.05 BAC Limits: Evidence of the Effectiveness in Reducing Impaired Driving

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New York City, NY

November 16, 2022

BAC *Per Se* Limits in the United States

- **All States, DC and PR have had .08 per se BAC laws since 2005.**
- **Minnesota was the last state to adopt .08 (8/1/05)**
- **With a per se BAC statute, only the validity of the BAC measurement itself is at issue.**
- **Only Utah has enacted a .05 BAC limit thus far. All other states use .08 g/dL.**
- **NY, WA and HI have recently introduced .05 BAC legislation**

[Source: Alcohol Policy Information System, NIAAA]

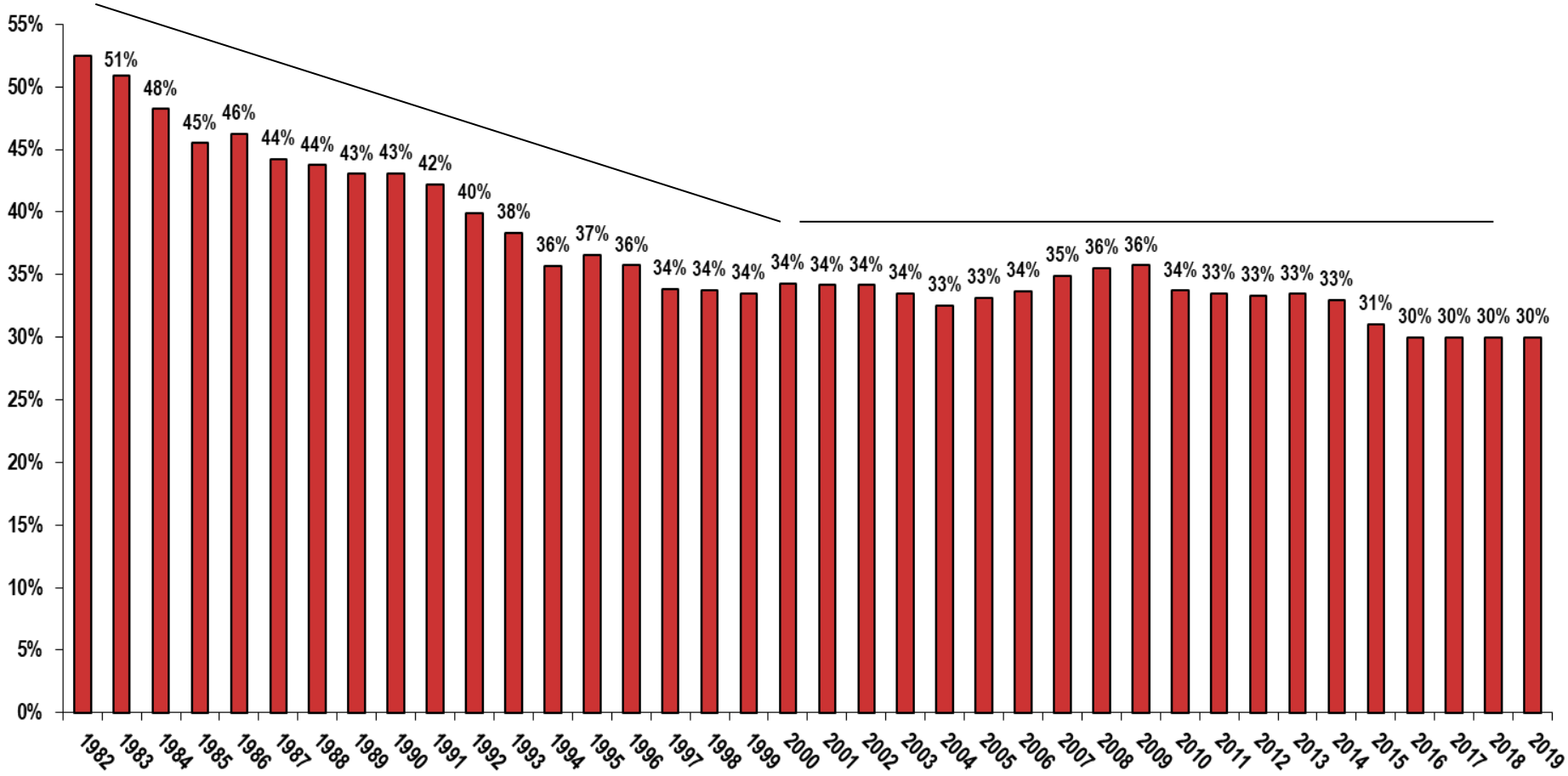
Rationale for a .05 BAC Limit for Driving in the US

- **Virtually everyone is impaired at .05 BAC**. It is a level at which critical driving skills are impaired.
- .05 BAC is a level at and above which the **risk of a crash is increased significantly.**
- .05 BAC is a level which **most industrialized countries have adopted.**
- Is an effective measure which has been shown to **reduce alcohol-related fatalities**.

