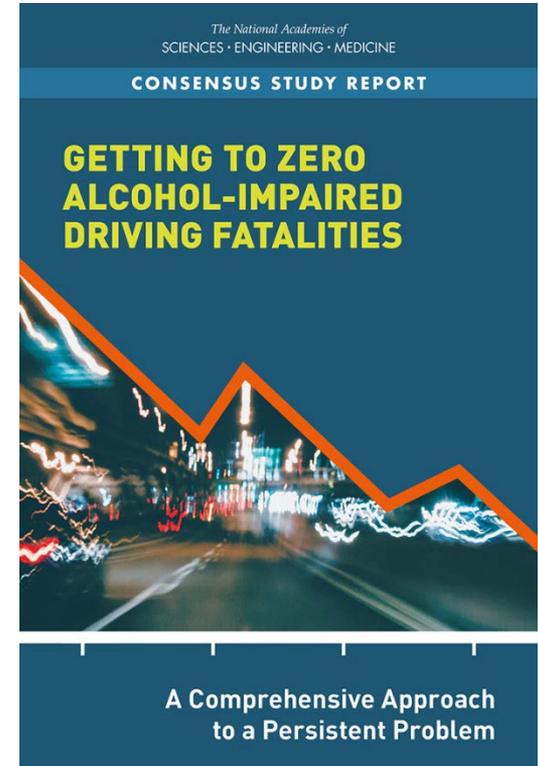


# Getting to Zero Alcohol- Impaired Driving Fatalities: A Comprehensive Approach to a Persistent Problem

Report Release  
January 17, 2018



# Committee

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# Statement of Task

The National Highway Traffic Safety Administration requests that the Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine convene a committee to examine:

- which interventions (programs, systems, and policies) are most promising to prevent injuries and deaths from alcohol-impaired driving;
- the barriers to action and approaches to overcome them; and
- which interventions need to be changed or adopted.

In conducting its work, the committee may consider interventions implemented by other countries. The committee's recommendations will be broad reaching and serve as a blueprint for the nation to accelerate the progress in reducing alcohol-impaired driving fatalities.

# Committee Process

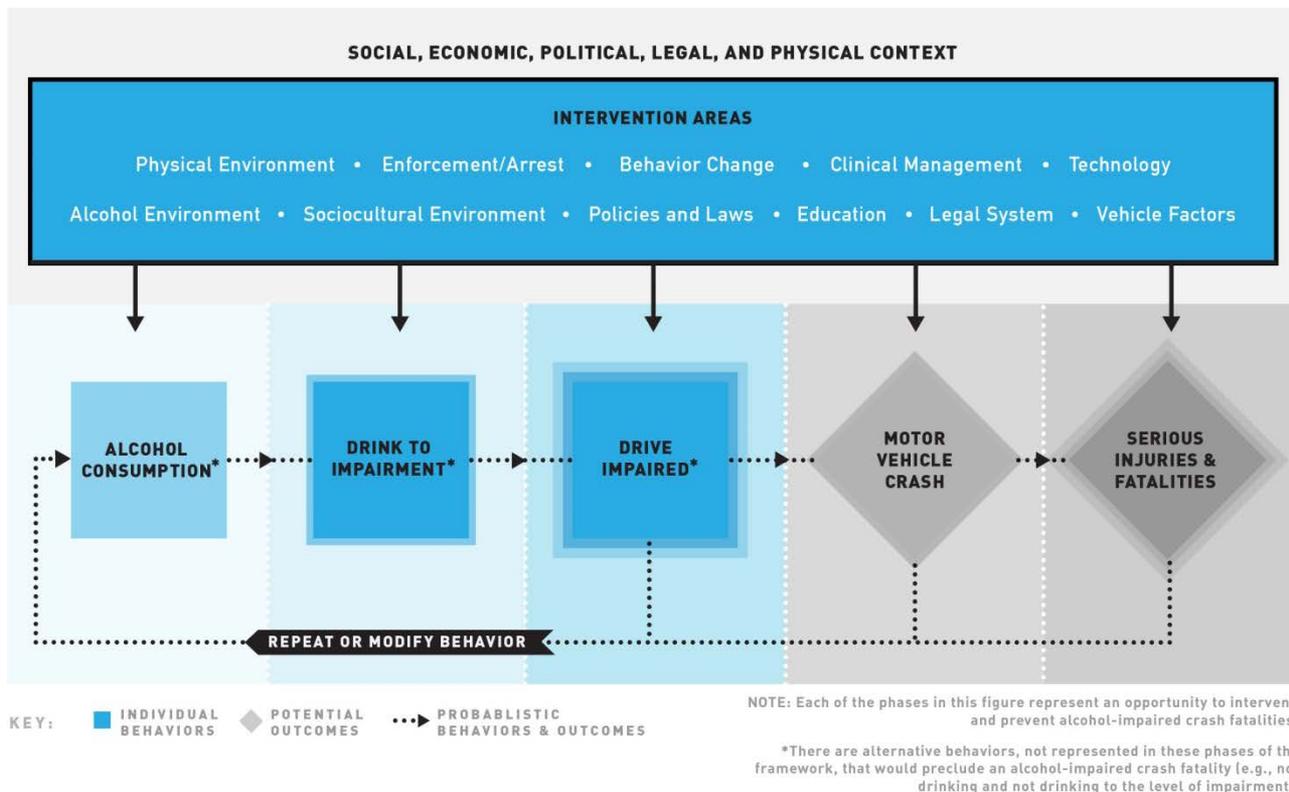
- Held 5 meetings
  - 3 information-gathering meetings
    - Received input from a broad range of invited speakers
    - Open to the public
  - 5 deliberative committee meetings
- Prepared 8-chapter report
  - Underwent external peer review by 13 expert reviewers, mirroring the committee's own expertise (e.g., epidemiology, alcohol use and abuse, injury prevention, public health, clinical care, communications, economics, etc.)



