Slide 1

Impaired Driving: Problem, Prevalence, Prevention

Shea Denning

UNC School of Government

November 2023

Slide 2
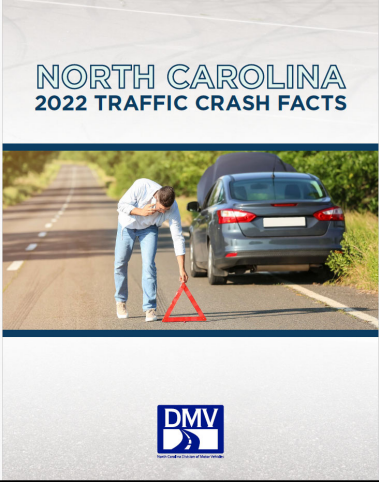
What we will cover . . .

The Problem

NORTH CAROLINA 2022 TRAFFIC CRASH FACTS

Solutions

Drug-Impaired Driving

Slide 3

The Problem

NORTH CAROLINA
2022 TRAFFIC CRASH FACTS

DMV

Slide 4

Pollev.com/sheadenning

Slide 5

The Problem of Impaired Driving: November 2023

Win up to 1,000 points per answer

5

Slide 6

What percentage of impaired driving episodes result in arrest

6

Slide 7

What percentage of impaired driving episodes result in arrest

2 percent or less
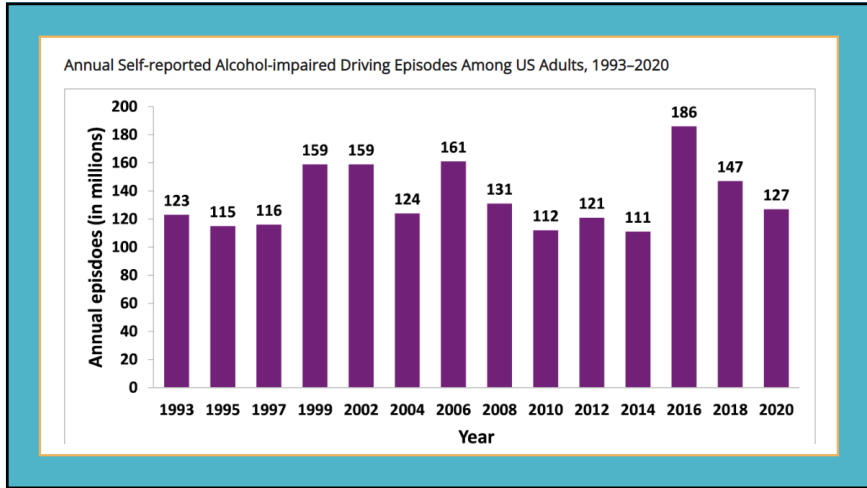
10 percent

25 percent

30 percent

7

Slide 8

What percentage of impaired driving episodes result in arrest

2 percent or less — 0%

10 percent — 0%

25 percent — 0%

30 percent — 0%

8

2

Annual Self-reported Alcohol-impaired Driving Episodes Among US Adults, 1993–2020

9

Leaderboard

Rank	Player	Score
1	Web_9d43c	6000 pts
1	Web_f45f4	6000 pts
3	Web_124e1	4000 pts
3	Web_5fca1	4000 pts

10

Which driving behavior is involved in the largest percentage of fatal crashes in NC each year?

11

Which driving behavior is involved in the largest percentage of fatal crashes in NC each year?

DWI

Speeding

Distracted Driving

12

Which driving behavior is involved in the largest percentage of fatal crashes in NC each year?

DWI

0%

Speeding

0%

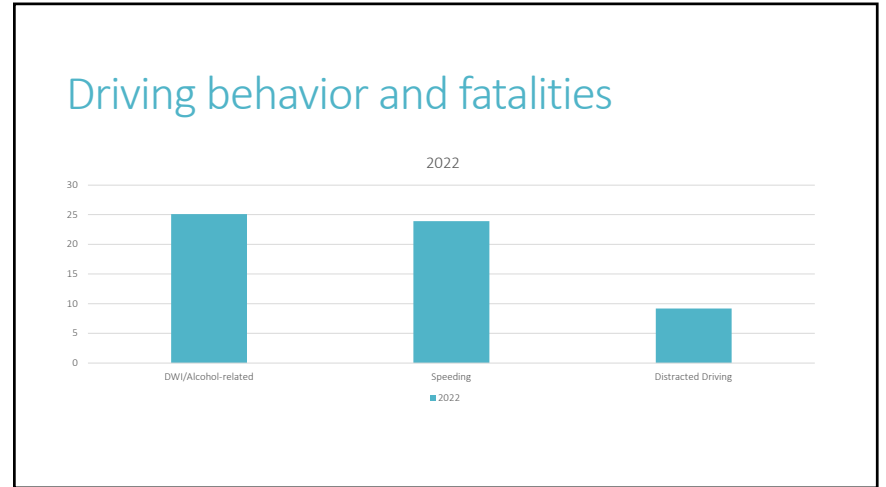Distracted Driving

0%

13

Driving behavior and fatalities

2022

15

Leaderboard

Rank	Player	Score
1	Web_9d43c	6000 pts
1	Web_f45f4	6000 pts
3	Web_124e1	4000 pts
3	Web_5fca1	4000 pts

15

Most drivers in fatal crashes involving alcohol impairment have a BAC of .15 or higher

16

17

Most drivers in fatal crashes involving alcohol impairment have a BAC of .15 or higher

True

False

18

Most drivers in fatal crashes involving alcohol impairment have a BAC of .15 or higher

True
0%

False
0%

19

Figure 3. Distribution of BACs for Drivers With BACs of .01 g/dL or Higher Involved in Fatal Traffic Crashes, 2021

.16 – most frequent recorded BAC

Number of Drivers
BAC Level (g/dL)

Source: FARS 2021 ARF
Note: NHTSA estimates BACs when alcohol test results are unknown.

67 percent of alcohol-impaired-driving fatalities were in crashes in which at least one driver had a BAC of .15 or higher.

20

Leaderboard

Rank	Player	Score
1	Web_9d43c	6000 pts
1	Web_f45f4	6000 pts
3	Web_124e1	4000 pts
3	Web_5fca1	4000 pts

21

22

Who is most often killed in a crash involving an impaired driver?

The impaired driver

Passengers in the vehicle with the impaired driver

Occupants of another vehicle

Pedestrians and bicyclists

23

Who is most often killed in a crash involving an impaired driver?