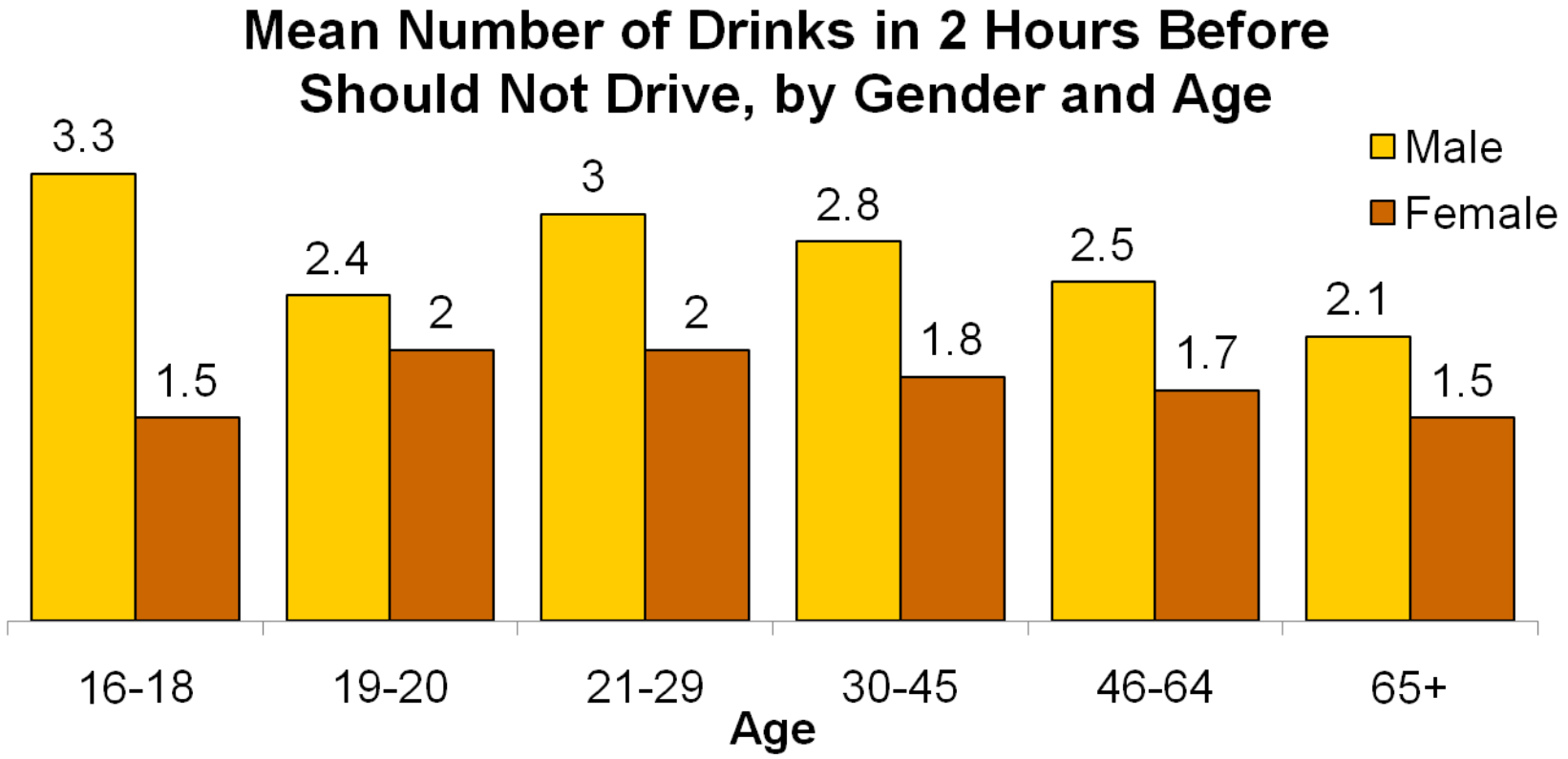
Progress in Reducing Impaired Driving in the US