# Committee Approach

- Public/population health approach
- Methodology
  - Comprehensive literature review to identify most promising interventions
    - Drew evidence from high-quality systematic reviews
- Embraced Vision Zero as a unifying philosophy
- Commissioned background papers on:
  - Data
  - News media
  - Alcohol industry
  - Global lessons

# Conceptual Framework



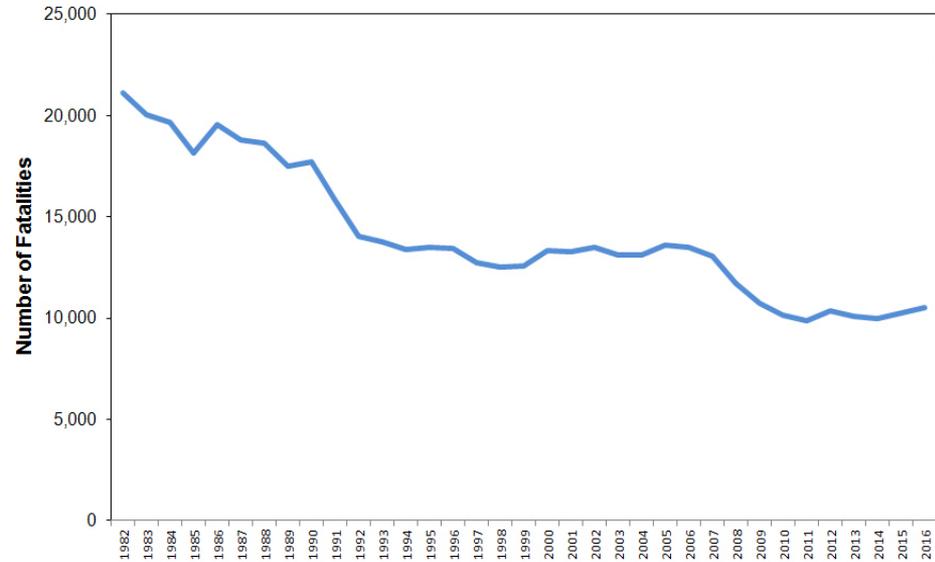
# The Report in Brief:

