05 law compared to 5.6% fatal crash rate reduction for the rest of the states. There were decreases in numerous measures of alcohol impaired crashes ranging from 7.8% to 22.9% reductions (Thomas et al., 2022).

POINT: .05 BAC laws will make criminals out of normal social drinkers.

COUNTERPOINT: Impairment and crash risk are the relevant issues—not how many drinks it may take to get to .05 BAC. Scores of studies have been conducted which indicate that, at .05 BAC, virtually everyone is impaired in important skills related to driving and, at that .05 level, the risk of being involved in a fatal crash is significantly greater than at .00 BAC. Drivers who are impaired by alcohol, whether they are social drinkers or problem drinkers, should not drive.

POINT: Lowering the limit from .08 BAC to .05 BAC will just distract us from the real problem—high BAC, chronic drinking drivers.

COUNTERPOINT: The studies of the effectiveness of .08 BAC laws indicate that these laws are just as effective in reducing alcohol-related fatalities involving high BAC drivers as they are in reducing fatalities involving low BAC drivers (Hingson, Heeren, & Winter, 1996; Wagenaar, et al., 2007). In the Utah study of the effects of their .05 BAC law there were reductions of 22.5% for drivers in crashes at BACs>.15 and similar reductions for drivers in crashes with BACs>.08 (22.9%) and BACs>.05 (22.5%) (Thomas et al., 2022).

Again, however, impairment and crash risk are the most relevant issues, not whether or not a person is considered a social drinker or a heavy drinker. It is illegal for any person to operate a motor vehicle if he or she is impaired by alcohol and research has consistently shown that virtually everyone is impaired in important driving-related functions at a BAC of .05 and higher, with decrements in performance on the order of 30% to 50%. Research has also consistently shown that a person at .05 BAC and higher is many times more likely to be involved in a fatal crash than is a person at .00 BAC.

Only a small percentage of alcohol-impaired drivers are ever caught and processed through the judicial system. Thus, a small minority of alcohol-related fatal crashes involve an identified chronic offender. Therefore, to reduce alcohol-impaired driving, it is essential to pursue both a broad preventive approach (of which a .05 BAC law is but one component) as well as a more specific approach that deals primarily with those chronic, heavy drinkers who are apprehended and identified by the system.

POINT: .05 BAC laws will overwhelm police and clog the criminal justice system.

COUNTERPOINT: Several studies, including a NHTSA-sponsored study in Illinois (Voas, Taylor, Kelley-Baker & Tippetts, 2000), have looked at the impact of .08 BAC laws on enforcement efforts and the criminal justice system. These studies have not found any significant problems for the police or for the court systems. The same should happen when the limit is lowered from .08 to .05 BAC. There will be slight increase in DWI arrests, but not enough to overburden the criminal justice system. The same finding occurred in the Utah study of their .05 BAC law----no significant increases in DUI arrests after the law was adopted.

POINT: “I know when I’m ‘too drunk to drive’—I don’t need to be concerned about my blood alcohol concentration.”

COUNTERPOINT: Your driving skills can be seriously compromised even when you may not appear to be observably “drunk” or do not feel drunk. Alcohol causes significant impairment in reaction time, divided attention, tracking behavior, and other skills essential for safe driving. Even when attempting to drive more carefully, an impaired driver cannot compensate for those reduced abilities. In addition, alcohol affects your ability to judge whether or not you are impaired.

POINT: The American public will not support .05 BAC because most people have no idea how much alcohol it would take to put them over the legal limit.

COUNTERPOINT: According to several national surveys, most Americans would not drive after having two or three drinks in one hour, an amount that would put them at about .05 BAC. Most people know how much alcohol it takes to impair their driving ability and they accept lower limits such as .05 BAC for adults.

The average male at 170 pounds would need 4 drinks in two hours on an empty stomach to reach a BAC exceeding .05. An average female weighing 137 pounds would not reach .05 BAC until she had 3 drinks in two hours on an empty stomach. The number of drinks, how fast you drink, your gender, your weight and whether there is food in your stomach all affect what your BAC will be.

A recent probability-based survey conducted by the AAA Foundation for Traffic Safety of over 2500 licensed drivers found that almost two-thirds (63.1%) of the respondents approved of lowering the illegal BAC limit from 0.08 to 0.05 g/dL.

POINT: Lowering the illegal BAC limit from .08 BAC to .05 BAC will not affect problem drinker drivers who have high BAC levels.

COUNTERPOINT: Several studies have shown that .08 laws not only reduce the incidence of impaired driving at lower BACs, they also reduce the incidence of impaired driving at higher BACs (i.e., over .10 and over .15). A .05 law will serve as a *general* deterrent to drinking and driving. It will send a message that the state is getting tougher on impaired driving, and it will make many people think twice about getting behind the wheel after they’ve had two, three or four drinks. A .05 BAC law can serve as a key component of an overall program to reduce impaired driving in any state. While high BAC, problem drinkers, and repeat DWI offenders do account for a significant part of the problem, more than three-quarters of all drivers involved in alcohol-related fatal crashes have no prior alcohol-related offenses. In the Utah study of the effects of their .05 BAC law there were reductions of 22.5% for drivers in crashes at BACs>.15 and similar reductions for drivers in crashes with BACs>.08 (22.9%) and BACs>.05 (22.5%) (Thomas et al., 2022).”

POINT: Lowering the BAC limit to .05 will make it difficult for the law enforcement community to determine impairment using the Standardized Field Sobriety Tests (SFSTs).

COUNTERPOINT: Lowering the per se limit to .05 does not place an unnecessary strain on police officers. They still must have probable cause to stop drivers and to determine if they are impaired. The horizontal gaze nystagmus (HGN) test of the three SFSTs is just as valid at .05 BAC as it is at .08 BAC and .10 BAC (McKnight, Langston, McKnight, & Lange, 2002).

POINT: Lowering the BAC limit from .08 to .05 appears to be another attempt at prohibition. Isn't it a slippery slope toward a zero-tolerance policy for all drivers?

COUNTERPOINT: The notion that safety organizations seek a return to prohibition is unfounded. Although there is strong research evidence that driving-related skills begin to deteriorate at lower BACs, numerous medical associations and public health organizations in other countries support .05 BAC as a reasonable and acceptable level that will save lives, prevent injuries and reduce costs to society. At least 63 countries around the world have adopted BAC limits for driving at .05 or lower. Only 21 countries remain at a .08 BAC limit.

POINT: What other organizations support a per se BAC level lower than .08%?

COUNTERPOINT: The World Medical Association, the American Medical Association, the British Medical Association, the European Commission, the European Transport Safety Council, the World Health Organization, the Canadian Medical Association, the Centre for Addiction and Mental Health, the National Transportation Safety Board, the National Academies of Science, Engineering and Medicine, the Association for the Advancement of Automotive Medicine, and the AB-InBev Foundation all have policies supporting a .05 BAC limit or lower.

POINT: Why shouldn't I be allowed to drive with a BAC between .05% and .08% if I don't show signs of impairment? Aren't I a better judge of my own reactions and abilities than the government?