- **Substantial progress** in reducing impaired driving fatal crashes was made between **1982 and 1997**.
- Many **DWI laws** were passed in the states and impaired driving **enforcement** was increased.
- However, since 1997 the percent of fatally injured drivers who were impaired has **stalled.**

Proportion of All *Fatally* Injured Drivers Estimated to Have Impairing Alcohol (BAC ≥ .05), 1982-2019 [-35%]



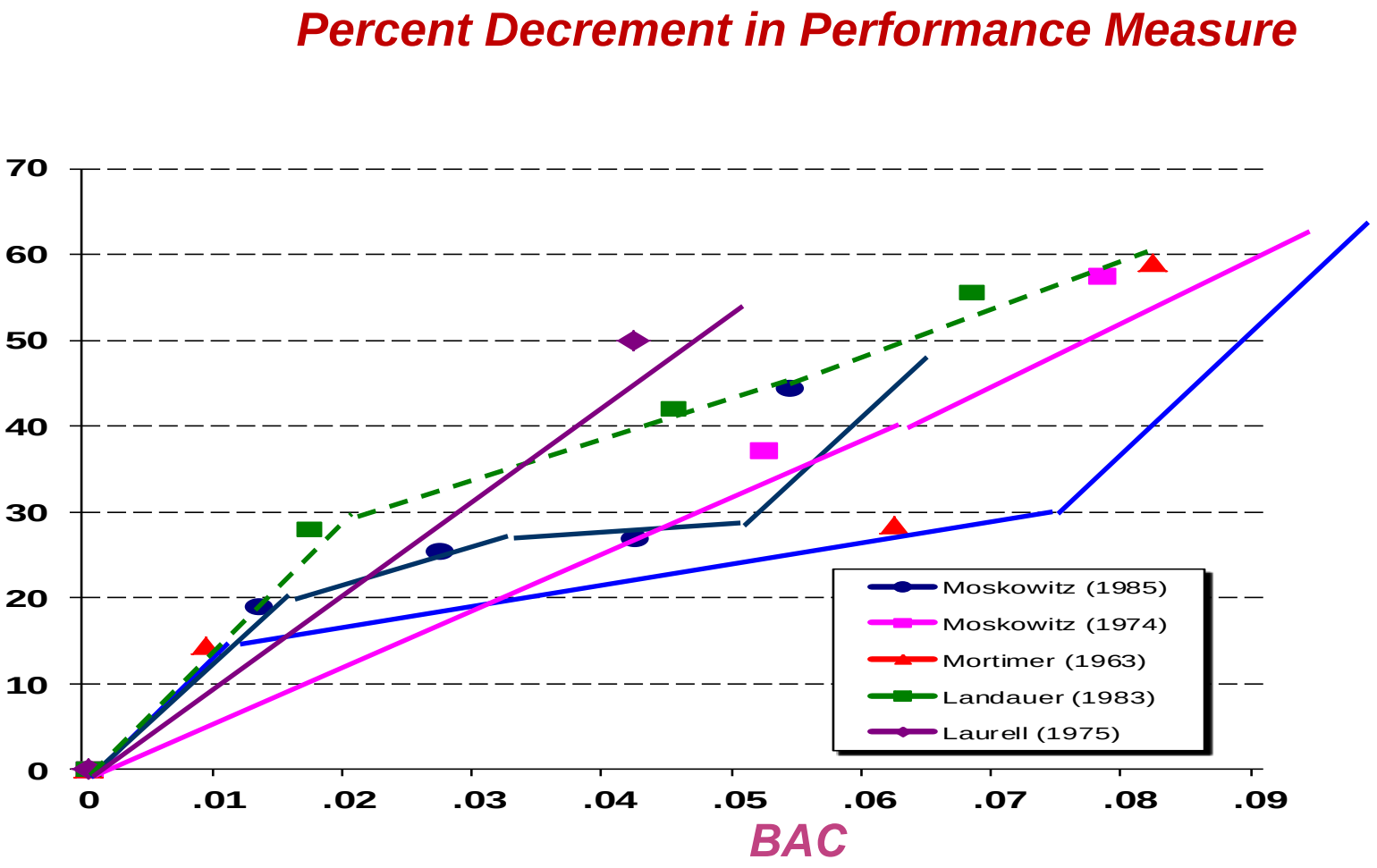
National Survey of Drinking & Driving



Q31: How many [drinks of alcoholic beverages drunk most often] could you drink in two hours before you should not drive? [Base: drivers who drink**]

