

2016 CCMTA ANNUAL MEETING

HALIFAX, NOVA SCOTIA

CONCURRENT SESSIONS

TOPIC:

EFFECTS OF LEGALIZATION OF THE
RECREATIONAL USE OF CANNABIS ON DRUG IMPAIRED
DRIVING IN THE UNITED STATES

PRESENTER:

DARRIN GRONDEL

DIRECTOR, WASHINGTON TRAFFIC SAFETY COMMISSION



16

Canadian Council of Motor Transportation

Administrators



Washington Traffic
Safety Commission



Darrin T. Grondel
Director
June 19, 2016



PROFESSIONAL



WASHINGTON
Traffic Safety
COMMISSION

WA Traffic Safety Commissioners



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Randy Dorn
Superintendent of
Public Instruction



Pat Lashway
Department of Social
and Health Services



Carolann Swartz
Washington State
Association of Counties

Vacant

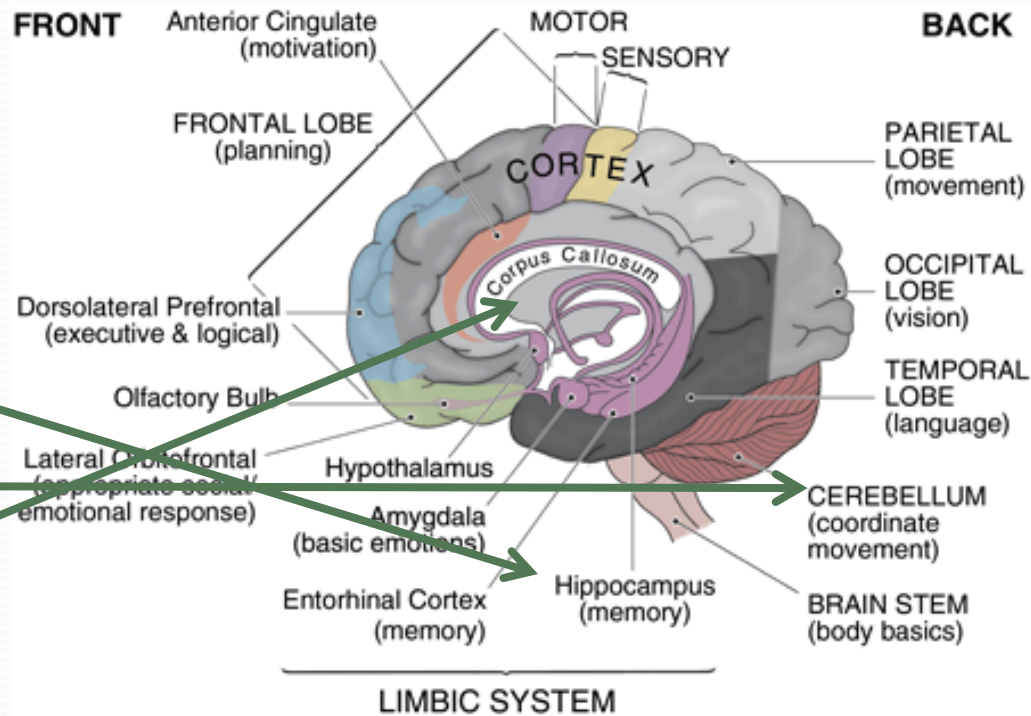
Association of Washington
Cities

Definitions

- **THC:** The main psychoactive substance found in marijuana; a/k/a delta-9tetrahydrocannabinol (Δ^9 -THC), dronabinol (Marinol – FDA)
- **Hydroxy-THC:** The main psychoactive metabolite of THC formed in the body after marijuana consumption; a/k/a 11-Hydroxy-THC or 11-OH-THC
- **Carboxy-THC:** The main secondary metabolite of THC; formed in the body after marijuana is consumed. It is NOT active; indicative only of recent use; not useful for per se violations; a/k/a 11-or-9-Carboxy THC or THC-COOH
- **Metabolite:** A chemical created in the body as part of the process of breaking down the parent compound • Active: has impairing qualities • Inactive: has no effect
- **Psychoactive or Active:** Causes euphoric and impairing effects (THC and 11-HydroxyTHC)
- **Cannabidiol (CBD)** – one of 113 active cannabinoids in cannabis devoid of psychoactive activity (euphoria or intoxication). Pre-clinical research shows promising therapeutic usefulness for anti-seizure, antioxidant, anti-inflammatory, analgesic, anti-tumor, anti-psychotic, and anti-anxiety (<https://www.drugabuse.gov/about-nida/legislative-activities/testimony-to-congress/2016/biology-potential-therapeutic-effects-cannabidiol>)
- **Chronic Use:** Daily or almost daily use.
- **“Per Se” law:** A statutory assignment of a blood concentration (5 nanograms/mL) above which it is an offense to drive
- ***not intended as a scientific resource, for basic explanation only**

SIGNS AND SYMPTOMS of MJ IMPAIRMENT

THC and similar compounds bind with receptors (CB1 and CB2) in the brain and other parts of the body affecting the function of the **hippocampus** (short-term memory), **cerebellum** (coordination) and **basal ganglia** (unconscious muscle movements).