COUNTERPOINT: You may not be the best judge of whether you are impaired or not by alcohol, especially at BACs of .05 and higher. Howat, Sleet, and Smith (1991) conducted a review of the literature from experimental and laboratory research on the impairment effects at .05 BAC. Many of the studies reviewed showed statistically significant decrements in driving performance at a BAC of .05 or lower. They recommended that setting a uniform .05 BAC statutory limit should be one measure in a comprehensive approach to reducing impaired driving including other legal, social, behavioral, and environmental strategies to deal with the problem. In addition, Ferrara, Zancaner, and Georgetti (1994) concluded in a review of the research literature that driving performance changes initially begin with any departure from a .00 BAC.

Moskowitz and Fiorentino (2000) reviewed 112 scientific articles regarding the effects of alcohol on driving-related skills published between 1981 and 1997. They concluded that, by the time subjects reach .05 BAC, the majority of experimental studies examined reported significant impairment. After testing 168 drivers in another study, Moskowitz, Burns, Fiorentino, Smiley, and Zador (2000) concluded that the majority of the driving population is impaired in at least some important measures at BACs as low as .02 BAC.

Recent epidemiological studies of the relative risk of being involved in a crash at various positive BAC levels indicate that the risk of crashing is substantially higher at .05 g/dL BAC compared to drivers at .00 g/dL BAC (Compton and Berning, 2015; Lacey et al., 2016; Voas, Torres, Romano, & Lacey, 2012). Zador, Krawchuk, and Voas (2000) estimated that the risk of being involved in a fatal crash for drivers at BACs as low as .02–.04 is anywhere from two times to five times higher than for drivers with BACs=.00, depending upon age and gender. That same study concluded that the risk of being killed as a driver in a single-vehicle crash is 6 to 17 times greater for drivers at BACs between .05 and .07 g/dL compared to drivers with BACs of .00, and that the risk of just being involved as a driver in a fatal crash is 4 to 10 times greater at BACs between .05 and .07 than drivers with BACs=.00.

POINT: As noted in the NTSB report, the per se BAC limit for noncommercial drivers over age 21 was lowered from 0.10 to 0.08 for all states by 2004, and all states have zero tolerance laws specifying per se BAC limits of 0.00-0.02 for drivers under 21, but NHTSA's own statistics show no change in the percentage of fatalities involving drivers with BACs over 0.00, 0.01-0.07, or 0.08+ since about 1997. If lowering the BAC from 0.10 to 0.08 didn't have an effect, why will lowering it to 0.05 be any better?

Also, in a similar vein, according to the information cited by NHTSA and NTSB, the most frequent BAC of drivers involved in fatal crashes was 0.16—twice the current illegal limit of .08 BAC. So how will lowering the BAC limit to 0.05 have any effect on the truly drunk drivers who are the real problem? You admit in the NTSB report that it's counterintuitive, but suggest it would somehow create a broad deterrent effect that would reduce all alcohol related crashes? If that's true, why has the percentage of drivers in fatal accidents at all BACs remained the same since 1997 despite a change in BAC limits?

COUNTERPOINT: States began lowering their BAC limit to .08 beginning in 1983. Most of those states experienced a decrease in the percentage of fatal crashes involving impaired driving after the law was adopted. In 2000, there was a federal sanction (withholding of highway construction funds) if states did not adopt a .08 per se BAC limit. Consequently, by 2005, all states adopted .08 BAC. The biggest decreases in impaired driving fatal crashes took place between 1982 and 1997 (Dang, 2008). This was due to .08 laws being adopted, administrative license revocation (ALR) laws being adopted, increased impaired driving enforcement, and many other factors. After 1997, very little activity transpired in impaired driving

countermeasures that served as general deterrence to impaired driving. The adoption of .08 laws and the infrastructure of other laws kept the percentage of fatal crashes involving impaired drivers at the same level as 1997 through 2019.

The .08 laws adopted between 1983 and 1997 were accompanied by intensive publicity and public awareness and increased enforcement. This activity waned after 1997. In order for laws to be an effective general deterrent, the public must be aware of them and the media must report them. This did not happen to any great extent with .08 laws adopted after 1997.

It is expected that .05 BAC laws will serve as a strong general deterrent to impaired driving and affect drinking drivers at all BAC levels--including .16 and higher. This is what happened when the first .08 BAC laws were adopted. Reductions were seen in fatal crashes involving drivers who were drinking (BAC>.01), who were intoxicated (BAC>.08) and who were at very high BACs (BAC>.15). Similar reductions were experienced in Utah when they adopted a .05 BAC limit.

Most drunk driving laws passed recently have been specific deterrent laws (sanctions for DWI offenders caught and convicted). A law that sends the message that the state will not tolerate impaired driving, such as lowering the limit to .05 BAC, has substantial potential to resume progress in reducing impaired driving injuries and fatalities.

POINT: According to a NHTSA research report, talking on a hands-free cell phone while driving is equivalent to driving with a .08 BAC. Distracted driving is apparently more dangerous than driving with a .05 BAC.

COUNTERPOINT: Not true. Talking or texting on a cell phone is dangerous for the brief time during the driver's trip while that behavior is occurring. The other times are at normal risk of a crash. A driver at a .05 BAC or higher is impaired the entire trip and at a crash risk significantly higher than a driver with a .00 BAC. The crash risk of distracted drivers is due to not keeping their eyes on the road ahead of them. The crash risk of a driver at a .05 BAC or higher is due to impaired decision-making, coordination, slowed reaction time, and tracking and steering ability, among other performance decrements.

POINT: A University of Utah report says that older drivers (aged 65 and older) have the same crash risk as a younger driver with a .05 BAC. Should we arrest older drivers for being impaired?

COUNTERPOINT: Of course not, unless they are exhibiting unsafe behaviors. Most older drivers are safe drivers and compensate for any infirmities in their driving. Young novice drivers also have a high crash risk---much higher than older drivers. It is proven from research that any driver at any age is impaired at .05 BAC and therefore it should be illegal. Most people say you should not drive after 2 or 3 drinks within two hours—which is .05 BAC or less for most of them.

POINT: A Rutgers University report says that police cannot detect a driver at .08 BAC because they do not exhibit typical “drunk” behavior.

COUNTERPOINT: Again, not true. A driver with a .08 BAC put through the Standardized Field Sobriety Testing (SFST) typically has numerous failures in the tests. The tests consist of a one-legged stand, a walk-and-turn and a horizontal gaze nystagmus detection. Most drivers at .08 BAC falter, do not follow directions and show nystagmus. Those signs detect alcohol impairment.

POINT: While Utah experienced a 19.8% decrease in their fatal crash rate between 2016 and 2019, three other States experienced larger decrease without a .05 BAC law. So Utah’s decrease was not necessarily due to the .05 BAC law.

COUNTERPOINT: So that means that 46 other States had fatal crash rate decreases that were smaller than Utah’s and overall that decrease was 5.6% in the 49 States other than Utah. That is very impressive.

The three States with larger decreases than Utah might have been due to a number of known effective countermeasures: an increase in traffic enforcement; an increase in seat belt use; a decrease in speeding; and other programs. The decrease in Utah was directly associated with the adoption and implementation of the .05 BAC law.