## 8 chapters, 16 recommendations

- After decades of progress, **alcohol-impaired driving remains the largest cause of death on roadways** and is a complex, preventable problem that requires a comprehensive, multisector approach. *(Chapter 1)*
- Reducing alcohol-impaired driving requires an understanding of the current alcohol and driving environments. *(Chapter 2)*
- **System-wide interventions** that target different intervention points are needed, including drinking to impairment, driving while impaired, and postcrash and/or arrest events. *(Chapters 3-5)*
- Improvements to existing **data and surveillance systems** would contribute to a greater understanding of the problem and inform targeted solutions. *(Chapter 6)*
- Social movements, community-based approaches, media approaches, and engaging a range of stakeholders all play an important role in **generating sustained action** to reduce alcohol-impaired driving fatalities. *(Chapters 7 and 8)*

# Magnitude of the Problem

- Each day, 29 people in the U.S. die in an alcohol-impaired driving crash.
- On average since 1982, 1/3 of all traffic fatalities were from alcohol-impaired driving fatalities.
- 10,497 people were killed in alcohol-impaired driving crashes in 2016.
- 214 children ( $\leq 14$  years) were killed in alcohol-impaired driving crashes in 2016.



Number of alcohol-impaired driving fatalities in the United States, 1982-2016.  
SOURCE: Adapted from Michael, 2017.

# Magnitude of the Problem

- Second-hand effects of alcohol-impaired driving:
  - In 2016, almost 40% of alcohol-impaired driving fatalities were victims other than the drinking driver
  - By comparison, 8.5% of smoking-related deaths due to second-hand smoke
- Economic cost of alcohol-impaired driving crashes in 2010: \$121.5 billion
  - Includes medical costs, legal expenses, and property damages

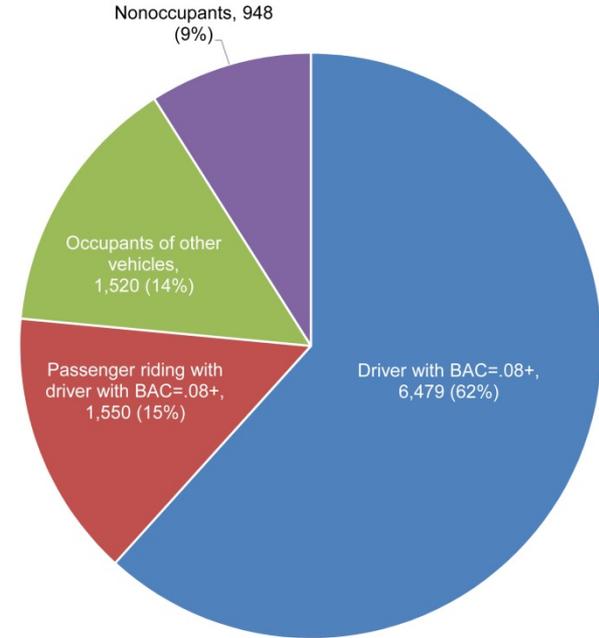
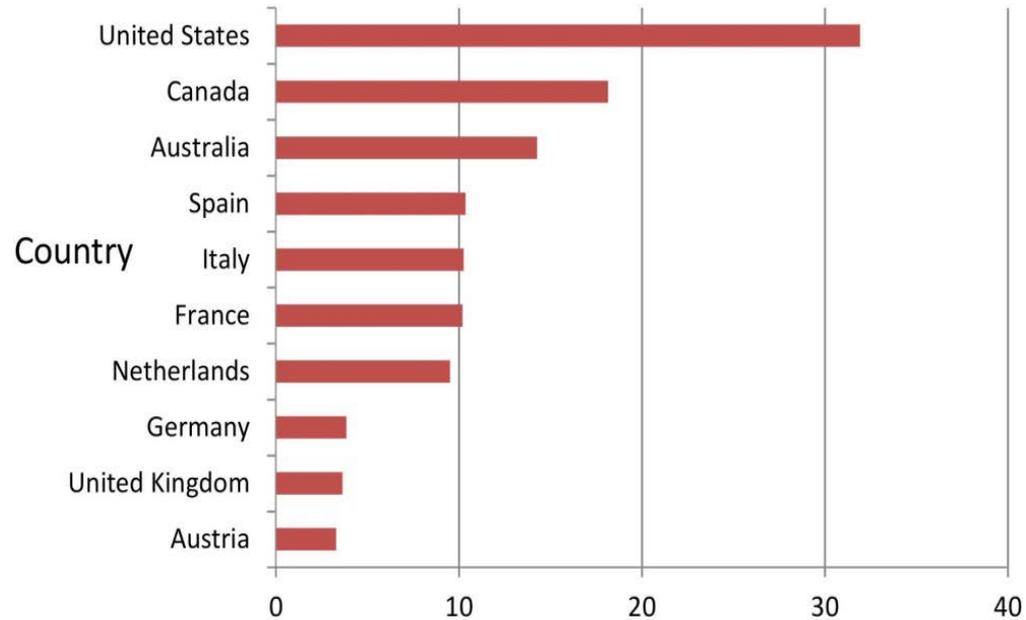