- Marijuana is a lipid (fat) soluble and tends to stay in the brain
- Alcohol is water soluble - blood

Estimated Duration of Effects After Smoking or Ingesting THC

	Peak Effects (After last smoking episode)	Duration of Effects	Behavioral and psychological effects return to baseline	Residual Effects
Smoked	1-30 minutes	2-3 hours	3-5 hours	Up to 24 hours
Oral/Edible	1-3 hours	4-8 hours	Dose Dependent	Dose Dependent

Note: Additional research is needed to understand all methods of ingestion and the effects, durations, and long term-impacts

Common Signs and Symptoms

- Relaxation
- Euphoria
- Relaxed Inhibitions
- Disorientation
- Altered time & distance perception
- Lack of concentration
- Impaired memory & comprehension
- Jumbled thought formation
- Drowsiness
- Mood changes, including panic and paranoia with high dose
- Heightened senses
- Body tremors (major muscle groups: quads, gluts and abs) Eyelid tremors
- Red, bloodshot eyes
- Possible green coating on tongue
- Dilated pupils



First Comes “Medical”

- **Approved by voter Initiative 692 in 1998**

- **Granted:**

- **Affirmative defense to criminal prosecution for:**

- **Qualifying patients and primary caregivers who possess no more than a “sixty-day supply”**
 - **(what is a 60 day supply?)**

- **Key events:**

2007 - Definition of sixty-day supply SB 6032 - 24 oz. and **15 plants**

2009 - Change in federal government’s enforcement policy

2010 - Physician assistants, advanced registered nurse practitioners and naturopaths added as authorizers

2011 - SB 5073 passes but is partially vetoed by Gov. Gregoire

- **Made it legal if participant in data base – vetoed**

2011 - Change in City of Seattle’s enforcement policy

Imagine 15 of these plants (Trees)?



Medical (continued)

- **The law does not authorize:**
 - ❑ Commercial production or processing
 - ❑ Sales or other transactions for consideration
 - ❑ Regulation or any type of government oversight
 - ❑ The “right” to use medical marijuana
 - ❑ Legalization or arrest protection for patients

Medical Marijuana

- 1998 (public vote)
- No provider list
- No patient registry
- No stringent regulatory oversight

Then Comes “Recreational



- I-502, Nov. 6, 2012
- ACLU, Rick Steves & Peter Lewis
- \$6 million war chest

Originally published November 6, 2012 at 10:26 PM | Page modified November 7, 2012 at 6:16 PM

Voters approve I-502 legalizing marijuana

Washington state voters made history Tuesday by legalizing the recreational use of marijuana.

By [Jonathan Martin](#)
Seattle Times staff reporter

Washington enthusiastically leapt into history Tuesday, becoming the first state, with Colorado, to reject federal drug-control policy and legalize recreational marijuana use.

Initiative 502 was winning 55 to 45 percent, with support from more than half of Washington's counties, rural and urban.

The vote puts Washington and Colorado to the left of the Netherlands on marijuana law, and makes them the nexus of a new social experiment with uncertain consequences. National and international media watched as vote counts rolled into I-502's election-night party in Seattle amid

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ERIKA SCHULTZ / THE SEATTLE TIMES
A 30-year-old female smokes marijuana in a street party after

Marijuana Legalized by voters

- **Approved by voter Initiative 502 in 2012**

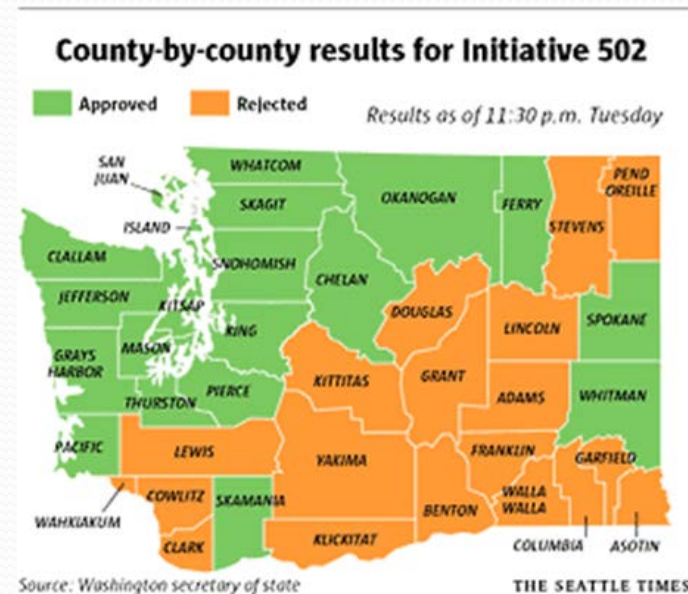
- Allows:

- Adults age 21 and older to:

- Possess up to one ounce of marijuana
 - Obtained from a state licensed system of private producers, processors and retail stores
 - Approved 25% tax with a 40% of new revenue going to state general fund.

- **Hallmarks of the legal marijuana market:**

- Regulation and enforcement
 - Seed to sale tracking
 - Testing and labeling requirements
 - Serving size limits
 - Product restrictions
 - Taxation



Recreational vs. Medical Marijuana



Recreational:

- Amount limits, up to either:
 - 1 oz “useable” MJ (bud)
 - 16 oz infused product (brownies)
 - 72 oz liquid (soda pop)
 - 7 grams concentrate (hash oil)
- Illegal to grow your own
- Lab tested, controlled pesticide use
- Age 21+
- Taxed

Provide pot to a minor: felony

Medical pre-2015:

- Up to 24 oz “useable” MJ
- Can grow up to 15 plants
 - Double that if your are an MJ provider and patient
- No dispensaries, but “cooperatives”
- No lab test, pesticide controls
- Age 18+ (even providers)
- Not taxed (1/3 – ¼ the cost)
- Need MJ card (not prescription) – tamper resistant
- Doctor, naturopath, PA, nurse practitioner, osteopath