[Source: Royal 2003]

Experimental Studies of Impairment and BAC



Relative Risk* of Being Involved in a Fatal Crash by BAC

Driver Age	BAC		
	.05 - .079	.08 - .099	>.15
16-20	6.24	12.61	490.41
21-34	4.78	8.74	200.03
35+	4.03	6.89	111.94

*Risk relative to BAC=.00 for same age group

Study used data from the 2007 FARS cases and the 2007 National Roadside Survey control data to calculate relative risks at various BAC levels

[Source: Voas, Torres, Romano, Lacey, JSAD, (2012)]

Studies of the Effects of Lowering the Illegal BAC Limit to .05

Australia (Homel, 1994)	Percent drivers with positive BACs in weekend fatal crashes decreased 13% pre-post law implementation but did not affect weekday fatal crashes
Australia (Henstridge et al., 1997)	Lowering the BAC limit to .05 resulted in an 11% decrease in alcohol-related fatal crashes and significant reductions in the number of non-fatal crashes
Japan (Nagata, et al., 2008)	Resulted in 38% decrease in alcohol-related crashes of all severities
Sweden (Norstrom, 1997)	10% reduction in alcohol-related fatal crashes and significant reductions in single vehicle crashes and all crashes associated with lowering limit to .05

Illegal Per Se BAC Limits for Driving

Country	BAC Limit
Australia	.05
Austria	.05
Belgium	.05
Denmark	.05
Finland	.05
France	.05
Germany	.05
Italy	.05
Spain	.05

[Source: WHO 2012]

Objective of Recent Study Funded by NIAAA (Fell & Scherer, 2017)

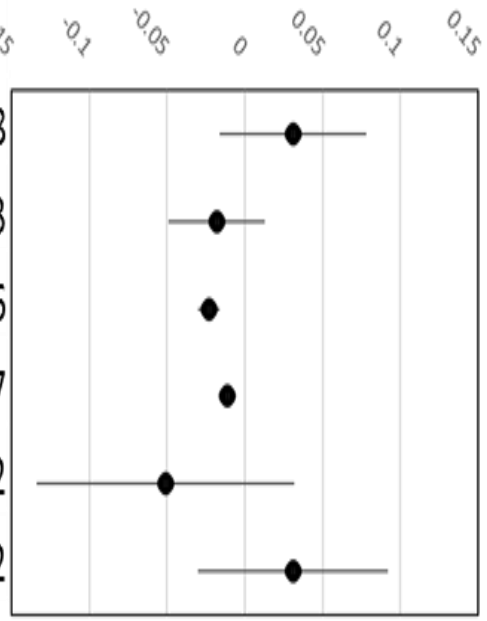
Determine whether lowering the BAC limit from .08 g/dL to .05 g/dL will be an effective policy in the United States using meta-analyses.

Methods

- Conduct a meta-analysis of qualifying international studies to estimate the range and distribution of the most likely effect size from a reduction in BAC to .05.
- Translate the synthesis toward estimating the effects of reducing the current .08 BAC limit to .05 BAC in the U.S.
- Estimate the life-saving benefits of the proposed reduction in the BAC limit from .08 to .05 (a .03 reduction in BAC)