The impaired driver
0%

Passengers in the vehicle with the impaired driver
0%

Occupants of another vehicle
0%

Pedestrians and bicyclists
0%

24
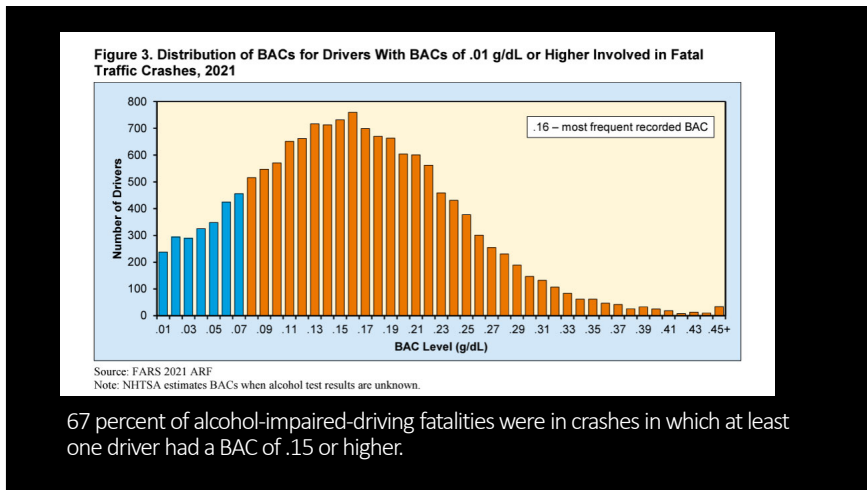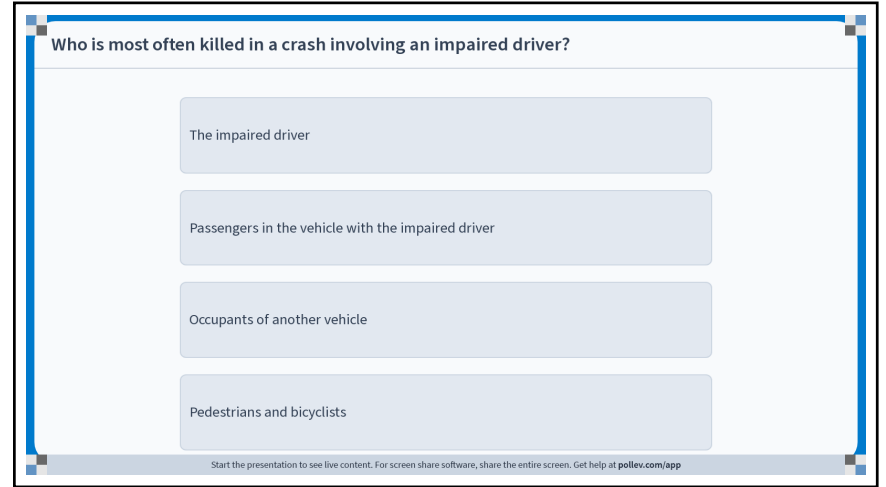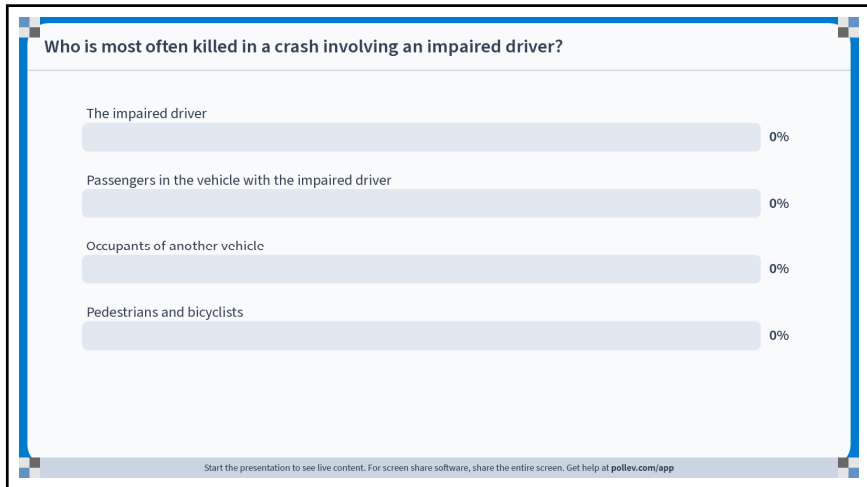
Table 1. Fatalities in Alcohol-Impaired-Driving Traffic Crashes, by Role, 2021

Role	Number	Percent
Alcohol-Impaired Drivers	8,089	60%
Passengers Riding With Alcohol-Impaired Drivers	1,603	12%
Subtotal	**9,692**	**72%**
Occupants of Other Vehicles	2,085	16%
Nonoccupants (pedestrians/pedalcyclists/other)	1,607	12%
Total Alcohol-Impaired-Driving Fatalities	**13,384**	**100%**

Source: FARS 2021 ARF
Notes: Percentages may not add up to 100 percent due to individual rounding. NHTSA estimates BACs when alcohol test results are unknown.

Leaderboard

Rank	Player	Score
1	Web_9d43c	6000 pts
1	Web_f45f4	6000 pts
3	Web_124e1	4000 pts
3	Web_5fca1	4000 pts

25

Most alcohol-impaired drivers involved in fatal crashes have a prior conviction for DWI in the past 5 years

26

Most alcohol-impaired drivers involved in fatal crashes have a prior conviction for DWI in the past 5 years

True

False

27

Most alcohol-impaired drivers involved in fatal crashes have a prior conviction for DWI in the past 5 years

True
0%

False
0%

28

Figure 2. Percentages of Previous 5-Year Driving Records of Drivers Involved in Fatal Traffic Crashes, by BAC, 2021

29

Leaderboard

Rank	Player	Score
1	Web_9d43c	6000 pts
1	Web_f45f4	6000 pts
3	Web_124e1	4000 pts
3	Web_5fca1	4000 pts

Start the presentation to see live content. For screen share software, share the entire screen. Get help at pollev.com/app
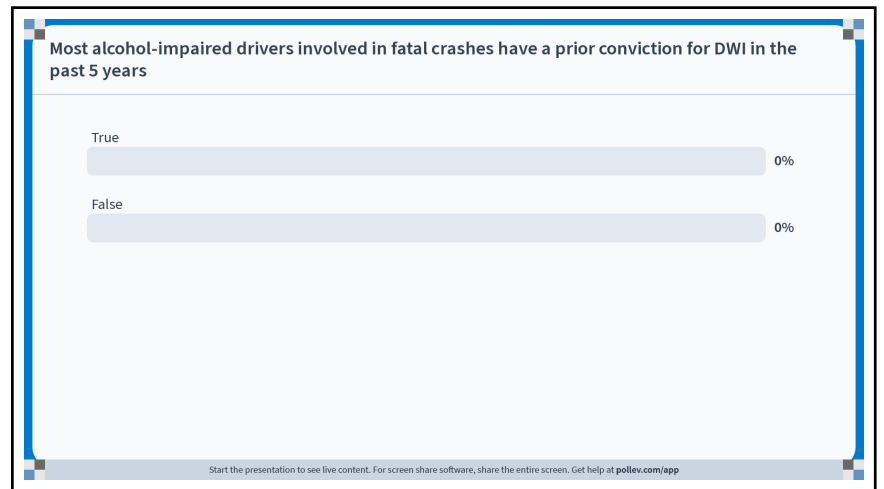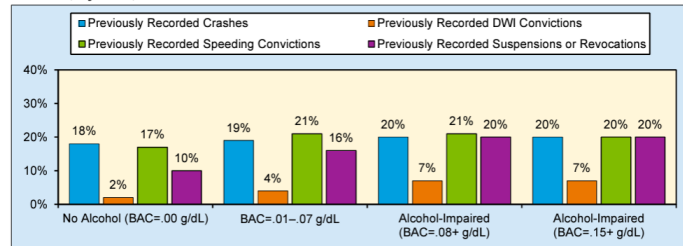
30

25 percent of all drivers arrested for impaired driving have prior DWI convictions

31

"Any alcohol-impaired driving violation, not just convictions, is a marker for future recidivisim."