DUI – 5 ng/ml -- Penalties for illegal grows, quantities

And Finally...Alignment

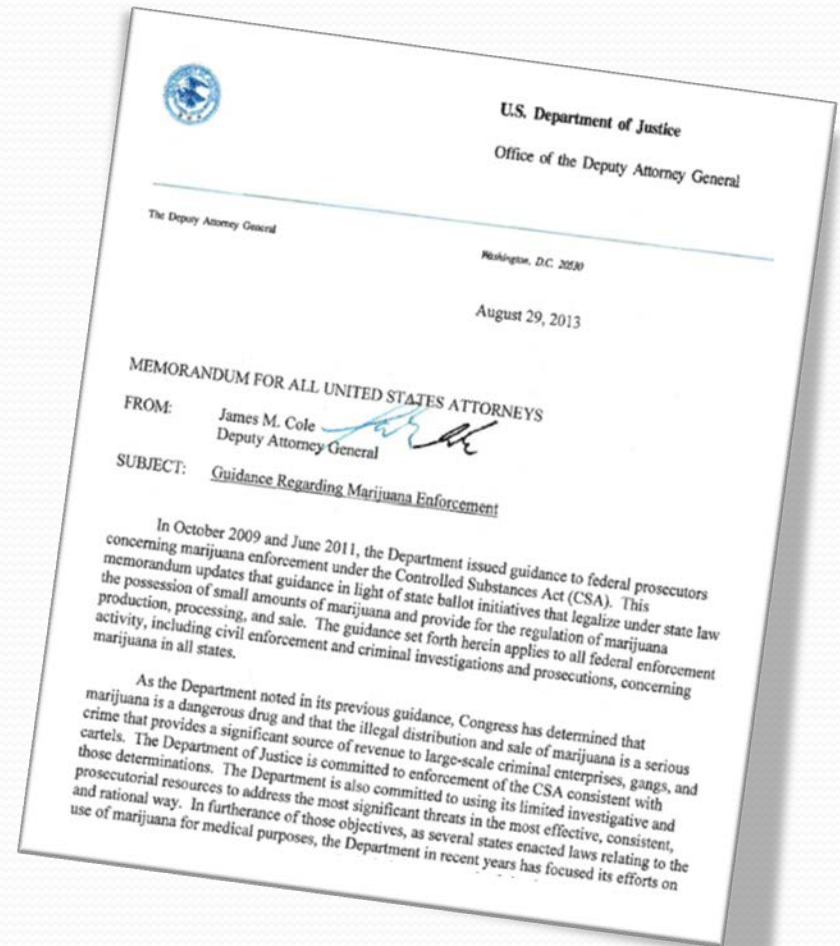
- **2015 Legislative Session – Senate Bill 5052 and House Bill 2136 Create:**
 - ❑ Regulation of the medical use of marijuana
 - ❑ Specific requirements for patients under the age of 18
 - ❑ A single system of licensed production, processing and retail sales by July 1, 2016
 - ❑ Consistent testing, labeling and product standards

No More of These...



Marijuana Use is a Violation of Federal Law

- Cole Memorandum Conditions:
 - Prevent youth access
 - Prevent an increase in **drug impaired driving**
 - Prevent travel across borders
 - Prevent increases in illegal pot grows on government lands (parks)
 - Prevent diversion of pot revenue to criminals
 - Pot use on federal property is still illegal



Marijuana Regulatory Process

I-502 - Liquor & Cannabis Board sets up regulatory system

Department of Health establishing rules for medical marijuana

Regulations govern growing, processing, distribution, sales, pesticides and testing of marijuana

258 stores reporting sales of 378 with approved licenses (as of June 17, 2016)



748 producers & or processors

Current grow canopy: 13.8 million square feet

- New Medical Market could expand the canopy

Sales (as of June 17, 2016):