POINT: A report from the California DMV in the 1990s stated that there was no significant effect on fatal crashes when the .08 BAC law went into effect. Therefore, there will probably be no significant impact of a .05 BAC law.

COUNTERPOINT: NHTSA sponsored a study of the .08 BAC law in California in 1991. That study found that the lower BAC level (.08) and the new administrative license revocation (ALR) law combined resulted in a 12% decrease in alcohol-related fatalities (Research and Evaluation Associates, 1991). The California DMV study found a 7% reduction in nighttime fatal and serious injury crashes associated with the .08 BAC and ALR laws (Rogers, 1995). Lowering the BAC limit from .10 BAC to .08 BAC has been a proven effective strategy.

POINT: Several legislators from States that introduced .05 BAC bills expressed a fear that lowering the BAC from .08 to .05 will result in differential enforcement (racial profiling by police). This would result in more Blacks being arrested at BACs = .05-.079 g/dL.

COUNTERPOINT: There is no evidence that this occurred in any country that lowered their BAC limit to .05 (Europe, Australia; Japan) nor in Utah. This excuse was also used when States upgraded their seat belt use laws from secondary enforcement (must be stopped for another

traffic violation before a seat belt citation can be issued) to primary enforcement (can be stopped and cited directly for not using a seat belt). NHTSA sponsored a study in Louisiana when they upgraded their law to primary enforcement. While observational surveys indicated that a greater percentage of Whites compared to Blacks were wearing a seat belt, an equal percentage of Blacks and Whites were cited for seat belt violations (7-8%) (Preusser & Preusser, 1997).

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Impairment Begins with the First Drink

In 49 U.S. states, the blood alcohol concentration at which a driver is legally impaired is 0.08.* For a majority of drivers, driving performance has already deteriorated significantly by the time they reach this level. In Utah, the limit is 0.05, and other states are considering lowering the alcohol concentration to 0.05 as well.

Alcohol, Drugs and Impairment Division (ADID) members of the National Safety Council, conducted an extensive scientific literature review in 2014 that examined crash risk at low alcohol concentrations. The review provides ample support that crash risk involving alcohol impairment begins at very low alcohol concentrations and rapidly rises:

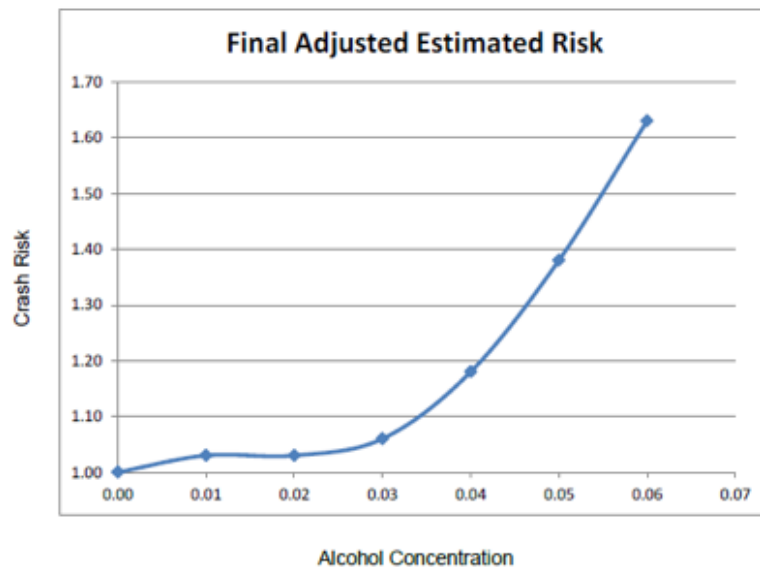


Chart adapted by ADID from: Blomberg RD, Peck RC, Moskowitz H, Burns M, Fiorentino D: The Long Beach/Fort Lauderdale relative risk study; J Safety Res 40:285; 2009.

Each drink of alcohol consumed increases the risk of crashing, beginning with the first drink.

What Happens When You Are Impaired

Most crash risk charts show risk of alcohol concentrations beginning at 0.08 and upwards, but the dramatic increase in crash risk also occurs at low alcohol levels. The above chart reflects crashes of all severities.

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*The limit is lower for some drivers. For commercial vehicle drivers, the limit is 0.04 and for drivers under age 21, all states have zero tolerance limits.

Crash risk for alcohol concentrations below 0.08:

- After 0.03, crash risk rises rapidly.
- At 0.04, there is an 18% increased risk.
- At 0.05, risk is 40% higher than it is at zero alcohol concentration.

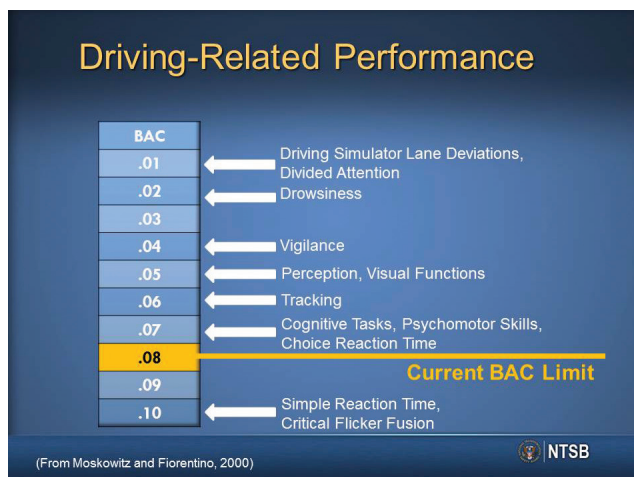
The ADID review found that:

- Each drink of alcohol consumed increases the risk of crashing, beginning with the first drink.
- It's more than just the drivers. People who consumed only one drink were more likely to ride in a car with an alcohol-impaired driver, increasing their risk of crash involvement by almost four times.

To explain the increased crash risk at these low levels, ADID members reviewed studies on alcohol impairment at low alcohol concentrations. Research shows that alcohol impairment begins at very low alcohol concentrations, as low as 0.015.

In its 2013 report "Reaching Zero: Actions to Eliminate Alcohol-Impaired Driving," the National Transportation Safety Board (NTSB) summarized research findings of driver impairment, showing performance decrements beginning at 0.01.

Alcohol Goes Up, Driving Skills Go Down:



Significant impairment occurs in the following ways among drivers under .05 alcohol concentration:

Visual acuity, vigilance, drowsiness, psychomotor skills and information processing.



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Some of the most significant effects occur with divided attention when drivers must attend to several aspects of driving at once, such as controlling the vehicle while paying attention to stimuli that require a response. We are using this ability nearly constantly for safe driving, yet divided attention shows impairment at very low alcohol concentrations. This dangerous risk begins at .01.

Fifty years of scientific evidence shows a direct relationship between increasing alcohol concentrations and crash risk by 0.048. There are significant decrements in speed of information processing, reductions in working memory, and increases in errors of commission. The body of evidence show driving performance deteriorates for most drinking drivers by the time they reach 0.05 alcohol concentration.

