

.05 BAC Research Facts

.05 BAC saves lives

- **If all states implemented a .05 BAC level, 538 to 1,790 lives would be saved each year.** (*Wagenaar, 2007*) (*Fell, 2018*).
- **If .05 BAC is implemented in the U.S., alcohol-related fatalities would decrease by 11.1 percent.** (*Fell, 2018*)
- **Reduces alcohol-related deaths from 5 to 18 percent.** (*Mann et al, 2001, Fell & Voas, 2006, NTSB 2017*). (*Fell, 2017*) (*Bartl, 2002*) (*Mercier-Guyon, 1998*) (*Henstridge, 1997*) (*Norstrom, 1997*) (*Smith, 1996*) (*Noordzij, 1994*)

Driving at a .05 BAC increases crash risk significantly

- **For drivers with BACs of .05–.079, the risk of being in a fatal crash (single-vehicle) is at least seven times higher than for drivers with no alcohol in their system.** (*Zador et al 2000, NIH/NIAAA Alcohol Alert 2001, Voas et al 2012, NTSB, 2017*).
- **At .05, crash risk is 38 to 40 percent higher than it is at zero alcohol concentration.** (*National Safety Council, 2016*). (*Compton, 2002*).
- **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 compared to drivers with .00 BACs.** (*Zador, 2000*)

In the United States, a majority of the public supports a .05 BAC

- **63 percent of people support lowering the illegal BAC level from .08 to .05.** (*AAA Foundation, 2015*).

Research on .05 BAC

Fell, James, Presentation at 2018 Lifesavers Conference, San Antonio, TX, “Rationale for Lowering the BAC Limit to .05 in the US,” April 22-24, 2018.

- It is estimated that 1,790 lives could be saved each year if all states lowered the BAC limit to .05 in the U.S.
- The evidence points to:
 - General public does not think anyone should drive after two or three drinks.
 - Most people are impaired at .05 BAC.
 - Relative risk of crash is statistically significant at .05 BAC.

National Academies of Sciences, Engineering, and Medicine, The National Academies Press “Getting to zero alcohol-impaired driving fatalities: A comprehensive approach to a persistent problem,” 2018.

- State governments should enact per se laws for alcohol-impaired driving at .05 blood alcohol concentration (BAC). The federal government should incentivize this change, and other stakeholders should assist in this process.
- The enactment of .05 per se laws should be accompanied by media campaigns and robust and visible enforcement efforts.
- Laws and sanctions that currently apply to 0.08% per se laws could remain in place but enforceable at the .05 BAC limit.

Fell, Scherer, Alcoholism: Clinical and Experimental Research, 41 (12), 2128-2139. “Estimation of the Potential Effectiveness of Lowering the Blood Alcohol Concentration (BAC) Limit for Driving from 0.08 to 0.05 grams per Deciliter in the United States,” 2017.

- Meta-analysis of all studies on lowering the blood alcohol limit, found that a .05 BAC level would reduce drunk driving deaths by 11.1 percent.
- Meta-analysis found no significant effect of lowering the BAC limit on alcohol consumption.
- Lowering the BAC Limit resulted in a significant 5 percent decline in non-fatal alcohol-related crashes.
- Lowering the BAC Limit to .08 resulted in a significant 9.2 percent decline in fatal alcohol-related crashes.

National Transportation Safety Board, “.05 BAC Safety Briefing Facts” February, 2017

- 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 percent and 10 percent (Mann et al, 2001, Fell & Voas, 2006).
- What does .05 vs. .08 mean in terms of impairment and crash risk? How many drinks?
 - For drivers with BACs of .05–.079, the risk of being in a fatal crash (single-vehicle) is at least seven times higher than for drivers with no alcohol in their system (Zador et al 2000, NIH/NIAAA Alcohol Alert 2001, Voas et al 2012).
 - Impairment by BAC and Drinks ([CDC](#) and [NHTSA/USDOT](#))

.02 BAC*	<i>About 2 alcoholic drinks**</i>	Decline in visual functions (rapid tracking of moving target) Decline in ability to perform two tasks at same time
.05 BAC*	<i>About 3 alcoholic drinks**</i>	Reduced coordination Reduced ability to track moving objects Difficulty steering Reduced response to emergency driving situations
.08 BAC*	<i>About 4 alcoholic drinks**</i>	Reduced ability to concentrate Short-term memory loss Difficulty controlling speed Reduced information processing capability Impaired perception

**Blood Alcohol Concentration measurement. **The number of drinks represents the approximate amount of alcohol that a 160-pound man would need to drink in one hour to reach the listed BAC in each category.*

National Safety Council, "[Position/Policy Statement: Low Alcohol Concentration National Culture Change](#)," June, 2016.