\$3.3 million average daily sales

FY 2015 - \$259,785,729 – tax obligation \$65 million

FY 2016 - \$908,725,755 - tax obligation \$170 million

<http://lcb.wa.gov/marijuana/dashboard>

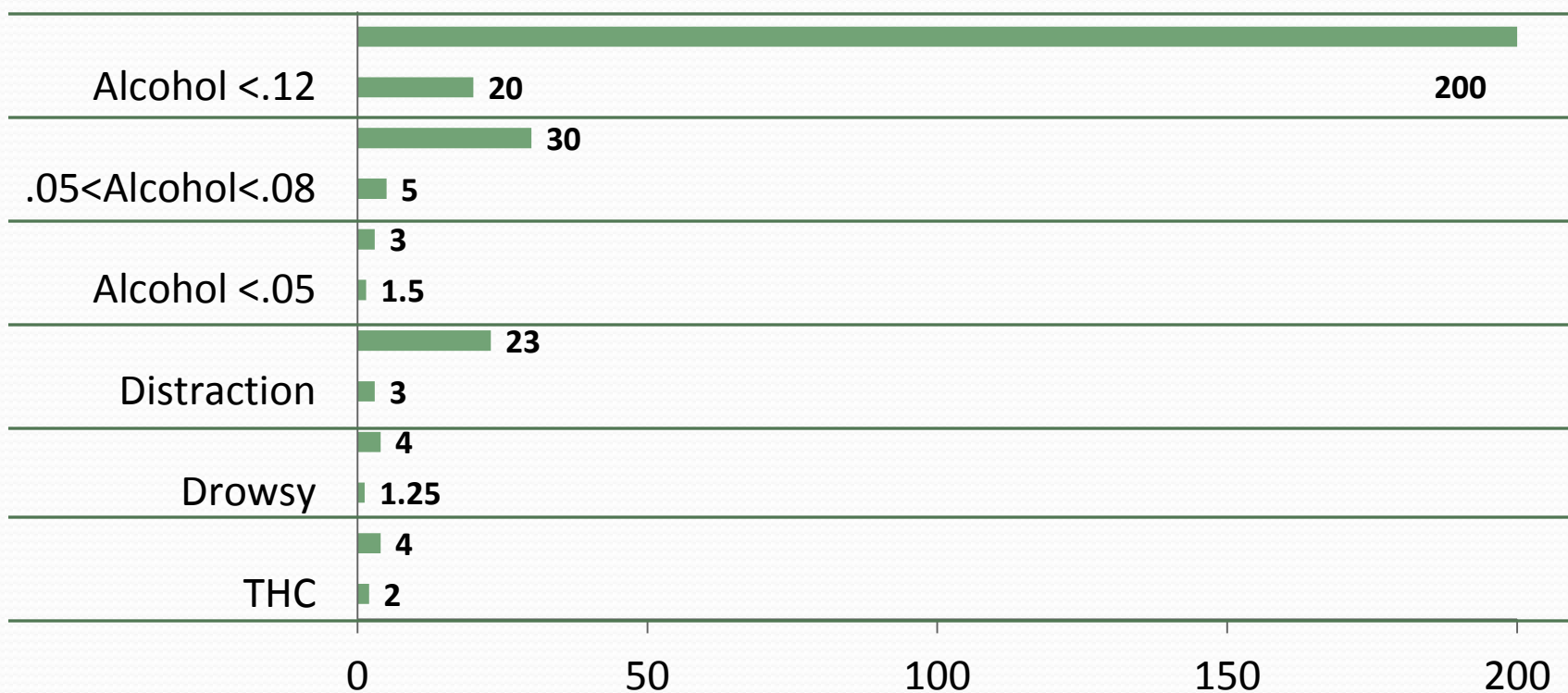


Marijuana impaired driving:

- Recent meta-analyses shows driving high doubles crash risk
- Affects focus, motor coordination, drowsiness and concentration
- Drivers involved in fatal crashes show a high frequency of combining pot & alcohol = synergistic effect
- Marijuana drug levels/specific type not shown in national FARS crash data
- DUI citations are down in Washington State



Does Marijuana Use Increase Crash Risk??