What People Don't Know About Drinking

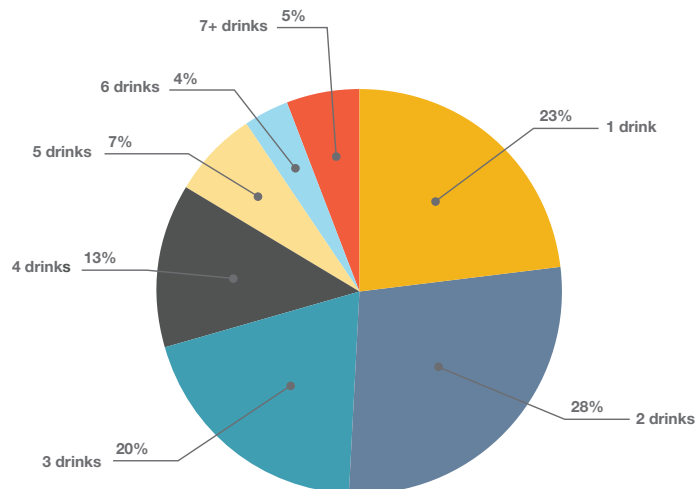
Most people cannot gauge their alcohol level based on drinks they've consumed. Only very rarely are people aware of their alcohol concentration when drinking.

What People Do Know About Drinking

Some people understand the number of drinks they have consumed could potentially affect their driving ability, but many do not. National Safety Council asked adult drivers in a February 2017 survey: How many drinks do you think you can typically have before you are not safe/too impaired to drive? Despite not being legally intoxicated, drivers report "feeling impaired" at low levels of alcohol consumption:

- 23% said that they can typically have one drink before they feel "not safe/too impaired to drive"
- 28% reported they are "not safe/too impaired to drive" after only two drinks

For many people, one to two drinks could place them at 0.05 alcohol concentration or lower.