6 Studies of the Effects of Lowering the BAC Limit on Alcohol Consumption

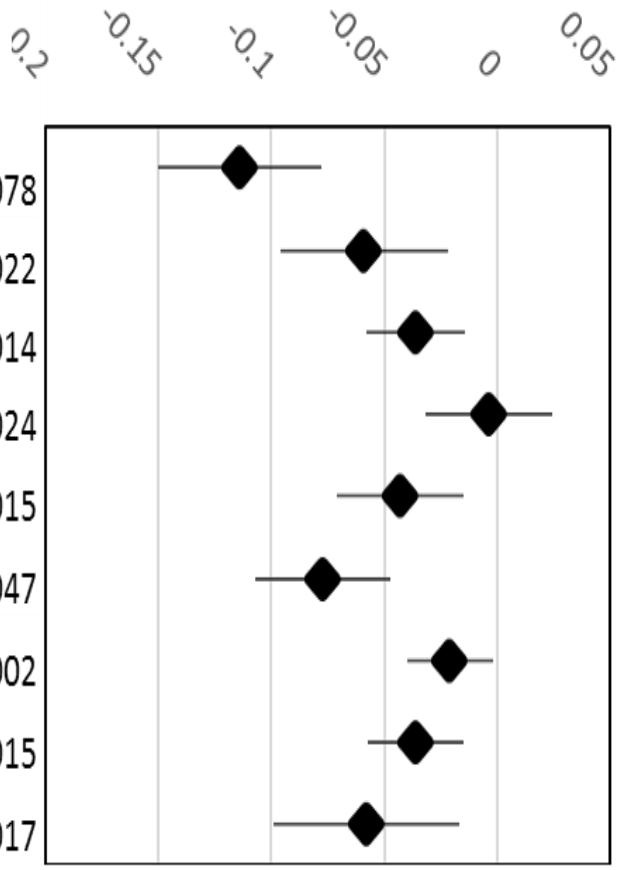
Article	Mean	SD	95% CI lower	95% CI upper
Aspler et al., 1999	0.031	0.047	-0.016	0.078
Bernhoff & Behrnsdorff, 2003	-0.018	0.031	-0.049	0.013
Campos et al., 2013	-0.023	0.007	-0.03	-0.016
Kerr et al., 2006	-0.011	0.004	-0.015	-0.007
Noordzij, 1994	-0.051	0.083	-0.134	0.032
Schwartz & Davaran, 2013	0.031	0.061	-0.03	0.092



Forest plot of articles examining alcohol consumption related outcomes

9 Studies of the Change in Non-Fatal Alcohol-Related Crash Rate After Lowering BAC to .08

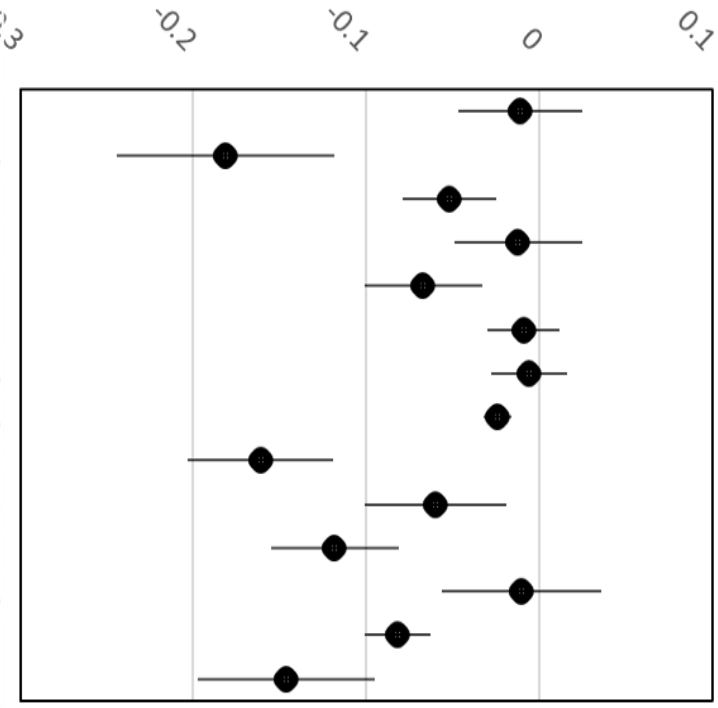
Article	Mean	SD	95% CI lower	95% CI upper
Blomberg, 1992	-0.114	0.036	-0.15	-0.078
Brooks & Zaal, 1993	-0.059	0.037	-0.096	-0.022
Desapriya et al., 2007	-0.036	0.022	-0.058	-0.014
Gorman et al., 2006	-0.004	0.028	-0.032	0.024
Haque & Cameron, 1989	-0.043	0.028	-0.071	-0.015
Kaplan & Prato, 2007	-0.077	0.03	-0.107	-0.047
Karakus et al., 2015	-0.021	0.019	-0.04	-0.002
Maisey, 1984	-0.036	0.021	-0.057	-0.015
Wagenaar et al., 2007	-0.058	0.041	-0.099	-0.017