Rauch, et al., *Risk of Alcohol-Impaired Driving Recidivism Among First Offenders and Multiple Offenders*, Vol. 100 No. 5 American Journal of Public Health: Research and Practice (May 2010) (finding that annual rate of subsequent violation was 7 times higher among drivers with a prior violation)

32

33

How many people were killed in alcohol-related crashes in NC in 2022?

33

34

How many people were killed in alcohol-related crashes in NC in 2022?

- 48
- 448
- 1,448
- 7,448

34

35

How many people were killed in alcohol-related crashes in NC in 2022?

- 48 — 0%
- 448 — 0%
- 1,448 — 0%
- 7,448 — 0%

35

36

1,784

Alcohol	2017	2018	2019	2020	2021	17-21 Avg.	2022
Crashes	11,342	11,345	11,492	11,475	12,264	11,584	11,850
Fatalities	368	411	348	412	407	389	448
Injuries	7,922	7,602	7,665	7,426	8,100	7,743	7,728
Percent of Total							
Crashes	*4.1%*	*4.0%*	*4.0%*	*4.6%*	*4.4%*	*4.3%*	*4.3%*
Fatalities	*26.4%*	*28.5%*	*23.7%*	*24.8%*	*22.8%*	*25.2%*	*25.1%*
Injuries	*6.2%*	*6.1%*	*6.1%*	*7.0%*	*7.1%*	*6.5%*	*7.0%*

36

37

U.S. Alcohol-Impaired Driving Fatalities

Source: NHTSA - FARS (1982-2018), NCSA (2019)

38

Leaderboard

Rank	Player	Score
1	Web_9d43c	6000 pts
1	Web_f45f4	6000 pts
3	Web_124e1	4000 pts
3	Web_5fca1	4000 pts

Start the presentation to see live content. For screen share software, share the entire screen. Get help at **pollev.com/app**
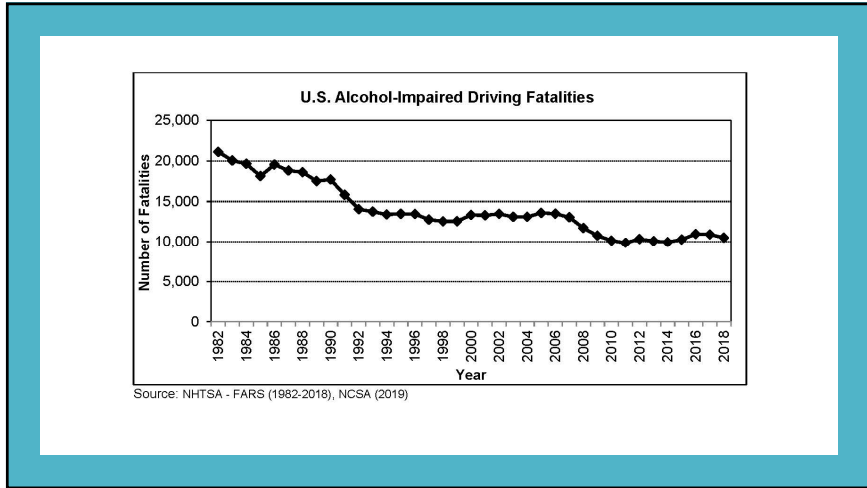
39

How many DWI charges were issued in NC in 2022?

Start the presentation to see live content. For screen share software, share the entire screen. Get help at **pollev.com/app**

40
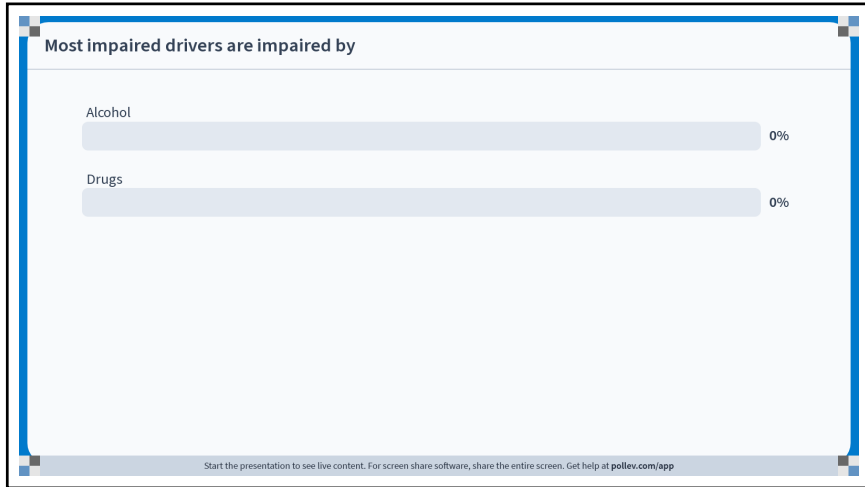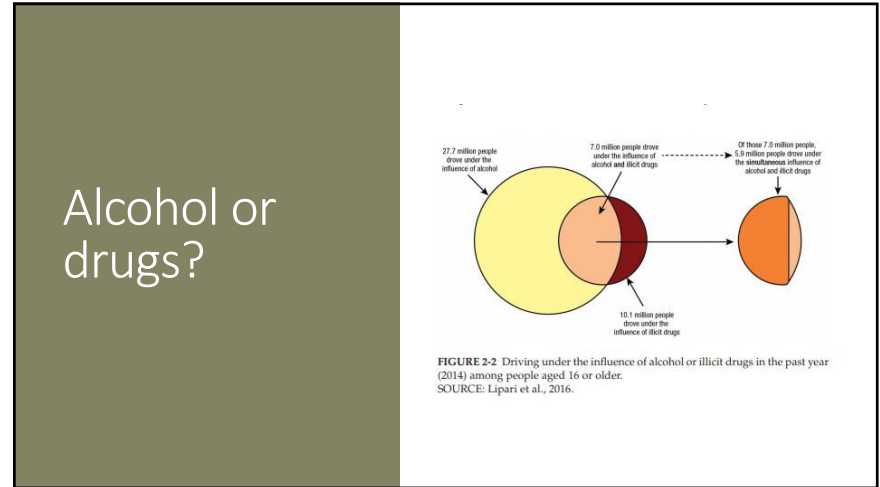
How many DWI charges were issued in NC in 2022?

