



NTSB 2017–2018

# MOST WANTED LIST OF TRANSPORTATION SAFETY IMPROVEMENTS

End Alcohol and Other Drug Impairment in Transportation



# NTSB

# .05 BAC Safety Briefing Facts

FEBRUARY 2017

## Decades of research show that .05% BAC laws can save lives on the roads *(Howat, Sleet, Smith, 1991)*

### How does a .05 BAC law prevent crashes? What about high BAC drivers and other risky behaviors?

- A .05 BAC law has a **broad deterrent effect** because it helps **prevent** drinking drivers from getting behind the wheel in the first place (it does not necessarily result in more DUI arrests).
- 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. *(Wagenaar et al, 2007)*
- Intoxicated drivers exhibit other risky behaviors, such as not wearing their seatbelt. A [University of Utah study](#) showed that drivers who are intoxicated are less likely to be wearing a safety belt (which further increases their risk of injury) and are more likely to have contributed to the crash.

### 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)*

<b>.02 BAC*</b>	<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
<b>.05 BAC*</b>	<i>About 3 alcoholic drinks**</i>	Reduced coordination Reduced ability to track moving objects Difficulty steering Reduced response to emergency driving situations
<b>.08 BAC*</b>	<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.*

NIH/NIAAA 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 0.05 percent BAC, most studies reported significant impairment *(NIH/NIAAA Alcohol Alert, 2001)*.

### 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 BAC 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 U.S. 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. It is estimated that a .05 or lower BAC would result in an 11.1% decline in fatal alcohol crashes and save 1,790 lives annually in the United States *(NORC, 2017)*.

Continued on the next page ➤

## .05 BAC Safety Briefing Facts

Continued from  
previous page






NTSB

www.nts.gov

## 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 U.S., their alcohol-related deaths are lower.

Examples	 U.S. .08 BAC	 Sweden .02 BAC	 Netherlands .05 BAC
% alcohol related crash* deaths	31%	19%	19%
Average alcohol consumption (liters pure alcohol per capita)**	9.2	9.2	9.9

\*data from *Global Status Report on Road Safety 2015* \*\*from *WHO 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, and others).

## Who supports a .05 BAC limit?

- The [National Transportation Safety Board \(NTSB\)](#) has recommended that all 50 states establish a per se BAC limit of .05 or lower because it would lead to reductions in crashes, injuries, and fatalities.
- [AAA Foundation](#) recent surveys show that 63% of Americans support .05 BAC laws.
- National Highway Traffic Safety Administration (NHTSA) national opinion surveys show that most people would not drive after consuming 2 or 3 drinks in an hour and believe the limit should be no higher than the BAC associated with that amount of drinking [Moulton et al., 2010], or .05 BAC or lower for most drivers.
- The American Medical Association, World Health Organization, Association for the Advancement of Automotive Medicine, AAA Utah, & other organizations support a .05 BAC limit.

## Brief history of .08 BAC laws

Beginning in the 1970's, national efforts began to reduce alcohol-impaired driving. Even from the outset of the movement to adopt .10 BAC as the national standard, there were advocates for lower BAC levels. Utah and Oregon were the first states to pass a .08 BAC law in 1983. The grassroots movement started in the early 1980's, federal grant funding to states began to be tied to .08 BAC laws in the 1990's, Congress adopted .08 BAC as the national illegal limit for impaired driving in 2000, and all 50 states & DC had .08 BAC as the illegal limit by 2005. ■

### Sources are listed in order of appearance and/or hyperlinked (for e-versions)

- Howat P, Sleet DA, Smith DI. Alcohol and Driving: Is The 0.05% Blood Alcohol Concentration Limit Justified? *Drug and Alcohol Review* (Australia), Vol 10(1), pp 151-166, March 1991: <https://www.ncbi.nlm.nih.gov/pubmed/16840263>
- Wagenaar AC et al (2007). Effects of legal BAC limits on fatal crash involvement: Analysis of 28 states from 1976 through 2002. *Journal of Safety Research*, 38(5): 493-499. [https://www.researchgate.net/publication/5822859\\_Effects\\_of\\_Legal\\_BAC\\_Limits\\_on\\_Fatal\\_Crash\\_Involvement\\_Analyses\\_of\\_28\\_States\\_from\\_1976\\_through\\_2002](https://www.researchgate.net/publication/5822859_Effects_of_Legal_BAC_Limits_on_Fatal_Crash_Involvement_Analyses_of_28_States_from_1976_through_2002)
- University of Utah: <https://utah.pure.elsevier.com/en/publications/epidemiology-of-motor-vehicle-crashes-in-utah>
- Zador PL, Krawchuk SA, Voas RB. Alcohol-related relative risk of driver fatalities and driver involvement in fatal crashes in relation to driver age and gender: an update using 1996 data. *Journal of Studies on Alcohol* 2000;61: 387-95.
- NIH/NIAAA: NIH/NIAAA Alcohol Alert 2001 <https://pubs.niaaa.nih.gov/publications/aa52.htm>
- Voas RB, Torres P, Romano E, Lacey JH. Alcohol-related risk of driver fatalities: an update using 2007 data. *J Stud Alcohol Drugs* 2012; 73: 341-50. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3316710/>
- CDC: [https://www.cdc.gov/motorvehiclesafety/impaired\\_driving/impaired-driv\\_factsheet.html](https://www.cdc.gov/motorvehiclesafety/impaired_driving/impaired-driv_factsheet.html) (under BAC Effects).
- NHTSA/USDOT. The ABCs of BAC: A Guide to Understanding BAC and Alcohol Impairment, DOT HS 809 844, July 2016. <https://www.nhtsa.gov/staticfiles/nti/pdf/809844-TheABCsOfBAC.pdf>
- NORC: Fell JC & Scherer M, Effectiveness of .08 and .05 BAC Limits for Driving, 2017 (NIH Grant no. R21 AA022171-01). <http://www.norc.org> (under "NORC Headlines").
- Mann RE, et al. The effects of introducing or lowering legal per se blood alcohol limits for driving: an international review. *Accident Analysis & Prevention* 2001 Sep;33(5):569-83. <https://www.ncbi.nlm.nih.gov/pubmed/11491238>
- Fell JC & Voas RB. The effectiveness of reducing illegal blood alcohol concentration (BAC) limits for driving: Evidence for lowering the limit to .05, *Journal of Safety Research* 37 (2006) 233-243. [https://www.researchgate.net/publication/6959778\\_The\\_effectiveness\\_of\\_reducing\\_illegal\\_blood\\_alcohol\\_concentration\\_BAC\\_limits\\_for\\_driving\\_Evidence\\_for\\_lowering\\_the\\_limit\\_to\\_05\\_BAC](https://www.researchgate.net/publication/6959778_The_effectiveness_of_reducing_illegal_blood_alcohol_concentration_BAC_limits_for_driving_Evidence_for_lowering_the_limit_to_05_BAC)
- NTSB: Reaching Zero: Actions to Eliminate Alcohol-Impaired Driving, NTSB/SR-13/01, PB2013-106566, 2013 <https://www.nts.gov/safety/safety-studies/Pages/SR1301.aspx> (Click on "Safety Studies" for full report).
- AAA Foundation for Traffic Safety Culture Index 2015. <https://www.aaafoundation.org/2015-traffic-safety-culture-index>
- Moulton BE, Peterson A, Haddix D, Drew L. National survey of drinking and driving attitudes and behaviors: 2008. Volume II: findings report. Washington, DC: NHTSA; 2010. <http://www.nhtsa.gov/staticfiles/nti/pdf/811343.pdf> (NHTSA report).