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DOT HS 813 233

February 2022

Evaluation of Utah's .05 BAC Per Se Law

Figure ES-2. Annual Alcohol Sales Net of Taxes

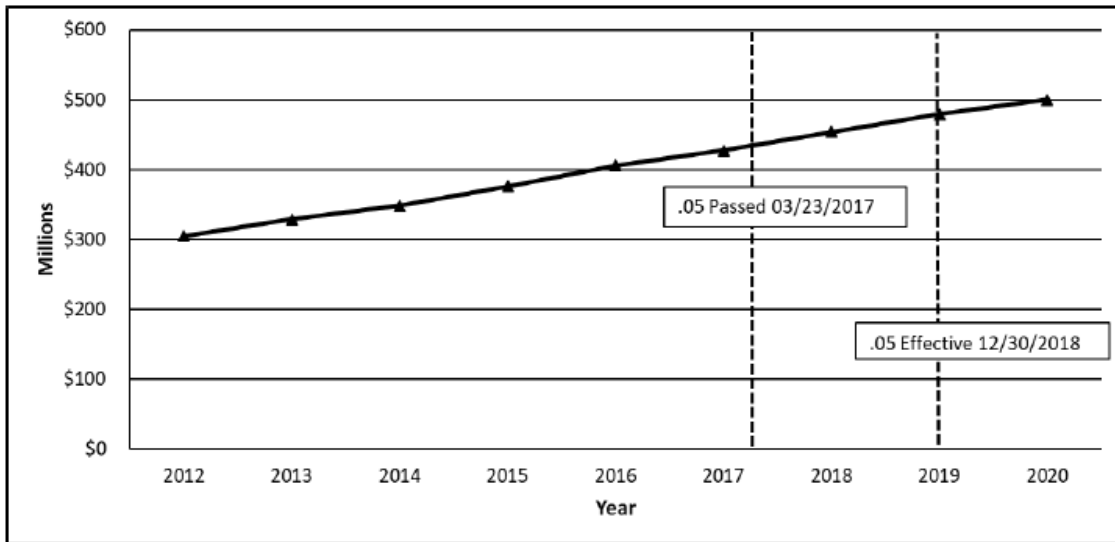


Figure 3. Utah Single Vehicle Nighttime Crashes per 100 Million VMT

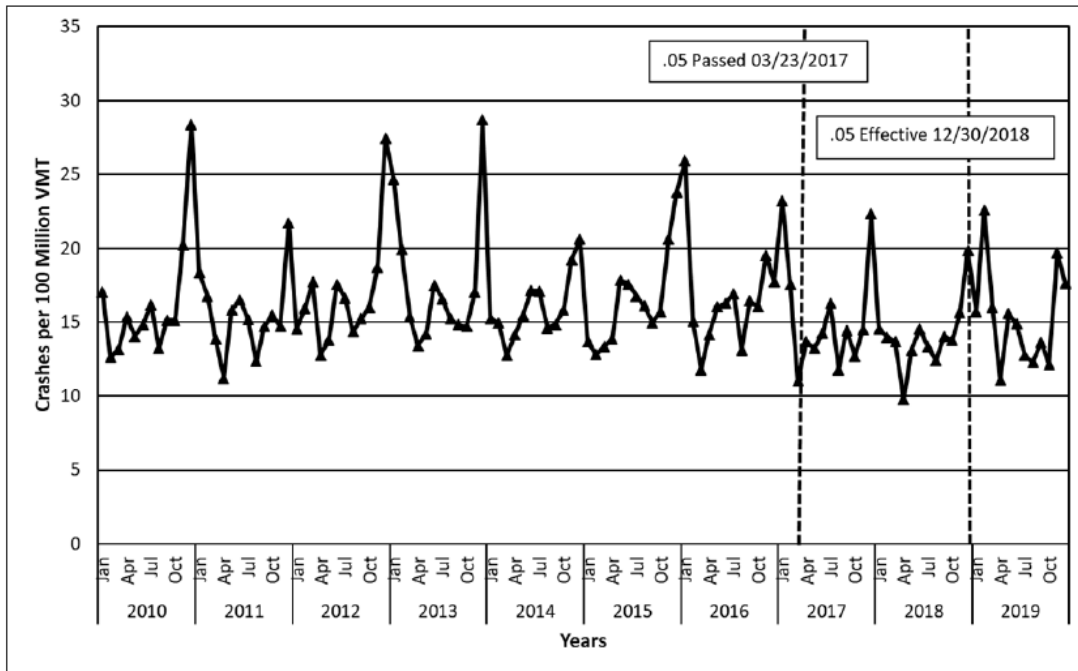


Figure 5. Utah vs. AZ, CO, NV: FARS Fatal Crashes per 100 Million VMT

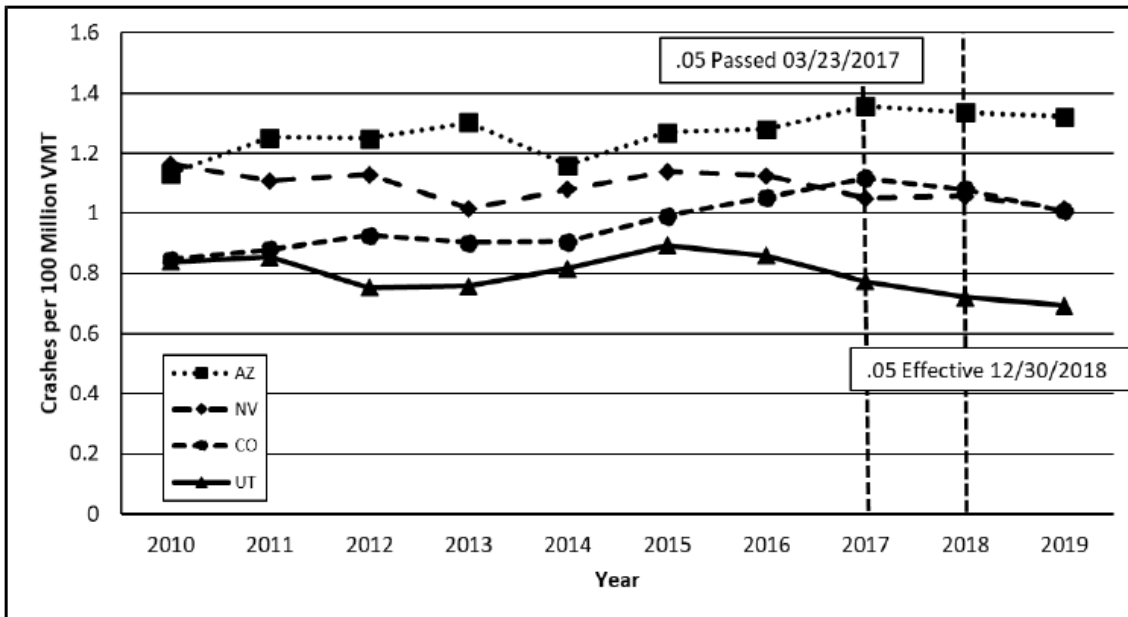


Figure 6. Fatalities per 100 Million VMT

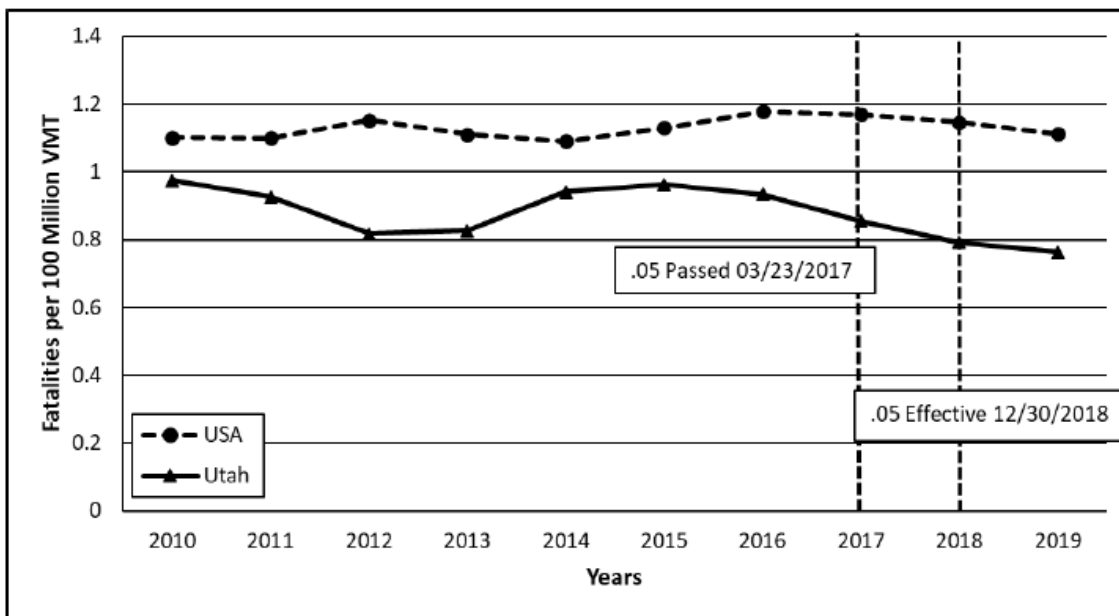


Figure 12. DABC Annual Alcohol Sales Net of Taxes FY 2012 - 2020

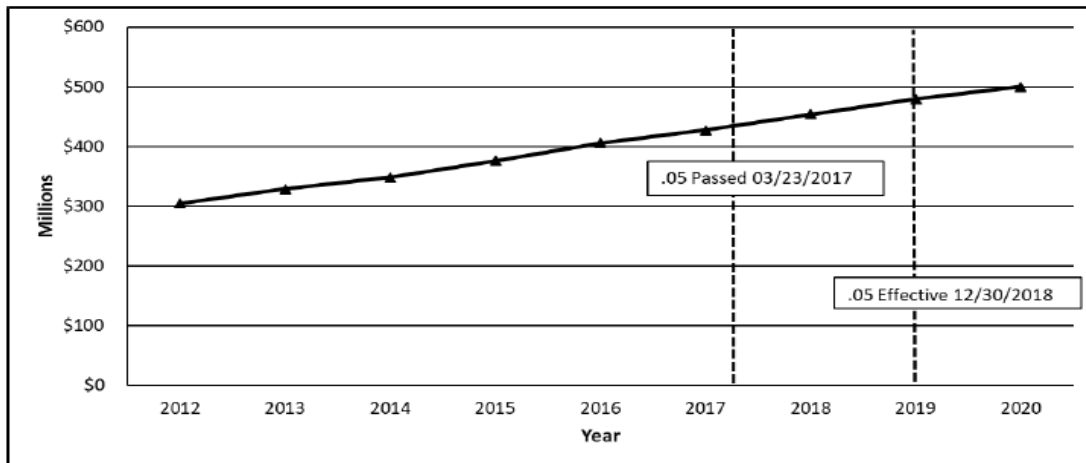


Table 16. Measures of Utah DABC Alcohol Sales for FY 2012 - 2020

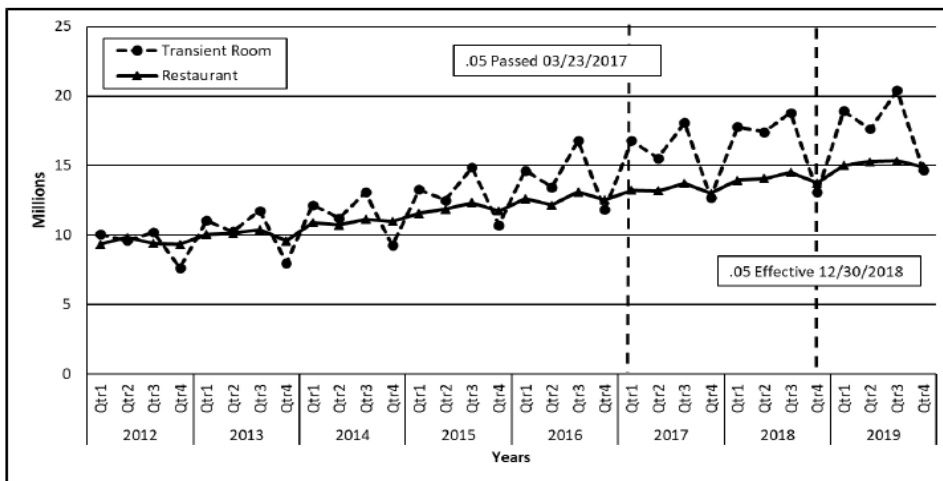
Measure	2012	2013	2014	2015	2016	2017	2018*	2019*	2020*
Sales Net of Taxes (\$)	304,883,697	328,912,217	348,453,487	376,238,719	405,911,384	427,606,013	453,689,000	479,324,000	500,212,000
Gross profit	140,812,503	154,008,906	162,281,115	173,068,079	186,732,544	194,527,614	209,137,000	220,054,000	229,517,000
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.