7,545

17,545

37,545

57,545

Start the presentation to see live content. For screen share software, share the entire screen. Get help at **pollev.com/app**

Slide 41

How many DWI charges were issued in NC in 2022?

7,545 — 0%

17,545 — 0%

37,545 — 0%

57,545 — 0%

41

Slide 42

DWI Charges

41,446 (2017)
40,237 (2018)
39,263 (2019)
34,810 (2020)
37,960 (2021)
37,545 (2022)

DWI Charges

42

Slide 43

Most impaired drivers are impaired by

43

Slide 44

Most impaired drivers are impaired by

Alcohol

Drugs

44

Most impaired drivers are impaired by

Alcohol   0%

Drugs   0%

45

Alcohol or drugs?

FIGURE 2-2 Driving under the influence of alcohol or illicit drugs in the past year (2014) among people aged 16 or older.
SOURCE: Lipari et al., 2016.

46

Leaderboard

Rank	Player	Score
1	Web_9d43c	6000 pts
1	Web_f45f4	6000 pts
3	Web_124e1	4000 pts
3	Web_5fca1	4000 pts

47

48

49

What is the average age of a person convicted of DWI in North Carolina?

50
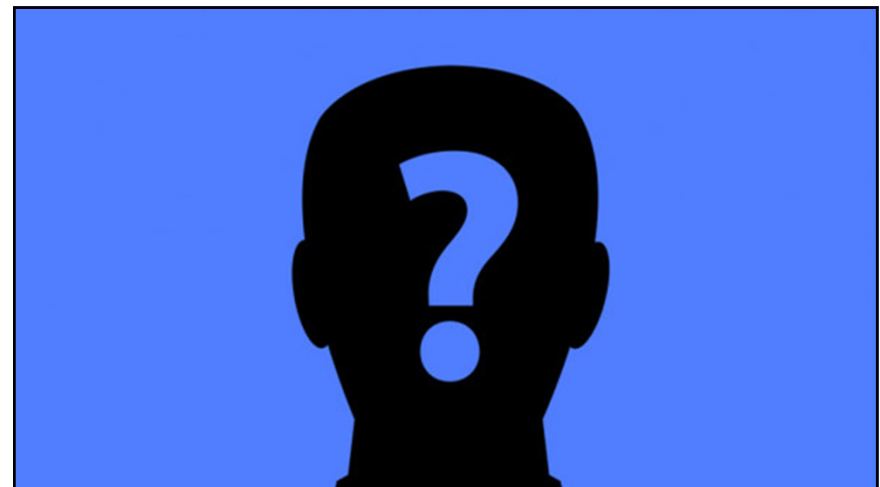
What is the average age of a person convicted of DWI in North Carolina?

23

27

37

47

51

What is the average age of a person convicted of DWI in North Carolina?

23   0%

27   0%

37   0%

47   0%

52

Figure 6
Convictions by Sex and Race

Male

Black 30%
Hispanic 14%
White 51%
Other 5%

Female

Black 27%
Hispanic 5%
White 65%
Other 3%

Male 74%   Female 26%

SOURCE: NC Sentencing and Policy Advisory Commission, FY 2022 DWI Statistical Report Data

Who? White males, Average age: 37

Figure 7
Distribution of Convictions by Age at Offense

Note: Of the 26,321 DWI convictions in FY 2022, 12 convictions with missing values for offender age were excluded from the figure.
SOURCE: NC Sentencing and Policy Advisory Commission, FY 2022 DWI Statistical Report Data

53

Leaderboard

Rank	Player	Score
1	Web_9d43c	6000 pts
1	Web_f45f4	6000 pts
3	Web_124e1	4000 pts
3	Web_5fca1	4000 pts

54

What about teenagers?

55

What percentage of NC high school students drove in the last month after drinking alcohol?

56

Slide 57

What percentage of NC high school students drove in the last month after drinking alcohol?
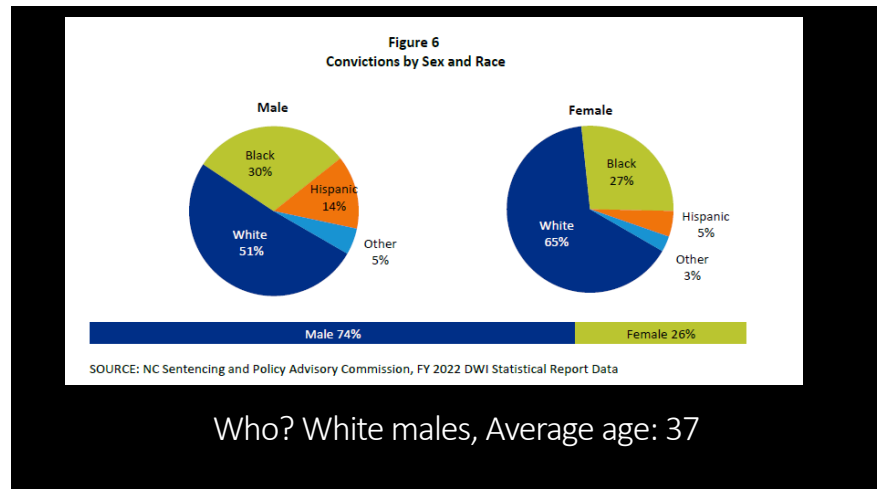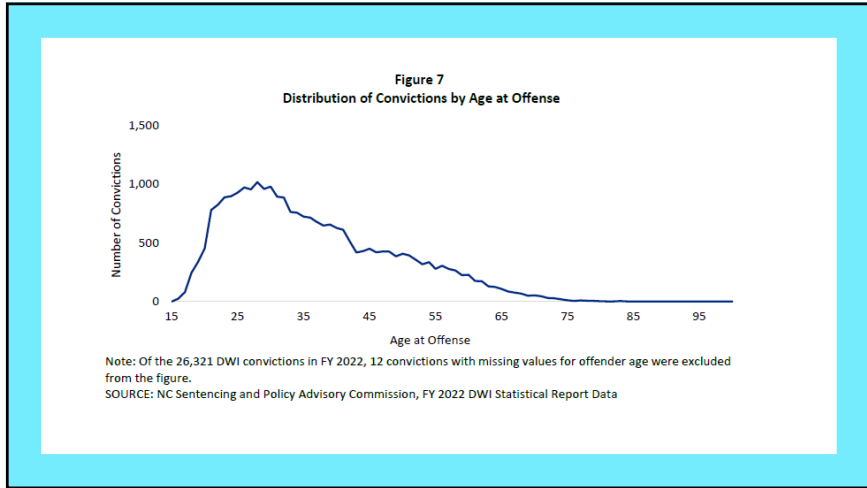
Less than 3 percent

5 percent

15 percent

More than 20 percent

Start the presentation to see live content. For screen share software, share the entire screen. Get help at **pollev.com/app**

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Slide 58

What percentage of NC high school students drove in the last month after drinking alcohol?