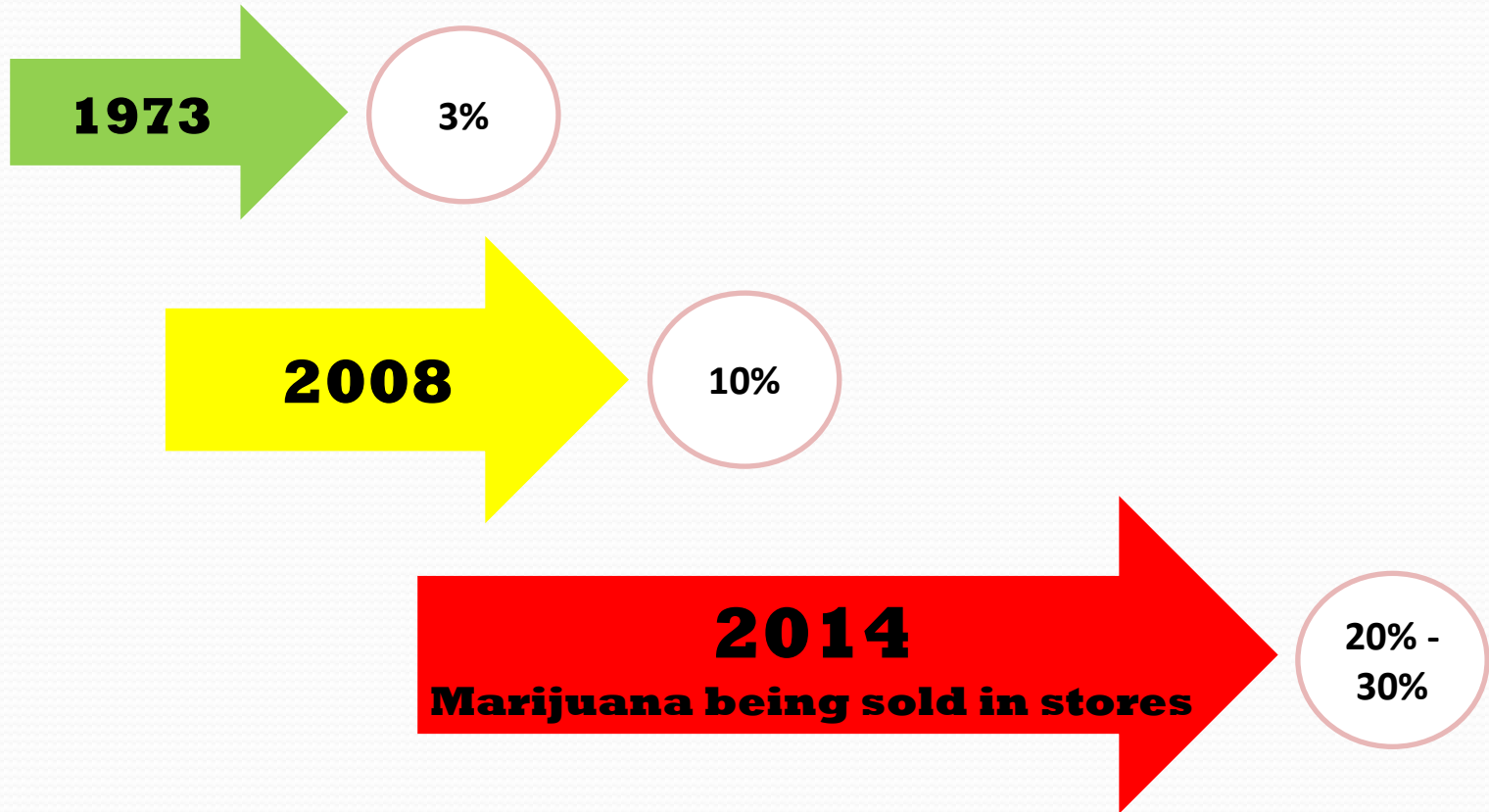


Review of literature revealed

Signs and Symptoms of Marijuana

- Relaxation
- Euphoria
- Relaxed Inhibitions
- Disorientation
- Altered time & distance perception
- Lack of Concentration
- Impaired Memory & comprehension
- Jumbled thought formation
- Drowsiness
- Mood changes, including panic and paranoia with high dose
- Heightened senses
- Body tremors (Major muscle groups: quads, gluts, and abs)
- Eyelid tremors
- Red, Bloodshot eyes
- Possible GVM or green coating on tongue
- Dilated pupils

“Not Your Daddy’s Woodstock Weed”