- Impairment from alcohol begins with the first drink. With more knowledge around this fact, people can make safer decisions and reduce crash risk. Therefore, the National Safety Council supports a national education campaign to inform Americans that impairment begins with the first drink. The National Safety Council also supports efforts by states to lower the legal alcohol limit for motor vehicle operators in the United States.
- At .05, risk is 40 percent higher than it is at zero alcohol concentration.
- Fifty years of scientific evidence shows a direct relationship between increasing alcohol concentrations and crash risk. The body of evidence shows driving performance deteriorates for most drinking drivers by the time they reach .05 alcohol concentration.

Blais et al, Cirrelt, "Effects of Introducing an Administrative .05% Blood Alcohol Concentration Limit on Alcohol-Related Collision in Canada," January 2015.

- The Canadian administrative .05 BAC laws are effective in reducing the percentage of fatally injured drivers with prohibited BAC limits at all levels.

Fell, Voas, Addiction, "The effectiveness of a 0.05 blood alcohol concentration (BAC) limit for driving in the United States," June 2014.

- Lowering the BAC limit for driving from the current .08 to .05 has substantial potential to reduce the number of people who drink and drive in the United States and get involved in fatal crashes.
- The driving performance of virtually all drivers is impaired at .05 BAC, and the risk of being involved in a crash increases significantly at .05 BAC.

AAA Foundation, "[2013 Traffic Safety Culture Index](#)," January 2014.

- 63 percent of people (2,325 people surveyed) support lowering the illegal BAC level from .08 to .05.
 - 29.9 percent strongly support and 33.4 percent somewhat support lowering the level to .05.
 - Support was lower among those who report drinking more, but even 41.9 percent of drivers who drink "a few times a week" and 61.5 percent of drivers who drink "a few times a month" supported lowering the BAC limit.
 - The survey question was asked as follows: "In the United States, the legal limit for a driver's blood alcohol concentration (a measure of the amount of alcohol in a person's blood) is 0.08 grams of alcohol per deciliter of blood. In Australia, France, Italy, Spain, and several other countries, the limit is 0.05. How strongly do you support or oppose lowering the limit in the United States from 0.08 to 0.05?"
- Drivers view drinking and driving as a very serious threat, and virtually all disapprove of drinking and driving and acknowledge that others also disapprove of it. More than 1 in 8, however, admit to driving at least once in the past year when they thought their alcohol level might have been close to or possibly over the legal limit, and of these, more than 17 percent (2.2 percent of all drivers) said they did so in the past month.

National Transportation Safety Board, "Reducing Zero: Actions to Eliminate Alcohol-Impaired Driving," May 14, 2013.

- Laboratory studies have shown that driving-related performance is degraded at BAC levels as low as .01, and epidemiological studies employing crash data have shown significantly elevated crash risk at BAC levels near .05.
- Lowering per se BAC limits has been associated with reductions in impaired driving crashes and fatalities.
- Reducing the per se BAC limit could reasonably be expected to have a broad deterrent effect, thereby reducing the risk of injuries and fatalities from crashes associated with impaired driving.

Phillips, Brewer, Addiction “The relationship between serious injury and blood alcohol concentration (BAC) in fatal motor vehicle accidents: BAC = 0.01% is associated with significantly more dangerous accidents than BAC = 0.00%,” 2011.

- The severity of life-threatening motor vehicle crashes increases significantly at blood alcohol concentrations (BACs) far lower than the current US limit of .08.
- Lowering the legal limit could save lives, prevent serious injuries and reduce financial and social costs associated with motor vehicle accidents.

Nagata, et al., Injury Prevention, “[Effectiveness of a law to reduce alcohol-impaired driving in Japan,](#)” 2008

- In Japan, lowering the BAC limit to .05 resulted in 38 percent decrease in alcohol-related crashes of all severities

Wagenaar et al, Journal of Safety Research, “[Effects of Legal BAC Limits on Fatal Crash Involvement: Analyses of 28 States from 1976 through 2002,](#)” 2007.

- Research on effectiveness of laws shows that lowering the BAC changes behavior at all BAC levels, by reducing driving after drinking, so it is an effective intervention for preventing driving at both high and low BAC levels.
- Lowering the national standard from .08 to .05 could save 538 lives each year.

Albalate, Daniel, Research Institute of Applied Economics, “Lowering blood alcohol content levels to save lives: The European Experience,” 2006.

- Results show how lowering illegal BAC limits to .05 has been an effective policy to save lives in particular road user groups in Europe. From these groups we can emphasize the case of males, to whom it has been especially effective in urban areas, and the case of all drivers between 20 and 49 years old.
- .05 BAC limits are not found statistically significant for the whole population unless it is accompanied by specific enforcement activities as random checks on the road.
- .05 BAC laws take two years to have a lifesaving effect.

Bartl, Esberger “Effects of lowering the legal BAC limit in Austria,” 2002.

- Found 9.4 percent 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.,,

Compton et al, Paper presented at the Proceedings of Alcohol, Drugs & Traffic Safety - T 2002: 16th International Conference on Alcohol, Drugs & Traffic Safety, August 4-9, 2002, Montreal, Canada. “Crash risk of alcohol-impaired driving,” 2002.