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



.05 BAC Safety Briefing Facts

Why does the NTSB support .05 BAC laws?

- ✓ Decades of research show that .05 BAC laws can save lives on the roads. (Albalade 2008; Thomas et al., 2022)
- ✓ A .05 BAC law has a broad deterrent effect because it helps prevent drinking drivers from getting behind the wheel in the first place. (Byrne et al., 2016)
- ✓ Alcohol, both alone and in combination with other drugs, continues to be the drug with the most detrimental impact on traffic safety. (NTSB 2022)

Who supports a .05 BAC limit?

NTSB
National Safety Council
Advocates for Auto and Highway Safety
Mothers Against Drunk Driving
National Academies of Science, Engineering, and Medicine
The World Health Organization
AB InBev

Impairment effects by BAC (NHTSA)

.02 BAC	<ul style="list-style-type: none"> • Decline in visual functions • Decline in ability to perform two tasks at same time
.05 BAC	<ul style="list-style-type: none"> • Reduced coordination • Reduced ability to track moving objects • Difficulty steering • Reduced response to emergency driving situations
.08 BAC	<ul style="list-style-type: none"> • Reduced ability to concentrate • Short-term memory loss • Difficulty controlling speed • Reduced information-processing capability • Impaired perception

Enacting .05 BAC laws in all states would result in an estimated 11% decline in fatal alcohol-related crashes and save at least 1,700 lives annually in the US. (Fell and Scherer 2017)

For drivers with BACs of .05–.079 g/dL, the risk of being in a single-vehicle fatal crash was at least 7 times higher than for drivers with no alcohol in their system. (Fell and Voas 2014)

Effects of the 2018 Utah .05 BAC law (Thomas et al., 2022)

- ✓ A 19.8% reduction in the fatal crash rate between 2016 and 2019
- ✓ More than 1 in 5 drinkers changed behaviors, such as planning alternative transportation when drinking away from home
- ✓ No decrease in alcohol sales, alcohol consumption, or tourism revenue
- ✓ No marked increase in DUI arrests

.05 BAC LAW AT-A-GLANCE

A majority of Americans support .05 BAC laws. (AAA FTS 2022)

What .05 BAC law DOES:

•••••
Saves lives

•••••
Deters people at ALL BACs from driving

•••••
Separates drinking from driving

What .05 BAC law DOES NOT do:

•••••
There is no evidence that it reduces drinking.

In fact, per capita alcohol consumption in several countries with a .05 BAC law is the same or higher than in the US, but deaths are lower.

•••••
It does not necessarily increase arrests.

People make the right choice not to get behind the wheel when they have been drinking (primary prevention).

SCAN THE CODES TO:

WATCH OUR .05 BAC VIRTUAL ROUNDTABLES

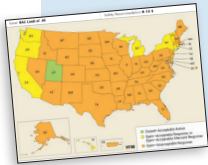
PART 1: Past, Present and Future



PART 2: Legislative Primer



READ OUR REPORT ON States' Progress on Implementing Alcohol-Impaired Driving Recommendations



What was the impact on safety of moving from .10 to .08?

A comprehensive 2017 independent research study shows that from 1982 to 2014, in 50 states and DC, **lowering the per se iBAC limit from .10 to .08 resulted in a 10.4% reduction in alcohol-related fatalities, with no change in alcohol consumption.** This means that lowering the BAC to .08 in the US has **saved 1,736 lives annually.** A total of 24,868 lives were saved between 1983 and 2014 due to lowering the BAC to .08. (Fell and Scherer 2017)

What is the international experience with .05?

Approximately 100 countries have some type of .05 or lower BAC laws and, **while their average alcohol consumption is the same or higher than the US, their proportion of alcohol-related deaths are lower.**

Metrics	US .08 BAC	Sweden .02 BAC	Netherlands .05 BAC
Alcohol-related crash deaths ¹	31%	19%	19%
Average alcohol consumption (liters pure alcohol per capita) ²	9.2	9.2	9.9

¹ Global Status Report on Road Safety 2015

² World Health Statistics 2015

Twenty years of international studies have shown that when a country lowers BAC limits from .08 to .05, **alcohol-related fatal and injury crashes decrease between 5% and 10%.** (Mann et al., 2001; Fell & Voas 2006)

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BLOOD ALCOHOL CONCENTRATION LIMIT FOR DRIVING

Policy Statement

WHEREAS critical driving performance is significantly impaired at blood alcohol concentrations (BACs) of 0.05 g/dL and above,

WHEREAS the risk of being involved in a crash increases significantly at BACs at or exceeding 0.05 g/dL,

WHEREAS lowering the illegal BAC limit for driving to 0.05 g/dL reduces alcohol-related crashes,

BE IT RESOLVED that the AAAM recommends that all countries adopt a maximum BAC of 0.05 g/dL as illegal per se for driving.

Adopted: October, 2009

Abstract

This chapter provides a scientific review of the evidence regarding the benefits of reducing the illegal blood alcohol concentration (BAC) limit for driving. Numerous independent studies in the United States indicate that lowering the illegal BAC limit from .10 to .08 g/dL has resulted in 5 to 16% reductions in alcohol-related crashes, fatalities, or injuries. The illegal limit is .05 BAC in numerous countries around the world and several international studies indicate that lowering the illegal per se limit from .08 to .05 g/dL BAC also reduces alcohol-related fatalities. Laboratory studies indicate that impairment in critical driving functions begins at low BACs and that most subjects are significantly impaired at .05 g/dL BAC. The relative risk of being involved in a fatal crash as a driver is 4 to 10 times greater for drivers with BACs between .05 and .07 g/dL compared to drivers with .00 g/dL BACs. There is strong evidence in the literature that lowering the BAC limit to .05 g/dL is effective. These law changes serve as a general deterrent to drinking and driving and ultimately save lives. This critical review supports the adoption of lower illegal BAC limits for driving in countries around the world.

Keywords: blood alcohol concentration (BAC) limits; .05 g/dL BAC limit; traffic safety; impaired driving; fatal crashes; general deterrent; effectiveness; drinking drivers

The following sections contain excerpts from this chapter which provide support for a Policy Statement from the Association for the Advancement of Automotive Medicine (AAAM) recommending that countries around the world adopt .05 BAC as illegal per se for driving.