FIGURE 2-1 Fatalities, by role, in crashes involving at least one driver with a BAC  $\geq 0.08\%$ , 2016.  
SOURCE: Data from NCSA, 2017b.

# International Comparison

## Alcohol-impaired driving traffic deaths per million population



NOTE: This analysis does not include vehicle miles traveled.

SOURCE: Redelmeier and Detsky, 2017.

# Current Environment

- Drivers ages 21-25 are disproportionately involved in fatal alcohol-impaired driving crashes when compared to other age groups.
  - In 2015 this age group accounted for 28% of motor vehicle crashes where the driver had a BAC equal to or higher than 0.08%.
- Rural areas are disproportionately affected by alcohol-impaired driving crashes and fatalities.
- Per capita alcohol consumption and hazardous drinking are increasing.

# Per Capita Alcohol Consumption, 1935-2014

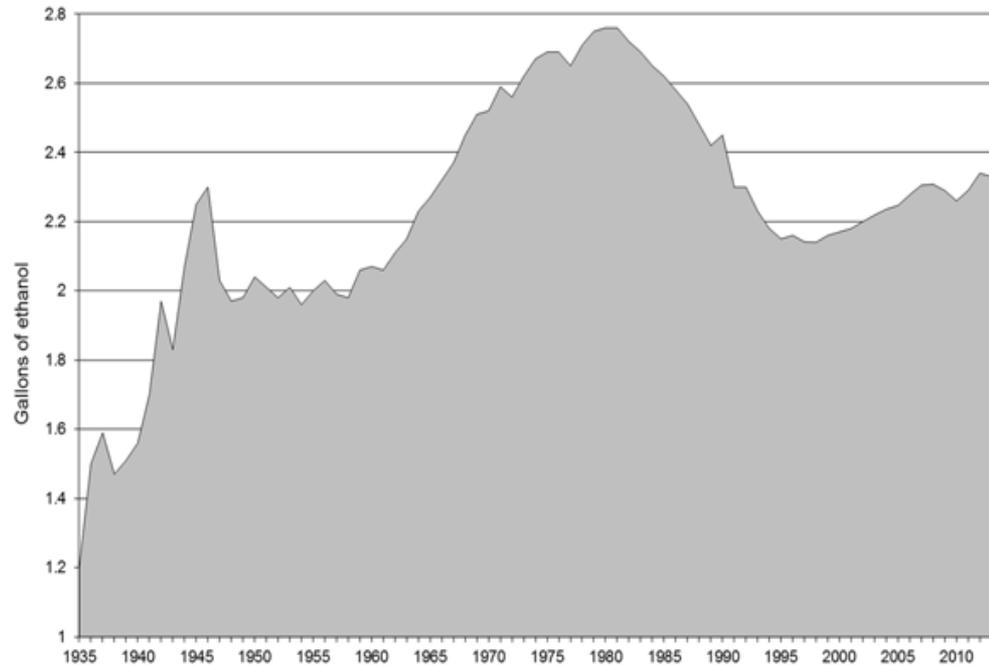


FIGURE 2-3 Total per capita ethanol consumption, United States, 1935-2014.  
SOURCE: Haughwout et al., 2016.

# Current Alcohol Environment:

## *Binge Drinking*

- Binge drinking is strongly associated with alcohol-impaired driving.
- Binge drinking accounts for 85% of alcohol-impaired driving episodes.

### Conclusion 2-2:

- Policies to reduce binge drinking are also protective against alcohol-impaired driving.
- Adoption of a comprehensive set of effective interventions and population-based strategies that take advantage of synergies across interventions would further reduce binge drinking and related harms.