- Epidemiological study 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 BAC compared to drivers at .00 BAC.
- Estimated that the risk of being involved in any crash for drivers with BACs at .05 is 38% higher than drivers with BACs=.00.
- At .06 BAC, that risk is 63% higher, and at .07 BAC the risk is 109 percent higher than drivers with BACs=.00.

National Institute on Alcohol Abuse and Alcoholism, “[Alcohol Alert, No. 52,](#)” April 2001.

- Reported that a review of 112 studies concluded that certain skills required to operate motorized vehicles become impaired at modest departures from zero BAC.
- At .05 percent BAC, most studies reported significant impairment.

Moskowitz, et al, DOT HS 809 075, Washington, DC: Southern California Research Institute, National Highway Traffic Safety Administration, Driver characteristics and impairment at various BACs,” August 2000.

- After testing 168 drivers, concluded that the majority of the driving population is impaired in some important measures at BACs as low as .02.

Moskowitz, and Fiorentino, DOT HS 809 028, Department of Transportation, National Highway Traffic Safety Administration. “A review of the literature on the effects of low doses of alcohol on driving-related skills,” April 2000.

- Reviewed 112 scientific articles regarding the effects of alcohol on driving related skills that were published between 1981 and 1997.
- They concluded that by .05 BAC the majority of experimental studies examined reported significant impairment.

Zador, Krawchuk, Voas, DOT HS 809-050 U.S. Department of Transportation, National Highway Traffic Safety Administration. “Relative risk of fatal crash involvement by BAC, age, and gender” April 2000.

- Epidemiological study 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 BAC compared to drivers at .00 BAC.
- Estimates that the risk of being involved in a fatal crash for drivers at BACs as low as .02–.04 is anywhere from 2 times to 5 times higher than for drivers with BACs=.00, depending upon age and gender.
- 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 compared to drivers with .00 BACs, 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.

Mercier-Guyon “Lowering the BAC limit to 0.05: Results of the French experience,” 1998.

- Alcohol-related traffic crash fatalities decreased from 100 prior to lowering the limit to 64 in 1997 right after the law change in the French Province where the study was conducted.

Henstridge et al., Federal Office of Road Safety “[The Long-Term Effects of Random Breath Testing in Four Australian States: A Time Series Analysis](#),” 1997.

- In Australia, lowering the BAC limit to .05 resulted in an 11 percent decrease in alcohol-related fatal crashes and significant reductions in the number of non-fatal crashes.
- Queensland experienced an 18 percent reduction in fatal crashes and a 14 percent reduction in serious crashes associated with lowering the BAC limit to .05. These results were not confounded with the effects of random breath testing.
- New South Wales showed an 8 percent reduction in fatal cases, a 7 percent reduction in serious crashes, and an 11 percent reduction in single-vehicle nighttime crashes associated with lowering the BAC limit to .05.

Norstrom, “[Effects of the lowering of the legal BAC-limit in Sweden](#),” 1997.

- In Sweden, a 10 percent reduction in alcohol-related fatal crashes and significant reductions in single vehicle crashes and all crashes associated with lowering the level.

Smith “Effect in traffic safety of introducing a 0.05% blood alcohol level in Queensland, Australia,” 1996.

- Significant 8.2 percent reduction in nighttime serious injury crashes and a 5.5 percent reduction in nighttime property damage crashes associated with lowering the limit from .08 to .05. Partly the result of increased enforcement.

McLean, A.J. et al. A.J. McLean & C.N Kloeden (Eds.), Proceedings of the 13th international conference on alcohol, drugs and traffic safety, "Reduction in the legal blood alcohol limit from 0.08 to 0.05: Effects on drink driving and alcohol-related crashes in Adelaide." August 13-18, 1995.

- There is also evidence that lowering the limit could significantly reduce injury and crashes at high alcohol Concentrations.

Hemel, Accident Analysis and Prevention, "[Drink-driving law enforcement and the legal blood alcohol limit in New South Wales](#)," April 1994.

- In Australia, the percent drivers with positive BACs in weekend fatal crashes decreased 13 percent pre-post law implementation but did not affect weekday fatal crashes.

Noordzij "Decline of drinking and driving In the Netherlands," 1994.

- Percent of drivers with BAC's greater than .05 from roadside surveys decreased from over 15 percent in the years prior to the .05 limit to 2 percent in the first year and then leveling off at 12 percent for ten years after the law change.

Howard, Sleet, Smith, "[Alcohol and driving: is the 0.05% blood alcohol concentration limit justified?](#)" 1991.

- Decades of research show that .05 BAC laws can save lives on the roads.
- Many of the studies reviewed showed statistically significant decrements in driving performance at .05 BAC or below.
- The authors concluded that young and inexperienced drinkers appeared to be at the greatest risk at .05 BAC.
- 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.

Moore, Gerstein, National Academy Press "Alcohol and public policy: Beyond the shadow of prohibition," 1981.

- 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 .05 BAC.