Forest plot of articles examining non-fatal alcohol-related crash outcomes

14 Studies of the Change in Alcohol-Related Fatal Crashes After Lowering BAC to .08

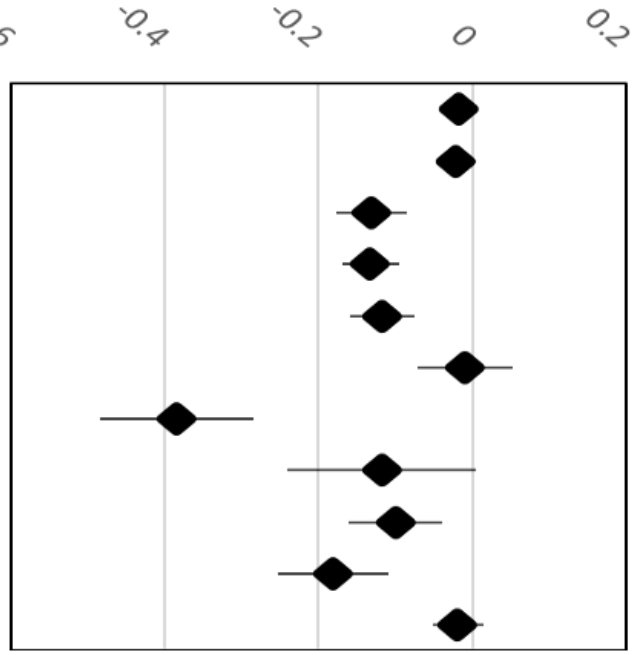
Article	Mean	SD	95% CI lower	95% CI upper
Apsler et al., 1999	-0.011	0.036	-0.047	0.025
Asbridge et al., 2015	-0.181	0.063	-0.244	-0.118
Bernat et al., 2004	-0.052	0.027	-0.079	-0.025
Bernhoff & Behrnsdorff, 2003	-0.012	0.037	-0.049	0.025
Dee, 2001	-0.067	0.034	-0.101	-0.033
Foss et al., 2001	-0.009	0.021	-0.03	0.012
Gorman et al., 2006	-0.006	0.022	-0.028	0.016
Hingson et al., 1994	-0.024	0.008	-0.032	-0.016
Hingson et al., 1996	-0.161	0.042	-0.203	-0.119
Hingson et al., 2000	-0.06	0.041	-0.101	-0.019
Research and Evaluation Associates, 1991	-0.118	0.037	-0.155	-0.081
Rogers, 1995	-0.01	0.046	-0.056	0.036
Voas et al., 2000	-0.082	0.019	-0.101	-0.063
Voas et al., 2002	-0.146	0.051	-0.197	-0.095



Forest plot of articles examining alcohol-related fatal crash outcomes associated with lowering BAC limit to .08

11 Studies of the Change in Alcohol-Related Fatal Crash Rates After Lowering the BAC to .05 or lower

Article	Mean	SD	95% CI lower	95% CI upper
Andreuccetti et al., 2011	-0.018	0.007	-0.025	-0.011
Assum, 2010	-0.021	0.026	-0.047	0.005
Hingson et al., 1998	-0.131	0.046	-0.177	-0.085
Homel, 1994	-0.133	0.037	-0.17	-0.096
Henstridge et al., 1997	-0.117	0.042	-0.159	-0.075
McLean et al., 1995	-0.009	0.062	-0.071	0.053
Nagata et al., 2008	-0.384	0.099	-0.483	-0.285
Nakahara et al., 2013	-0.118	0.123	-0.241	0.005
Norström, 1997	-0.1	0.061	-0.161	-0.039
Smith, 1986	-0.181	0.071	-0.252	-0.11
Živković, et al., 2013	-0.019	0.033	-0.052	0.014



Forest plot of articles examining alcohol-related fatal crash outcomes associated with lowering BAC limit to .05 or lower

Conclusions

- Lowering the BAC limit to .05 (or lower) resulted in a significant **11.1%** decline in ***fatal alcohol-related crashes*** according to the meta-analysis.

Conclusions

- It is estimated that **1790 lives could be saved** each year if ***all states lowered the BAC limit to .05 in the U.S.***

Evaluation of Utah's .05 Per Se Law

- The fatal crash rate reduction from 2016 to 2019 in Utah was **19.8%.**
- In comparison, the rest of the United States showed a **5.6%** fatal crash rate reduction from 2016-2019.
- No significant change in **DUI arrests** and alcohol sales and tourism measures continued to **increase.**
- The report concluded: "Overall, ...05 per se law had demonstrably positive impacts on highway safety in Utah."

Implications for .05 BAC

- Progress in reducing impaired drivers in fatal crashes has ***stalled*** since 1997 and has now increased in 2020 and 2021.
- It will be ***at least 10 years*** before technological solutions can be implemented (e.g. DADSS, autonomous cars)
- ***10,000 deaths*** each year due to impaired driving is unacceptable.

A .05 BAC limit is a countermeasure that is proven to saves lives.

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