THC Potency Used in Most Government Studies

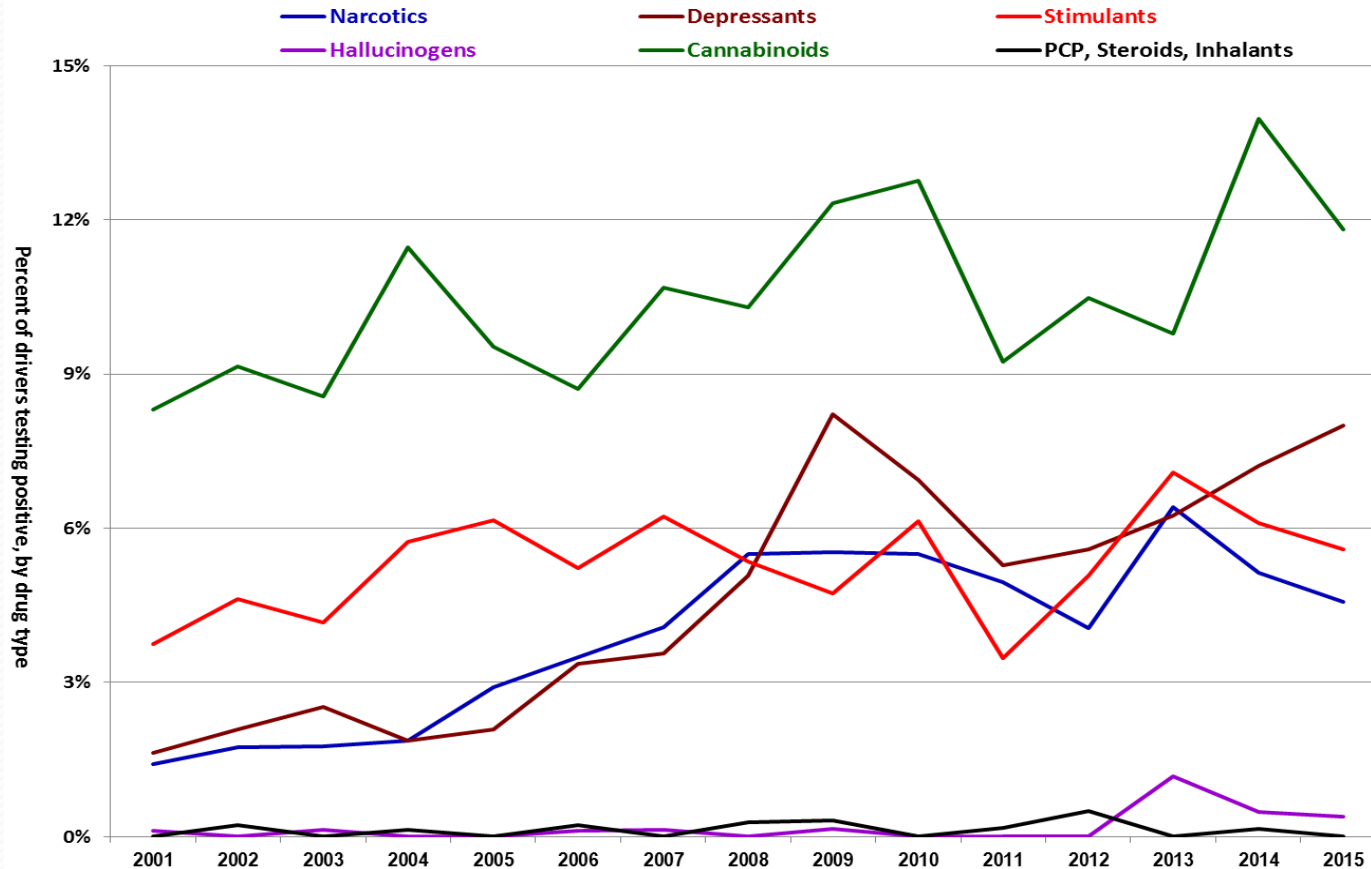
**UNDER
3% THC**



Marijuana Has Always Been the Dominate Drug in Fatal Crashes

Drug-Test Results of Drivers in Fatal Crashes, 2001-2015pre

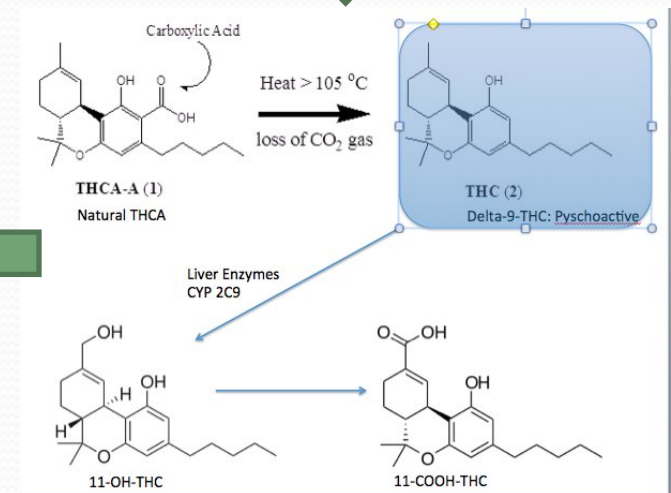
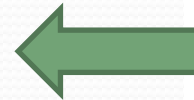
By Year and Drug Class



The Problem with Fatal Crash Data

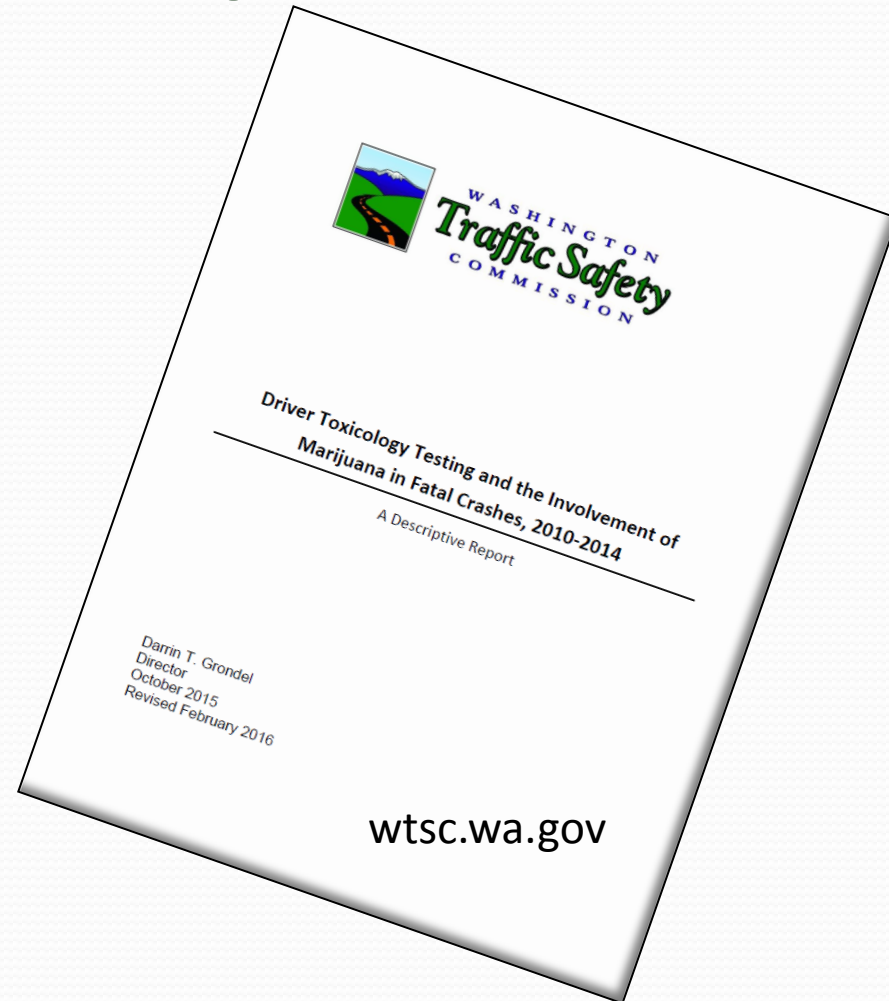


Delta 9
Hashish Oil
Hashish
Marijuana/Marihuana
Marinol
Tetrahydrocannabinols (THC)
Cannabinoid (Type Unk)



How the WTSC Prepared

- Reviewed all toxicology paper reports and manually entered full toxicology outcomes into spreadsheet
- Worked with Dr. Couper to abstract the information for surviving drivers
- Abstracted full toxicology for everyone in fatal crashes who had toxicology testing (drivers, occupants, non-motorists)
- Married to the original FARS record for in-depth fatal crash analysis
- Initial report focused on data years 2010-2014, DRIVERS



Most Cannabinoid-Positive Drivers Also Tested Positive for Drugs/Alcohol;