Less than 3 percent

0%

5 percent

0%

15 percent

0%

More than 20 percent

0%

Start the presentation to see live content. For screen share software, share the entire screen. Get help at **pollev.com/app**
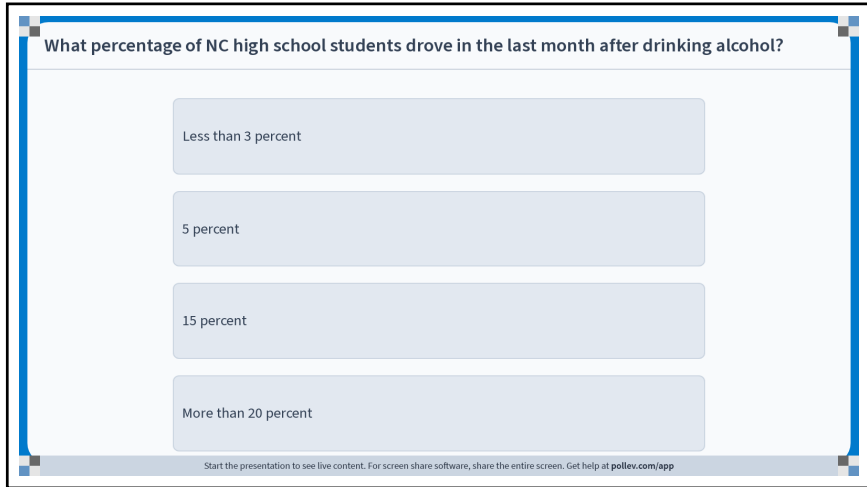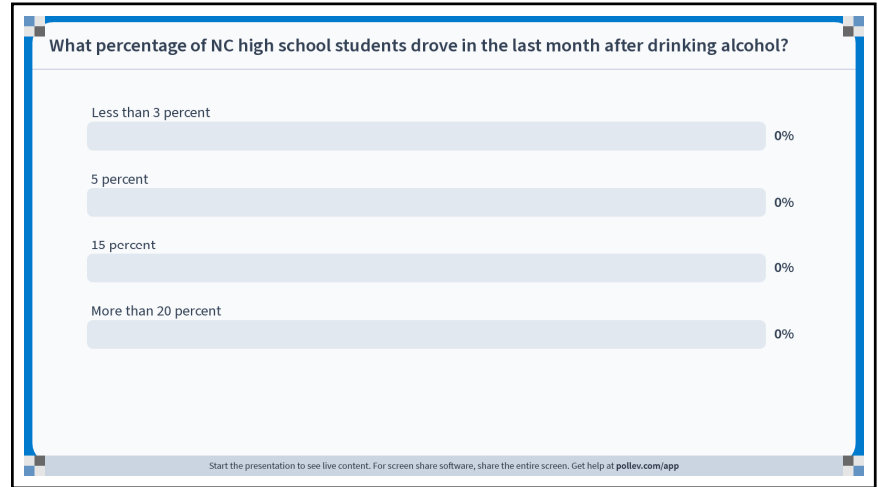
58

Slide 59

59

Slide 60

Drove When They Had Been Drinking Alcohol
(in a car or other vehicle, one or more times during the 30 days before the survey, among students
who had driven a car or other vehicle during the 30 days before the survey)
North Carolina, High School Youth Risk Behavior Survey, 2019

Total   Female   Male

2019   2.9%
2.3%
3.6%

0   20   40   60   80   100

The kids are alright

60

61

Drove when they had been drinking alcohol
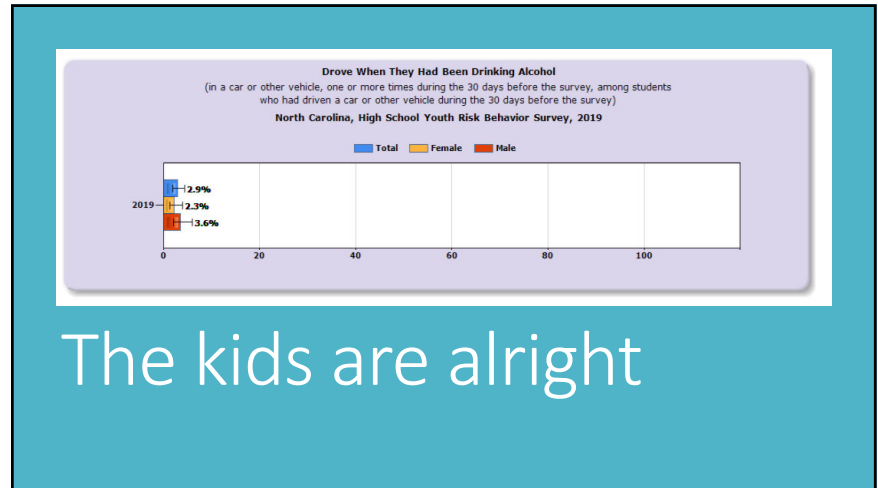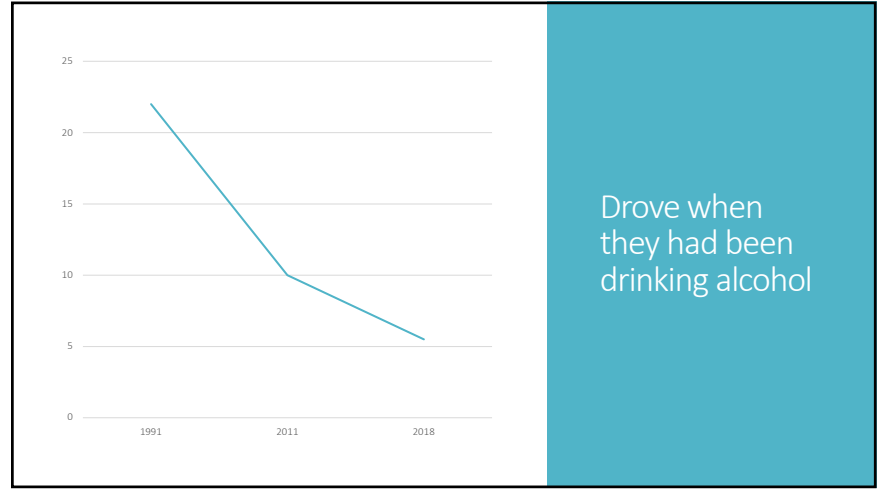
62

Leaderboard

Start the presentation to see live content. For screen share software, share the entire screen. Get help at **pollev.com/app**

63

Big Picture

64

Impaired driving is dangerous.