A. Introduction

The international trend toward lowering BAC (blood alcohol concentration) limits has been continuing for some time now, with most industrialized nations reducing their illegal limit to a BAC of .05 or lower. The illegal limit is .05 g/dL BAC in Australia, Austria, Belgium, Bulgaria, Croatia, Denmark, Finland, France, Germany, Greece, Israel, Italy, the Netherlands, Portugal, South Africa, Spain, and Turkey, as examples. Japan and Poland recently adopted a .03 g/dL BAC standard. Norway, Russia, and Sweden have essentially a zero-tolerance limit of .02 g/dL BAC. This trend has not developed without merit; a myriad of studies have indicated that lowering illegal BAC limits is in the best interest of the public. For example, laboratory studies indicate that impairment in critical driving functions begins at low BACs [1, 2]. Most subjects in laboratory studies are significantly impaired regarding visual acuity, vigilance, drowsiness, psychomotor skills, and information processing by the time they reach .05 g/dL BAC compared to their performance at .00 g/dL BAC [3]. The relative risk of being involved in a fatal crash as a driver is 4 to 10 times greater for drivers with BACs between .05 and .07 g/dL, compared to drivers with .00 g/dL BACs [4]. A recent study sponsored by the National Highway Traffic Safety Administration (NHTSA) in the United States indicates that drivers at .04 g/dL BAC have a significantly higher relative risk (ratio of 1.18 to 1.00) of being involved in a traffic crash than drivers at .00 g/dL BAC [5, 6]. Leading medical, crash prevention, public health, and traffic safety organizations around the world support BAC limits at .05 g/dL or lower, including the World Medical Association, the American and British Medical Associations, the European Commission, the European Transport Safety Council, the World Health Organization, and the American College of Emergency Physicians [7].

B. A Summary of the Evidence for Lowering the BAC Limit to .05 g/dL or Less

1. Effectiveness of .05 BAC Laws

Several countries have conducted evaluations of lowering their illegal BAC limits to .05 g/dL or less. A multi-year study of the .05 g/dL BAC law in the Netherlands (adopted in 1974) concluded that it contributed to a sustained decline in the total number of drinking drivers involved in crashes [33]. A study from France evaluated the impact of lowering its BAC limit from .08 to .05 g/dL in 1996. Annual alcohol-related crash fatalities declined from approximately 100 before the legal change to 64 in 1997 in the province of Haute-Savoie, where the study was conducted [34].

In 1988, the illegal BAC limit was lowered from .08 to .05 g/dL in Austria. A study of the law found that there was an overall 9.4% decrease in alcohol-related crashes relative to the total number of crashes [35]. However, they noted that intense media and enforcement campaigns also occurred around the time that the limit was lowered, making it nearly impossible to attribute the reductions to any one of these factors, at least in the short term. Bartl and Esberger [35] concluded that “lowering the [il]legal BAC limit from .08 to .05 g/dL in combination with intensive police enforcement and reporting in the media leads to a positive short-term effect.” This provided support for the view that a .05 g/dL BAC illegal limit, as part of a comprehensive approach to fighting impaired driving, can have beneficial effects.

Homel [36] found that lowering the BAC limit from .08 to .05 g/dL in New South Wales, Australia, significantly reduced fatal crashes on Saturday by 13%. Henstridge, Homel, and Mackay [37] conducted a rigorous time-series analysis of random breath testing (RBT) and .05 BAC laws in Australia, controlling for many factors including seasonal effects, weather, economic trends, road use, alcohol consumption, and day of the week. Although the primary focus of the Australian study was the impact of RBT, the findings on the effect of .05 BAC laws were also significant. The study statistically accounted for the effect of other alcohol countermeasures to determine the specific values of the declines that were attributable directly to either RBT or the lower .05 BAC limit. The study analyzed traffic data for periods ranging from 13 to 17 years and found that those Australian states lowering their BAC limits from .08 to .05 g/dL experienced meaningful declines in alcohol-related crash measures. After Queensland, Australia, reduced their per se BAC limit to .05 g/dL in 1982, they experienced an 18% reduction in fatal collisions and a 14% reduction in serious collisions. These results were not confounded by the effects of RBT, as it was not introduced until 8 years later. Similarly, the .05 g/dL BAC limit in New South Wales was estimated to have reduced serious collisions by 7%, fatal collisions by 8%, and SVN collisions by 11%. This translated into the averting of an estimated 605 serious, 75 fatal, and 296 SVN collisions per year. Although the .05 g/dL BAC limit was introduced only 2 years before RBT in New South Wales, the authors accounted for this in their analyses and attempted to determine the crash reductions specifically attributable to each of the interventions.

Smith [38] specifically evaluated the effects of lowering the BAC limit in Queensland from .08 to .05 g/dL BAC. The proxy measure of changes in nighttime crashes as compared to daytime crashes was used. There was a significant 8.2% reduction in nighttime serious injury crashes (requiring hospitalization) and a 5.5% reduction in nighttime property damage crashes associated with the .05 g/dL BAC limit in the first year. Smith partially attributes some of the crash reductions in the second and third years after the adoption of .05 g/dL BAC to increased enforcement. When lowering the illegal BAC limit stimulates increased enforcement, it should be considered a benefit of the law, not a drawback, as concluded by Smith.

In South Australia, the illegal BAC limit was not lowered to .05 g/dL until 1991. Kloeden and McLean [39] reported that the number of nighttime drivers who had been drinking was reduced by 14.1% following adoption of the law. A second study of South Australia found that the .05 g/dL BAC limit did not significantly affect the number of fatally injured drivers who were legally impaired [40]. However, it did find that the proportion of impaired drivers at BACs of .15 or greater declined from 1991 to 1993. This last finding supports other Australian research indicating that the lower BAC limit has a substantial effect on drivers with BACs higher than .15 [41]. It has been estimated that drivers with BACs higher than .15 are 244 times more likely to be involved in a fatal crash than drivers with zero BACs [42]. The study by Zador et al. [4] found that male drivers aged 21 to 34 with BACs of .15 or higher are 573 times more likely to be killed in a single-vehicle crash than sober drivers of the same age. Thus, even though a .05 g/dL BAC limit would appear to be aimed at drivers with moderate BACs, its potential effect on the behavior of high-BAC drivers has important traffic safety implications.

Deshapriya and Iwase [43] determined that the .05 g/dL BAC limit adopted in Japan in 1970 had a substantial effect on drunk driving fatalities, nonfatal alcohol-related crashes and driving while intoxicated in Japan using multi-year trend analyses of crash and survey data. Bernhoft and Behrendorff [44] found an increase in the proportion of drivers who reported that

they would have no alcohol or restrict themselves to one drink within two hours in the first year after Denmark lowered their BAC limit to .05 g/dL BAC (from 71 to 80%). However, they did not find a decrease in alcohol-related crashes in the first year after the law was adopted.

Table 1 summarizes the research on lowering the BAC limit to .05 g/dL.