TEST STATUS	Driver Category 1	Sample	Driver Category 2	Sample	Driver Category 3	Sample
Not Tested	Not Tested	1,153	Not Tested	1,153	Not Tested	1,153
Tested - Negative	No Drugs, No Alcohol	712	No Drugs, No Alcohol	712	No Drugs, No Alcohol	712
Tested – Positive (1,773) Excluding Alcohol Test Only (91), Drug Test Only (2), Tested with Unknown Results (8)	Alcohol Only	360	Alcohol Only <.079	46	Alcohol Only <.079	46
			Alcohol Only ≥.08	314	Alcohol Only ≥.08	314
	Cannabinoids Only	93	THC Only	56	THC Only	56
			Carboxy-THC Only	37	Carboxy-THC Only	37
	Cannabinoids + Alcohol Only	137	THC + Alcohol	96	THC + Alcohol <.079	13
					THC + Alcohol ≥.08	83
			Carboxy-THC + Alcohol	41	Carboxy-THC + Alcohol	41
	Cannabinoids + Drugs + Alcohol	43	THC + Drugs + Alcohol	24	THC + Drugs + Alcohol <.079	6
					THC + Drugs + Alcohol ≥.08	18
			Carboxy-THC + Drugs + Alcohol	19	Carboxy-THC + Drugs + Alcohol	19
	Cannabinoids + Drugs Only	69	THC + Drugs	39	THC + Drugs	39
			Carboxy-THC + Drugs	30	Carboxy-THC + Drugs	30
	Other Drugs Only	258	Other Drugs Only	258	Other Drugs Only	258
	Other Drugs + Alcohol Only	101	Other Drugs + Alcohol Only	101	Other Drugs + Alcohol Only	101
Total Driver Sample, 2010-2014						2,926

+24 in 2015 = 80 total drivers with THC ONLY

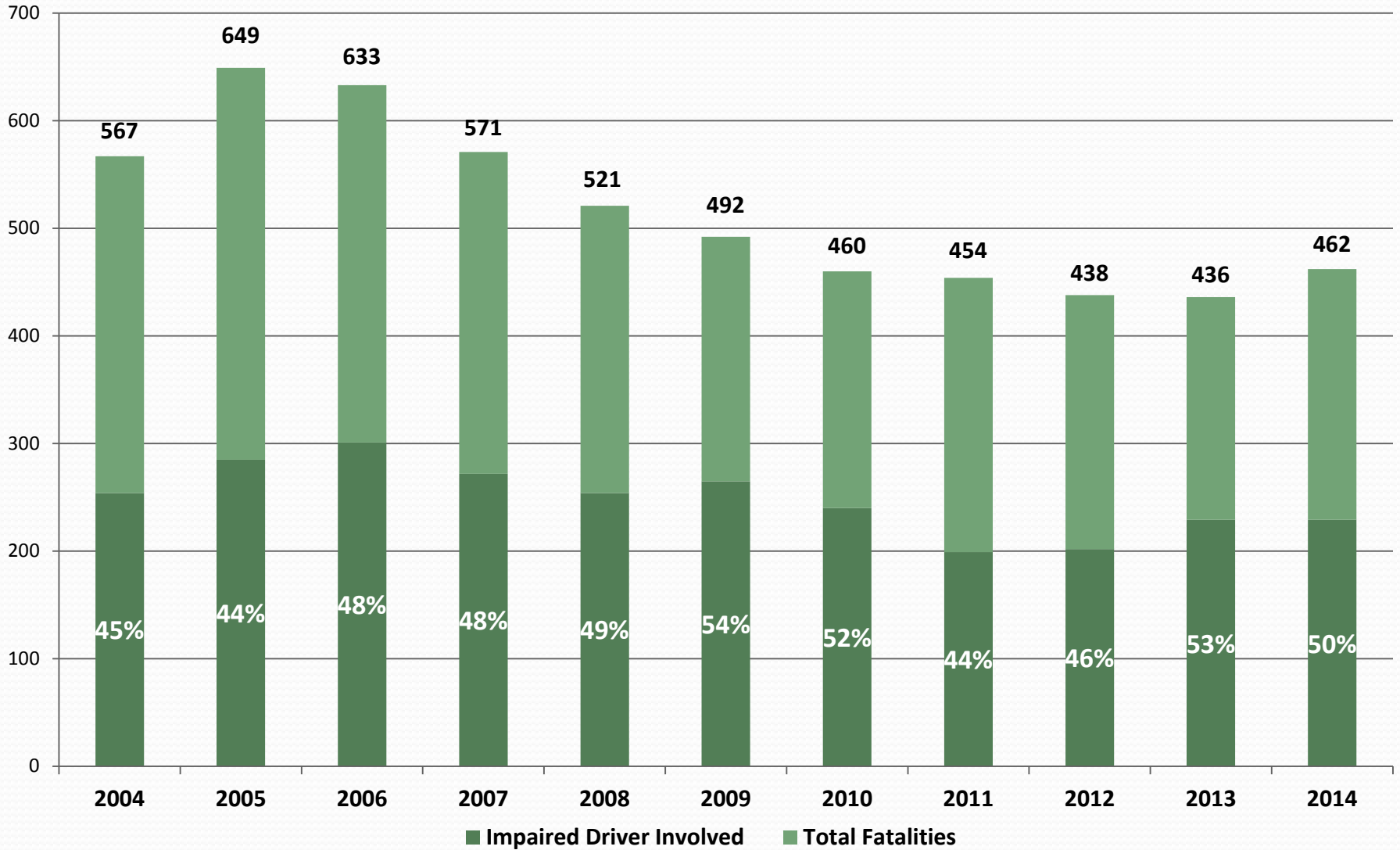
Increases in 2014...

- **Still too soon for answers/impact on traffic safety**
 - ❑ The frequency of drivers in fatal crashes that tested positive for active THC, alone or in combination with alcohol or other drugs, was highest in 2014 (75 drivers) compared to the previous four-year average (36 drivers).
 - ❑ The frequency of drivers tested with alcohol greater than/equal to BAC .08 and no other drugs was lowest in 2014 (51 drivers) compared to the previous four-year average (98 drivers).
 - ❑ In 2014, 84.3 percent of drivers positive for cannabinoids were positive for active THC, compared to only 44.4 percent of cannabinoid-positive drivers in 2010.
 - ❑ In 2014, among the 75 drivers involved in fatal crashes positive for active THC, approximately half (38) exceeded the 5 ng/ml THC per se limit.