"Driving requires several complex skills, and alcohol affects the capacity to drive safely by impairing information processing and reaction time and compromising judgment and coordination."

National Academies of Sciences, Engineering, and Medicine 2018. *Getting to Zero Alcohol-Impaired Driving Fatalities: A Comprehensive Approach to a Persistent Problem.*
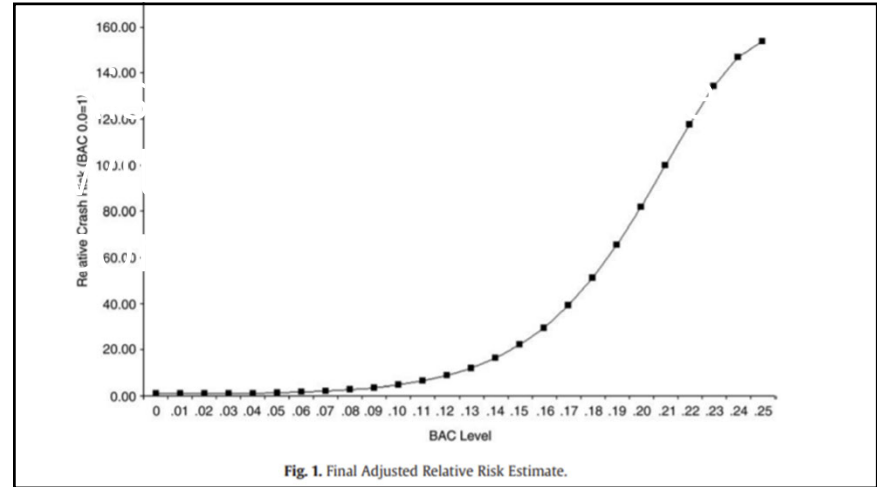
65

Fig. 1. Final Adjusted Relative Risk Estimate.

66

Alcohol-impaired driving is a leading cause of motor vehicle fatalities.
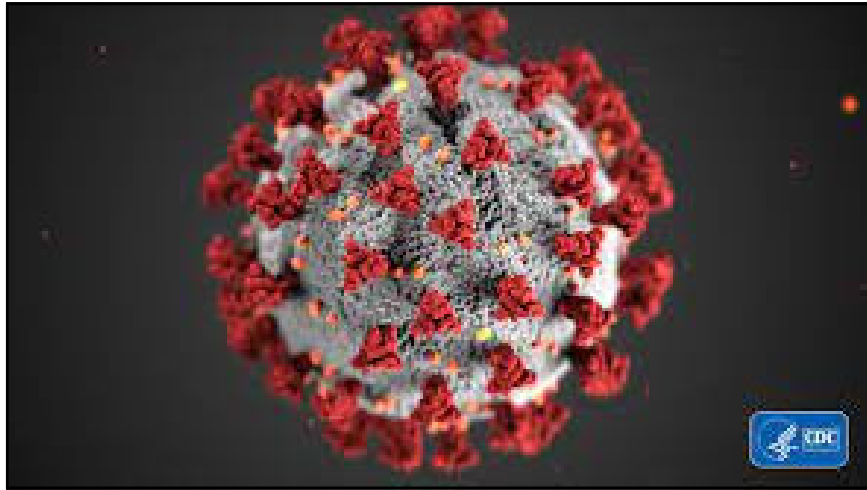
The majority of drivers in fatal crashes have BAC levels far higher than 0.08.

67

The percent of alcohol-impaired-driving fatalities has declined from 48 percent in 1982 to 28 percent in 2019.

This 28 percent of overall fatalities is the lowest percentage since 1982, when NHTSA started reporting alcohol data
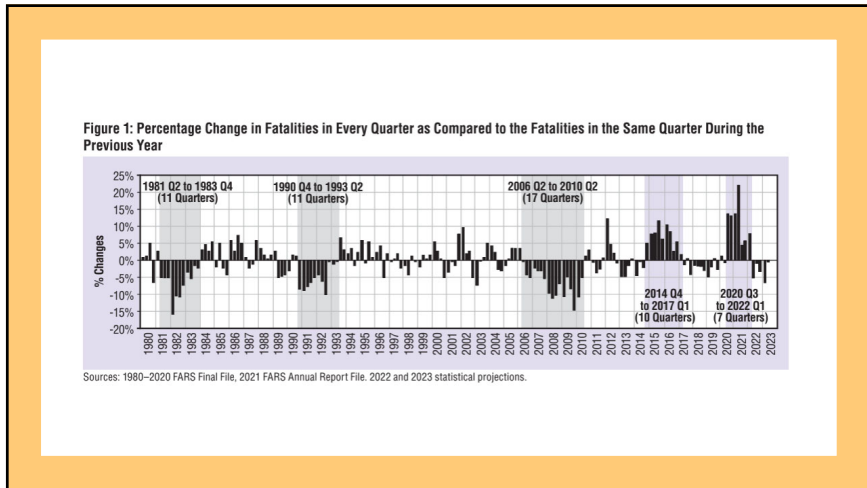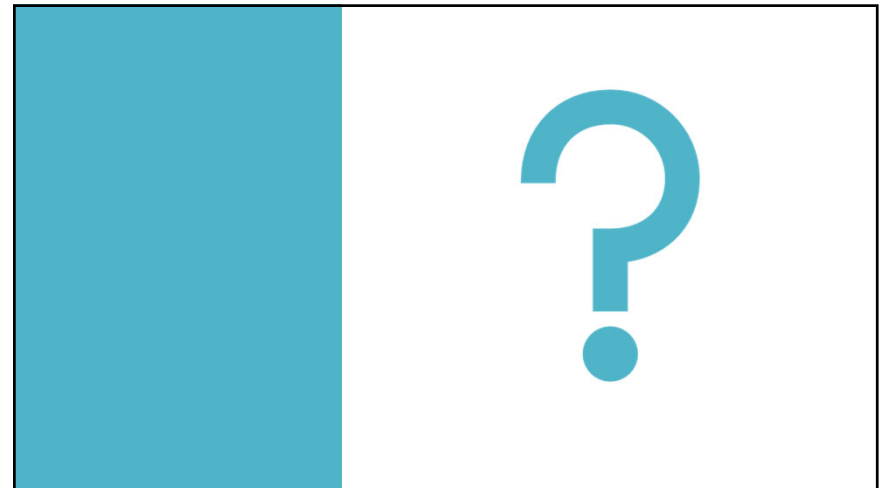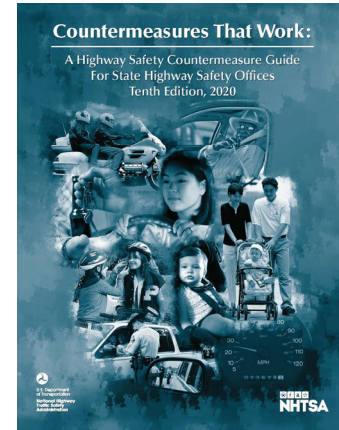
68