# Impairment and Alcohol Trends

- It can be difficult for individuals to understand what it means to be impaired
  - Individuals differ in their degree of impairment at a given BAC
- Several factors affect alcohol's physiologic influence
  - Weight, age, sex, race, ability to metabolize alcohol
- Inconsistent serving sizes and the combination of alcohol with caffeine and energy drinks undermine individuals' ability to estimate their level of impairment
- Alcoholic beverages are now more affordable, of far greater variety, and more widely promoted

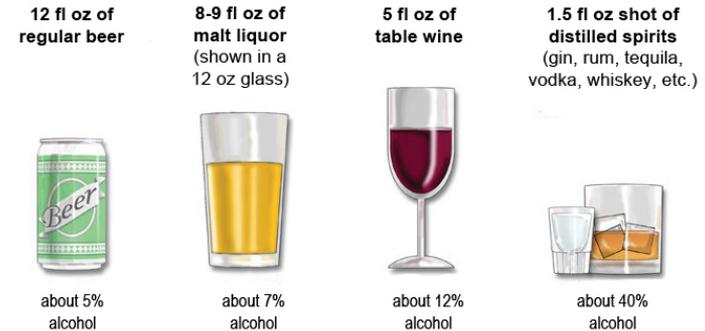


FIGURE 1-7 Standard drinks in the United States.  
SOURCE: NIAAA, n.d. -b.

## Conclusion 1-1:

Alcohol-impaired driving is a complex preventable public health problem that requires a comprehensive and collaborative multisector approach.

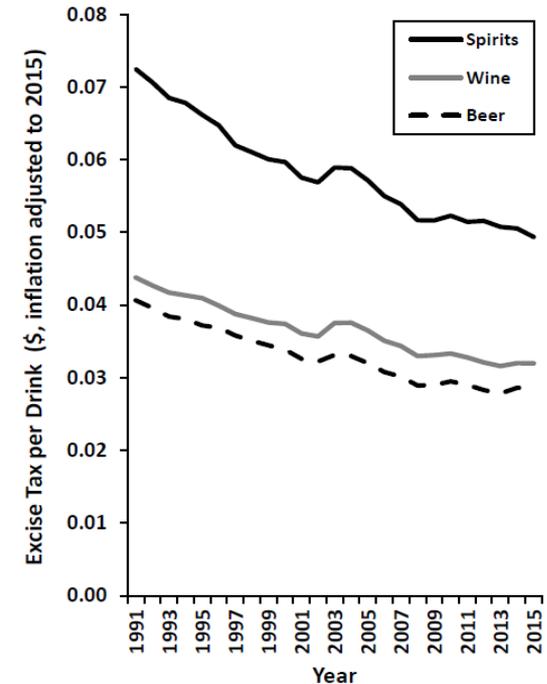


# Committee Recommendations



# Interventions to Reduce Drinking to Impairment: *Increasing Alcohol Taxes*

- Alcohol taxes have strong and consistent evidence base for reducing binge drinking
  - Strong direct evidence shows that higher alcohol taxes reduce alcohol-impaired driving and motor vehicle crash fatalities
- Alcohol taxes have declined in inflation-adjusted terms at both federal and state levels
- Alcohol taxes are considerably less than the alcohol-induced costs
  - Such as health care, lost productivity, or criminal justice costs



# Interventions to Reduce Drinking to Impairment: *Increasing Alcohol Taxes*

Recommendation 3-1: Federal and state governments should increase alcohol taxes significantly.

# Interventions to Reduce Drinking to Impairment

Recommendation 3-2: State and local governments should take appropriate steps to limit or reduce alcohol availability, including:

- restrictions on the number of on- and off-premises alcohol outlets
- days and hours of alcohol sales

Recommendation 3-3: To stop illegal alcohol sales (to already-intoxicated adults and underage persons i.e., <21 years old), federal, state, and local governments should:

- adopt and strengthen laws
- dedicate enforcement resources

# Interventions to Reduce Drinking to Impairment

Recommendation 3-4: Federal, state, and local governments should use their existing regulatory powers to:

- strengthen and implement standards for permissible alcohol marketing content and placement across all media
- establish consequences for violations
- promote and fund counter-marketing campaigns

Conclusion 3-2: As part of a comprehensive approach, well-funded media campaigns are an important component of alcohol-impaired driving enforcement policy interventions.