Table 1. Studies of the Effects of Lowering the Illegal BAC Limit to .05 g/dL in Various Countries

Study	Results
Noordzij (1994) [33] “Decline in Drinking and Driving in the Netherlands”	Percentage of drivers with BACs \geq .05 g/dL from roadside surveys decreased from more than 15% in the years before the .05 limit to 2% in the first year and then leveled off at 12% for 10 years after the law change.
Mercier-Guyon (1998) [34] “Lowering the BAC Limit to 0.05: Results of the French Experience”	Alcohol-related traffic crash fatalities decreased from 100 before the limit to 64 in 1997, after the law change in the French Province where the study was conducted.
Bartl and Esberger (2000) [35] “Effects of Lowering the Legal BAC Limit in Austria”	Found 9.4% decrease in alcohol-related crashes. “Lowering the legal BAC-limit from .08% to .05% in combination with intense police enforcement and reporting in the media leads to a positive short-term effect.”
Henstridge et al. (1995) [37] “The Long-Term Effects of Random Breath Testing in Adelaide”	Queensland (Australia) experienced an 18% reduction in fatal crashes and a 14% reduction in serious crashes associated with lowering the BAC limit to .05 g/dL. These results were not confounded with the effects of random breath testing. New South Wales showed an 8% reduction in fatal cases, a 7% reduction in serious crashes, and an 11% reduction in SVN crashes associated with lowering the BAC limit to .05 g/dL.
Smith (1988) [38] “Effect on Traffic Safety of Introducing a 0.05% Blood Alcohol Level in Queensland, Australia”	Significant 8.2% reduction in nighttime serious injury crashes and a 5.5% reduction in nighttime property damage crashes associated with lowering the limit from .08 to .05 g/dL. Partly the result of increased enforcement.
Deshapiya and Iwase (1998) [43] “Impact of the 1970 Legal BAC 0.05 mg% Limit Legislation on Drunk-Driver-Involved Traffic Fatalities, Accidents, and DWI in Japan”	Trend analyses indicate that the .05 BAC law has reduced both alcohol-related traffic crashes and DWI drivers in Japan.

Study	Results
Bernhoft and Behrendorff (2003) [44] “Effect of lowering the alcohol limit in Denmark”	When the BAC limit was lowered from .08 to .05 g/dL in 1998 in Denmark, there was a significant increase in the proportion of drivers who reported that they would not drink at all or would have only one drink if they were driving (71% before to 80% after).

2. Impairment and Crash Risk at .05 g/dL BAC

Howat, Sleet, and Smith [49] conducted a review of the literature from experimental and laboratory research on the impairment effects at .05 g/dL BAC. Many of the studies reviewed showed statistically significant decrements in driving performance at a BAC of .05 g/dL or lower. The authors concluded that young and inexperienced drinkers appear to be at the greatest risk at .05 g/dL BAC. They recommended that setting a uniform .05 g/dL BAC statutory limit should be one measure in a comprehensive approach to reducing impaired driving including other legal, social, behavioral, and environmental strategies to deal with the problem. Ferrara et al. [1] concluded in a review of the research literature that driving performance changes initially begin with any departure from a .00 g/dL BAC.

Moskowitz and Fiorentino [2] reviewed 112 scientific articles regarding the effects of alcohol on driving-related skills published between 1981 and 1997. They concluded that, by the time subjects reach .05 g/dL BAC, the majority of experimental studies examined reported significant impairment. After testing 168 drivers, Moskowitz et al. [3] concluded that the majority of the driving population is impaired in at least some important measures at BACs as low as .02 g/dL BAC.

Recent epidemiological studies [4, 5, 6] of the relative risk of being involved in a crash at various positive BAC levels indicate that the risk of crashing is substantially higher at .05 g/dL BAC compared to drivers at .00 g/dL BAC. Zador et al. [4] estimated that the risk of being involved in a fatal crash for drivers at BACs as low as .02–.04 g/dL is anywhere from two times to five times higher than for drivers with BACs=.00 g/dL, depending upon age and gender. That same study concluded that the risk of being killed as a driver in a single-vehicle crash is 6 to 17 times greater for drivers at BACs between .05 and .07 g/dL compared to drivers with BACs of .00 g/dL, and that the risk of just being involved as a driver in a fatal crash is 4 to 10 times greater at BACs between .05 and .07 g/dL than drivers with BACs=.00 g/dL. As mentioned earlier, Compton et al. [5] and Blomberg et al. [6] concluded that the risk of being involved in any crash of any severity (property damage, injury, or fatal) for drivers with BACs at .04 g/dL or higher was significant (18% higher than for drivers at .00 g/dL). Further, drivers with a BAC of .05 g/dL have a 38% higher risk of crashing than drivers with BACs=.00 g/dL. At .06 BAC, that risk is 63% higher, and at .07 g/dL BAC, the risk is 109% higher than for drivers with BACs=.00 g/dL.

C. Conclusion

Mann, Macdonald, Stoduto, Bondy, and Shaikh [61] reviewed all of the available scientific evidence in assessing the potential impact of lowering the BAC limit to .05 g/dL. They

assessed research on the effects of alcohol on driving performance; epidemiological research on the risk of collision involvement at various BACs; research on the impact of lowering the BAC limit in other countries and jurisdictions; and other possible issues such as public acceptance, police discretion, and judicial outcomes. This review concluded that the adoption of a .05 g/dL BAC could potentially reduce the motor vehicle crash fatalities by 6 to 18% in Canada. In a subsequent international review, Mann, Macdonald, Stoduto, Bondy, Jonah and Shaikh [62] concluded that most, but not all, studies showed beneficial effects on traffic safety measures due to lowered BAC limits. They suggest that most of the effects of such laws are due to general deterrence.

Chamberlain and Solomon [7] conducted an extensive review of all of the issues surrounding a .05 g/dL BAC limit. The review summarized the effects of low doses of alcohol on driving behavior, the relative risk of a crash at various BAC levels, and the experience in other countries with lowering BAC limits, and presented a compelling case for a .05 g/dL BAC limit around the world.

The scientific evidence accumulated over the past 50 years indicates a direct relationship between rising BAC levels and the risk of being involved in a motor-vehicle crash and documents that driving performance begins to deteriorate significantly at .04–.05 g/dL BAC [63, 64, 65]. Because alcohol has been shown to have a wide variation of effects from subject to subject, special attention needs to be given to the selection of a BAC level in which the vast majority of drinking drivers are likely to be affected. This level appears to be .05 g/dL BAC. When all of the international evidence on lowering BAC limits is assembled, reviewed, and summarized, it is concluded that lowering the illegal BAC limit to .05 g/dL (or lower for countries that have had .05 g/dL limits for several years) is an effective strategy in reducing impaired driving.

The general public does not think people should drive after two or three alcoholic drinks. This translates to .04 or .05 g/dL BAC for most people. Laboratory research shows that most people's critical driving skills are significantly impaired at .04-.05 g/dL BAC. The World Health Organization [66] recommends an upper limit of .05 g/dL BAC for the general driving population and .02 g/dL BAC for young drivers as the best practice at this time.

D. Acknowledgement

This chapter is based upon an article by the same authors that appeared in the *Journal of Safety Research* [67]. The authors would like to thank MADD Canada and, in particular, Andrew Murie, Executive Director, for initially supporting the Pacific Institute for Research and Evaluation for a critical review of the evidence for lower blood alcohol concentration limits.

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