69

70

Figure 1: Percentage Change in Fatalities in Every Quarter as Compared to the Fatalities in the Same Quarter During the Previous Year

71

72

Extreme Speeding

Fewer Seat Belts

Increased Use of Alcohol and Drugs

73

Solutions

Countermeasures That Work:
A Highway Safety Countermeasure Guide
For State Highway Safety Offices
Tenth Edition, 2020

NHTSA

74

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1. Deterrence: Laws

Countermeasure	Effectiveness	Cost	Use	Time
1.1 Administrative License Revocation or Suspension (ALR/ALS)	★★★★★	$$$	High	Medium
1.2 Open Container	★★★	$	High	Short
1.3 High-BAC Sanctions	★★★	$	Medium	Short
1.4 BAC Test Refusal Penalties	★★★	$	Unknown	Short
1.5 Alcohol-Impaired Driving Law Review	☆☆	$$	Unknown	Medium

75

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2. Deterrence: Enforcement

Countermeasure	Effectiveness	Cost	Use	Time
2.1 Publicized Sobriety Checkpoints	★★★★★	$$$	Medium	Short
2.2 High-Visibility Saturation Patrols	★★★★	$$	High	Short
2.3 Preliminary Breath Test Devices†	★★★★	$$	High	Short
2.4 Passive Alcohol Sensors††	★★★★	$$	Unknown	Short
2.5 Integrated Enforcement	★★★	$	Unknown	Short

† Proven for increasing arrests
†† Proven for detecting impaired drivers

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3. Deterrence: Prosecution and Adjudication

Countermeasure	Effectiveness	Cost	Use	Time
3.1 DWI Courts[†]	★ ★ ★ ★	$$$	Low	Medium
3.2 Limits on Diversion & Plea Agreements[††]	★ ★ ★ ★	$	Medium	Short
3.3 Court Monitoring[††]	★ ★ ★	$	Low	Short
3.4 Sanctions	☆ ☆	Varies	Varies	Varies

† Proven for reducing recidivism
†† Proven for increasing conviction

4. Deterrence: DWI Offender Treatment, Monitoring, and Control

Countermeasure	Effectiveness	Cost	Use	Time
4.1 Alcohol Problem Assessment and Treatment	★ ★ ★ ★ ★	Varies	High	Varies
4.2 Alcohol Ignition Interlocks[†]	★ ★ ★ ★ ★	$$	Medium	Medium
4.3 Vehicle and License Plate Sanctions[†]	★ ★ ★ ★	Varies	Medium	Medium
4.4 DWI Offender Monitoring[†]	★ ★ ★ ★	$$$	Unknown	Varies
4.5 Lower BAC Limit for Repeat Offenders	★ ★ ★ ★	$	Low	Short

† Proven for reducing recidivism

77

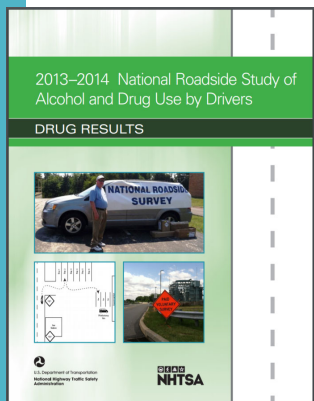**5. Prevention, Intervention, Communications and Outreach**

Countermeasure	Effectiveness	Cost	Use	Time
5.1 Alcohol Screening and Brief intervention	★ ★ ★ ★	$$	Medium	Short
5.2 Mass-Media Campaigns	★ ★ ★	$$$	High	Medium
5.3 Responsible Beverage Service	☆ ☆	$$	Medium	Medium
5.4 Alternative Transportation	★ ★ ★	$$	Unknown	Short
5.5 Designated Drivers	☆ ☆	$	Medium	Short

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Source: Getting to Zero Alcohol-Impaired Driving Fatalities: A Comprehensive Approach to a Persistent Problem (2018)

79

If an impaired driver is stopped, how likely are they to be detected?

80

Drug-Impaired Driving

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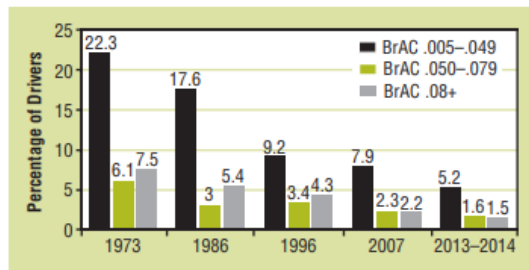## Woman sentenced to 10-20 years in prison in fatal huffing-related crash

82

National Roadside Survey

83

Figure 1.
Percentage of Weekend Nighttime Drivers by BrAC Category in the Five National Roadside Surveys[3]

84

Slide 85

Table 2
Overall Drug Prevalence by Data Collection Period and Type of Test in the 2013–2014 NRS

Time of Day	% Drug-Positive Oral Fluid Test	% Drug-Positive Blood Test	% Drug-Positive Oral Fluid and/or Blood Test
Weekday Daytime	19.0%	21.6%	22.4%
Weekend Nighttime	19.8%	21.2%	22.5%

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Slide 86

The kids are alright

86

Slide 87

What drug is most common?

CONTAINS THC

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Slide 88

Table ES-6. Comparing 2007 to 2013–2014 NRS: Nighttime Drug Prevalence in Oral Fluid or Blood by Drug Class (Percentage by Column)

Drug Class	2007 NRS N	2007 NRS %	2013–2014 NRS (Comparable) N	2013–2014 NRS (Comparable) %
THC-positive	499	8.7	666	12.7*
THC-positive only	379	6.8	528	10.3*
THC-positive plus any other drug	120	1.8	138	2.3*
Stimulants-only	190	3.2	159	2.1
Narcotic Analgesics-only	104	1.6	125	2.2
Sedatives-only	56	0.8	31	0.8
Antidepressants-only	55	0.7	66	1.0
Other-only	14	0.3	4	0.2
More than one class	58	1.0	67	1.3
Total drug-negative	4,934	83.7	4,789	79.9*
Total drug-positive	976	16.3	1,118	20.1*

N's are unweighted; percentages are weighted.
THC-positive includes results from THC and hydroxy-THC.
"More than one class" excludes drivers who tested positive for THC.
*Statistically different from 2007 NRS (based on 95% Confidence Intervals).