- Campaigns are more likely to be effective when rigorous formative research and behavior change theories inform their design and dissemination.

# Alcohol-Impaired Driving Interventions: *Lowering the BAC limit to 0.05%*

- BAC laws have historically been key to reducing alcohol-impaired driving fatalities
- Evidence shows ability to operate a vehicle deteriorates significantly at 0.05%
- In many developed countries, lower BAC laws decreased alcohol-impaired driving fatalities
  - 0.05 BAC laws are associated with decreased crashes at all BAC levels

TABLE 4-1 Blood Alcohol Concentration (BAC) Levels and Physiological Effects, Effects on Driving

Blood Alcohol Concentration	Typical Physiological Effects	Typical Effects on Driving
0.02%	<ul style="list-style-type: none"> <li>• Some loss of judgment</li> <li>• Relaxation</li> <li>• Slight body warmth</li> <li>• Altered mood</li> </ul>	<ul style="list-style-type: none"> <li>• Decline in visual functions (rapid tracking of a moving target)</li> <li>• Decline in ability to perform two tasks at the same time (divided attention)</li> </ul>
0.05%	<ul style="list-style-type: none"> <li>• Exaggerated behavior</li> <li>• May have loss of small-muscle control (e.g., focusing your eyes)</li> <li>• Impaired judgment</li> <li>• Usually good feeling</li> <li>• Lowered alertness</li> <li>• Release of inhibition</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced coordination</li> <li>• Reduced ability to track moving objects</li> <li>• Difficulty steering</li> <li>• Reduced response to emergency driving situations</li> </ul>
0.08%	<ul style="list-style-type: none"> <li>• Muscle coordination becomes poor (e.g., balance, speech, vision, reaction time, and hearing)</li> <li>• Harder to detect danger</li> <li>• Judgment, self-control, reasoning, and memory are impaired</li> </ul>	<ul style="list-style-type: none"> <li>• Decline in ability to concentrate</li> <li>• Short-term memory loss</li> <li>• Decline in control of speed</li> <li>• Reduced information processing capability (e.g., signal detection, visual search)</li> <li>• Impaired perception</li> </ul>

# Alcohol-Impaired Driving Interventions: *Lowering BAC per se laws to 0.05%*

Recommendation 4-1: State governments should enact per se laws for alcohol-impaired driving at 0.05% blood alcohol concentration (BAC).

- The federal government should incentivize this change, and other stakeholders should assist in this process.
- The enactment of 0.05% per se laws should be accompanied by media campaigns and robust and visible enforcement efforts.
  - Effectiveness of this policy will be enabled by legislation such as use of sobriety checkpoints, administrative license revocation, and penalties for refusing preliminary breath or blood tests that are equal to or greater than penalties for alcohol-impaired driving offenses.

# Alcohol-Impaired Driving Interventions

Recommendation 4-2: States and localities should conduct frequent sobriety checkpoints in conjunction with widespread publicity to promote awareness of these enforcement initiatives.

Recommendation 4-3: When the Driver Alcohol Detection System for Safety (DADSS) is accurate and available for public use, auto insurers should provide policy discounts to stimulate the adoption of DADSS.

- Once the cost is on par with other existing automobile safety features and is demonstrated to be accurate and effective, NHTSA should make DADSS mandatory in all new vehicles.

# Alcohol-Impaired Driving Interventions

Recommendation 4-4: Municipalities should support policies and programs that increase the availability, convenience, affordability, and safety of transportation alternatives for drinkers who might otherwise drive. This includes:

- permitting transportation network company ride sharing
- enhancing public transportation options (especially during nighttime and weekend hours)
- boosting or incentivizing transportation alternatives in rural areas

# Postcrash and Arrest Interventions

Recommendation 5-1: Every state should implement DWI courts, guided by the evidence-based standards set by the National Center for DWI Courts.

- All DWI courts should include available consultation or referral for evaluation by an addiction-trained clinician.