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Slide 89

How Marijuana Use May Affect Driving

- Slow reaction time (may affect events like emergency braking)
- Difficulty with road tracking and lane positioning
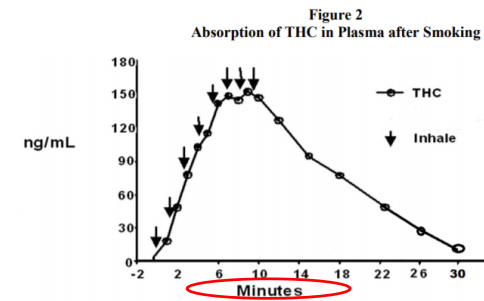- Impaired cognitive performance
- Impaired executive functions (route planning, decision making and risk taking)
- Reduced speeds, increased following distance, fewer risks taken
  - Contrast with alcohol: higher speeds, closer following, greater risk-taking

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Slide 90

Difficulties in detecting marijuana impairment

Figure 2
Absorption of THC in Plasma after Smoking

Note: Whole Blood THC is less than Plasma THC

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Slide 91

"The lack of an 'impairment standard' equivalent to BAC level does not prevent the successful prosecution of a marijuana-impaired driver. The lack of toxicological evidence simply means that the officer has to offer other evidence that the driver was under the influence of marijuana and too impaired to drive safely."

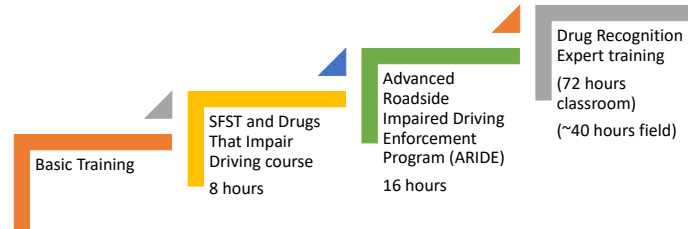NHTSA, Marijuana-Impaired Driving: A Report to Congress (July 2017)

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Slide 92

Legislatures, law enforcement, and highway safety offices in many states are urged to "DO SOMETHING" about drug-impaired driving, but what to do is far from clear.

92

What can be done?

- Better train law enforcement officers in drug detection

Drug Recognition Expert training
(72 hours classroom)
(~40 hours field)

Advanced Roadside Impaired Driving Enforcement Program (ARIDE)
16 hours

SFST and Drugs That Impair Driving course
8 hours

Basic Training

N.C. Evid. R. 702(a1)

Notwithstanding any other provision of law, a witness may give expert testimony solely on the issue of impairment and not on the issue of specific alcohol concentration level relating to the following:

(1) The results of a Horizontal Gaze Nystagmus (HGN) Test when the test is administered in accordance with the person's training by a person who has successfully completed training in HGN.

(2) Whether a person was under the influence of one or more impairing substances, and the category of such impairing substance or substances, if the witness holds a current certification as a Drug Recognition Expert, issued by the State Department of Health and Human Services.

- Studies have shown DRE judgments of drug impairment are corroborated by toxicological analysis in 85% or more of cases

Drug Evaluation and Classification Program

SIGNS AND SYMPTOMS PREDICTIVE OF DRUG IMPAIRMENT

Shinar[1], D.; Schechtman[2], E.; Compton[3], R.P.

[1,2] Industrial Engineering and Management, Ben Gurion university of the Negev, Israel
[3] National Highway Traffic Safety Administration, U.S. Department of Transportation,

[1] Industrial Engineering and Management, Ben Gurion University of the Negev, Beer Sheva 84105, Israel

Keywords: Drugs and driving, drug impairment, Marijuana, Depressant, Stimulant, Narcotic.

Abstract
A double blind study was performed to evaluate the ability of police officers to detect drug impairments and to identify the type of drug responsible for the impairment, on the basis of observed symptoms and psychophysical measurements of performance. The officers were not allowed to interview the subjects. Results showed that even with this partial information the officers are able to detect drug impairment at better-than-chance levels, but the association between drug ingestion and identification of the specific impairing drug was not very high. Drug identification was best for alprazolam impairment, noticeably poorer for cannabis and codeine impairment, and no better than chance for amphetamine impairment. To improve identification, the officers should always list the two most probable impairing drugs (rather than one), and be more consistent in their use of observed signs and symptoms.

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Drug Recognition Expert (DRE) examination characteristics of cannabis impairment

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ABSTRACT

Background: The Drug Evaluation and Classification Program (DECP) is commonly utilized in driving under the influence (DUI) cases to help determine category(ies) of impairing drug(s) present in drivers. Cannabis, one of the categories, is associated with approximately doubled crash risk. Our objective was to determine the most reliable DECP metrics for identifying cannabis-driving impairment.
Methods: We evaluated 302 toxicologically-confirmed (blood Δ^9-tetrahydrocannabinol [THC] $\geq 1\,\mu g/L$) cannabis-only DECP cases, wherein examiners successfully identified cannabis, compared to normative data (302 non-impaired individuals). Physiological measures, pupil size/light reaction, and performance on psychophysical tests (one leg stand [OLS], walk and turn [WAT], finger to nose [FTN], Modified Romberg Balance [MRB]) were included.
Results: Cases significantly differed from controls (p < 0.05) in pulse (increased), systolic blood pressure (elevated), and pupil size (dilated). Blood collection time after arrest significantly decreased THC concentrations; no significant differences were detected between cases with blood THC <5 µg/L versus ≥5 µg/L. The FTN best predicted cannabis impairment (sensitivity, specificity, positive/negative predictive value, and efficiency ≥87.1%) utilizing ≥3 misses as the deciding criterion; MRB eyelid tremors produced ≥86.1% for all diagnostic characteristics. Other strong indicators included OLS sway, ≥2 WAT clues, and pupil rebound dilation. Requiring ≥2/4 of: ≥3 FTN misses, MRB eyelid tremors, ≥2 OLS clues, and/or ≥2 WAT clues produced the best results (all characteristics ≥96.7%).
Conclusions: Blood specimens should be collected as early as possible. The frequently-debated 5 µg/L blood THC per se cutoff showed limited relevance. Combined observations on psychophysical and eye exams produced the best cannabis-impairment indicators.

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Combined observations on psychophysical and eye exams produce the best cannabis-impairment indicators.

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7. Drug-Impaired Driving

Countermeasure	Effectiveness	Cost	Use	Time
7.1 Enforcement of Drug-Impaired Driving	★ ★ ★	$$	Unknown	Short
7.2 Drug-Impaired-Driving Laws	☆	Unknown	Medium[†]	Short
7.3 Education Regarding Medication	☆	Unknown	Unknown	Long

† Use for drug per se laws

Effectiveness:

★ ★ ★ ★ ★	Demonstrated to be effective by several high-quality evaluations with consistent results
★ ★ ★ ★	Demonstrated to be effective in certain situations
★ ★ ★	Likely to be effective based on balance of evidence from high-quality evaluations or other sources
☆ ☆	Effectiveness still undetermined; different methods of implementing this countermeasure produce different results
☆	Limited or no high-quality evaluation evidence

Effectiveness is measured by reductions in crashes or injuries unless noted otherwise.

See individual countermeasure descriptions for information on effectiveness size and how effectiveness is measured.

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