Recommendation 5-2: All health care systems and payers should cover and facilitate effective evaluation, prevention, and treatment strategies for binge drinking and alcohol use disorders including:

- screening, brief intervention, and referral to treatment (SBIRT)
- cognitive behavioral therapy
- medication-assisted therapy

# Postcrash and Arrest Interventions: *All-Offender Ignition Interlock Laws*

- Ignition interlock device: a breath alcohol analyzer connected to a vehicle's ignition
  - Requires a breath sample to start car
  - Inhibits driving if sample contains more than a preset alcohol concentration, usually 0.02%
- Current state laws vary in structure and practice
  - 30 states, D.C., and 4 California counties have all-offender ignition interlock laws
- Ignition interlock use has increased but devices remain underused relative to number of eligible offenders

# Postcrash and Arrest Interventions: *All-Offender Ignition Interlock Laws*

Recommendation 5-3: All states should enact all-offender ignition interlock laws to reduce alcohol-impaired driving fatalities.

- An ignition interlock should be required for all offenders with a BAC above the limit set by state law.
- To increase effectiveness, states should consider increased monitoring periods based on the offender's BAC or past recidivism.

# Data and Surveillance Needs and Opportunities

Recommendation 6-1: NHTSA should ensure that:

- timely standardized data on alcohol-impaired driving, crashes, serious injuries, and fatalities are collected and accessible for evaluation, research, and strategic public dissemination
- data from other government agencies and private organizations are included as needed
- should explore the usefulness of big data for inclusion in alcohol-impaired driving information strategies

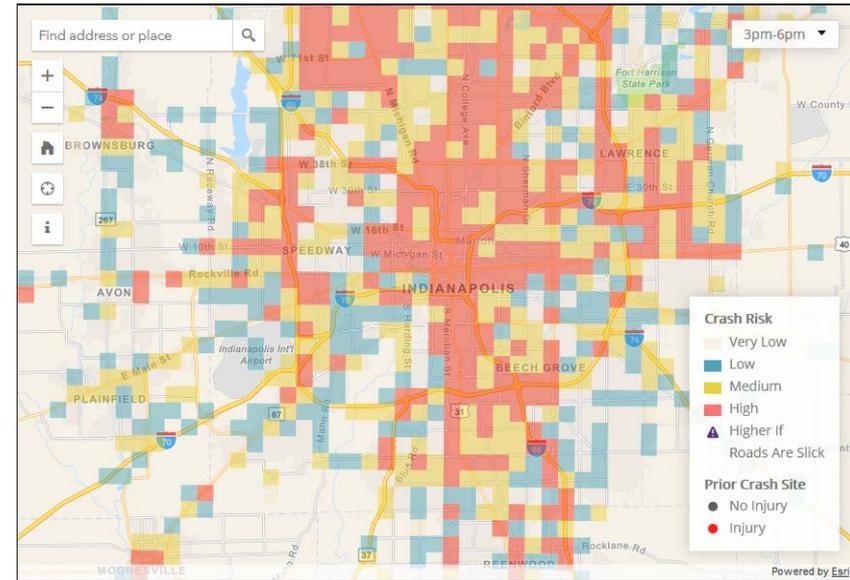


FIGURE 6-1 Indiana daily crash prediction map.  
Source: Indiana State Police and Indiana Management Performance Hub, 2017.

# Data and Surveillance Needs and Opportunities

Recommendation 6-2: To facilitate surveillance of alcohol-impaired driving that is timely, ongoing, concise, and actionable, NHTSA should convene a diverse group of stakeholders that includes academic researchers, law enforcement, city and state public health, transportation sector, and other federal agency representation to:

- create and maintain a metrics dashboard
- publish brief, visually appealing quarterly and annual national and state-by-state reports that analyze and interpret progress in reducing alcohol-impaired driving

# Generating Action

Conclusion 7-2: Alcohol companies and alcohol-related businesses could assist efforts to reduce alcohol-impaired driving fatalities by:

- reducing the alcohol content of existing products
- refraining from marketing including sponsorships that are likely to influence excessive alcohol use
- supporting or at least not opposing effective alcohol-impaired driving countermeasures

Recommendation 7-1: The National Conference of State Legislatures should draft model legislation to provide benchmarks for states that seek to reduce alcohol-impaired driving fatalities.

# Generating Action

Recommendation 7-2: NHTSA should create a federal interagency coordinating committee to:

- develop and oversee an integrated strategy for reducing alcohol-impaired driving
- assure collaboration
- maintain accountability
- share information among organizations committed to reducing alcohol-impaired driving

Recommendation 7-3: NHTSA, other federal partners, and private funding sources free of conflicts of interest should:

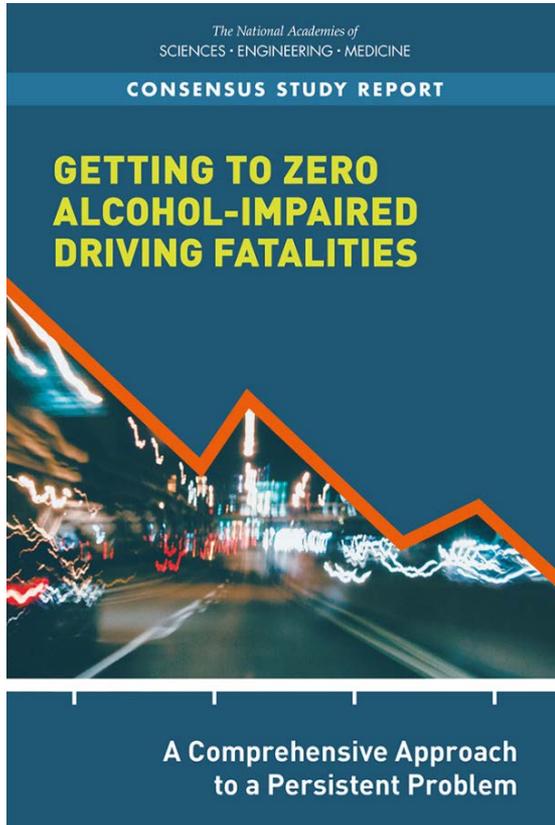
- support training, technical assistance, and demonstration projects in the implementation of effective strategies, including policy changes, for reducing alcohol-impaired driving

# Conclusion

Conclusion 8-1: To achieve the goal of zero alcohol-related crash fatalities a systematic multipronged approach with clear roles and accountabilities across sectors (including public health, transportation, law enforcement, and health care providers, among others) is needed.

**TABLE 8-1 Tools and Stakeholders to Accelerate Progress to Reduce Alcohol-Impaired Driving Fatalities**

Alcohol Consumption and Drinking to Impairment		
<i>Evidence Based</i>	Increase alcohol taxes	Stakeholders: *State and federal governments; alcohol producers; consumers; community coalitions Time frame: short term
	Implement policies to address physical availability of alcohol	Stakeholders: *Local and state governments; alcohol producers; hospitality and retail sectors; community coalitions Time frame: short term
	Implement policies to reduce illegal sales of alcohol	Stakeholders: *Local, state, and federal governments; alcohol producers; hospitality and retail sectors; community coalitions Time frame: short term
	Regulate alcohol marketing	Stakeholders: *Local, state, and federal governments; alcohol producers; hospitality and retail sectors; media (television, radio, print, social media); community coalitions Time frame: short term
Driving While Impaired		
<i>Evidence Based</i>	Lower BAC <i>per se</i> laws to 0.05%	Stakeholders: *State and federal governments; law enforcement; news media/advertising (television, radio, print, social media); alcohol producers; hospitality and retail sectors; public/consumers; community coalitions Time frame: short term
	Conduct frequent, publicized sobriety checkpoints	Stakeholders: *Local and state governments; law enforcement, news media/advertising (television, radio, print, social media) Time frame: short term
	Universal primary seat belt laws	Stakeholders: *Local and state governments; law enforcement; public/consumers Time frame: short term
<i>Promising</i>	Future use of DADSS	Stakeholders: *NHTSA; automobile industry; automobile insurance industry; Congress; health insurers Time frame: long term
	Increase availability of transportation alternatives	Stakeholders: *Local government; transportation sector; hospitality sector; news media/advertising; public/consumers; private sector Time frame: short term
Postcrash and/or Arrest		
<i>Evidence Based</i>	Evaluation and treatment of binge drinking and AUD (e.g., SBIRT, CBT, medication-assisted therapy)	Stakeholders: *Health care sector; *health insurers; *state government; law enforcement; legal sector Time frame: short term to midterm



# Thank you!

For the report and related resources, see:  
<http://www.nationalacademies.org/StopDWIdeaths>

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