Toxicology Outcomes	2010	2011	2012	2013	2014	*2015pre
Not Tested	219	226	224	212	272	375
No Drugs, No Alcohol	147	151	151	147	116	155
Alcohol Only <.079	15	8	6	7	10	10
Alcohol Only >.080	67	67	60	69	51	47
THC Only	9	7	13	7	20	24
Carboxy-THC Only	11	10	7	3	6	4
THC + Alcohol <.079	3	1	0	3	6	5
THC + Alcohol >.080	16	16	12	16	23	26
Carboxy-THC + Alcohol	12	6	11	9	3	1
THC + Drugs + Alcohol <.079	0	0	1	2	3	5
THC + Drugs + Alcohol >.080	2	5	2	3	6	10
Carboxy-THC + Drugs + Alcohol	10	2	5	2	0	1
THC + Drugs	6	3	8	5	17	12
Carboxy-THC + Drugs	10	5	3	7	5	4
Other Drugs Only	47	42	46	71	52	77
Other Drugs + Alcohol Only	20	18	19	20	24	18

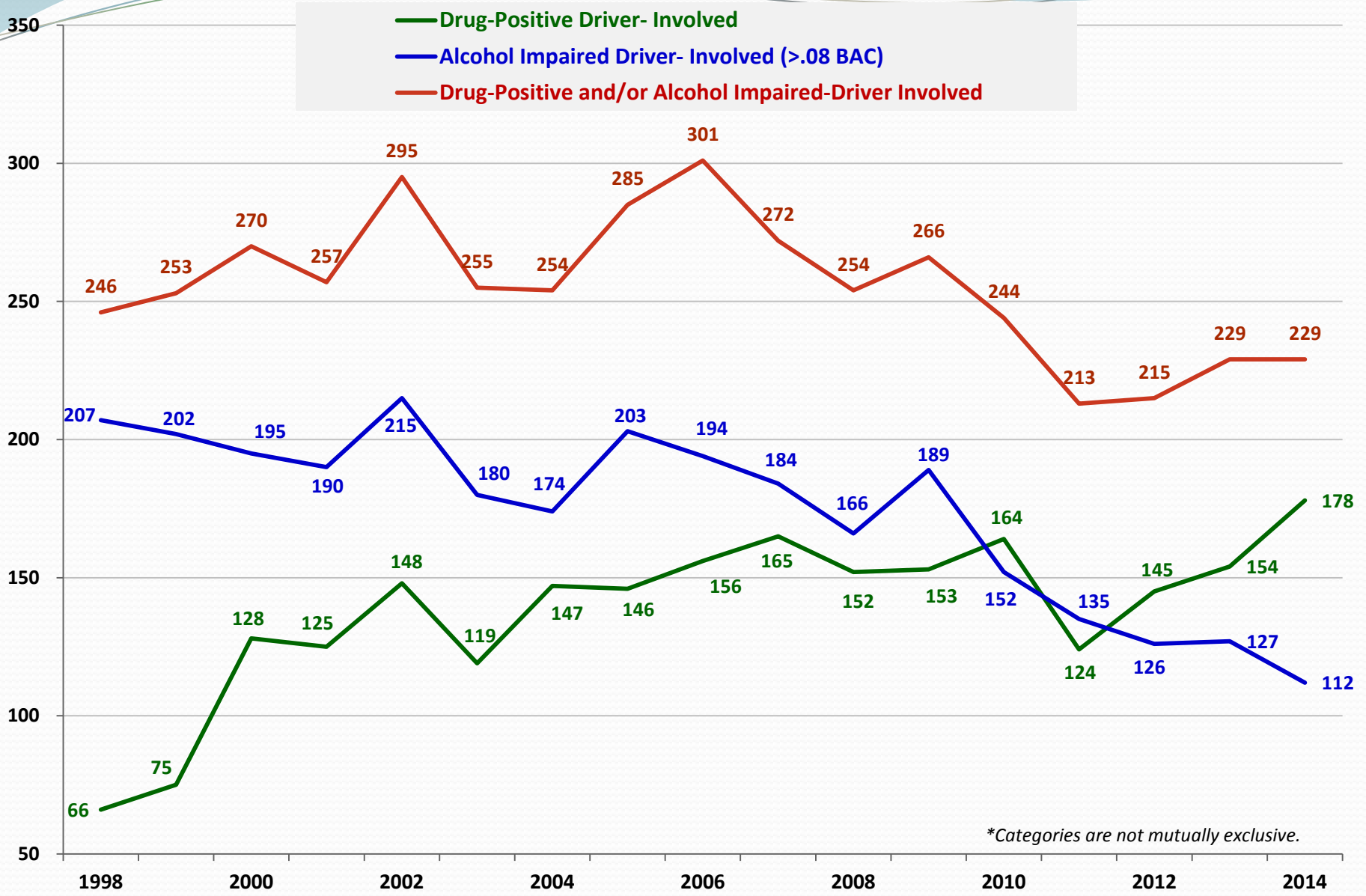
Total Traffic Deaths and the Percent That Involve an Impaired Driver 2004-2014



Washington Drug/Alcohol-Involved Driving Deaths, 1998-2014

Drug/Alcohol Involvement

Source: FARS

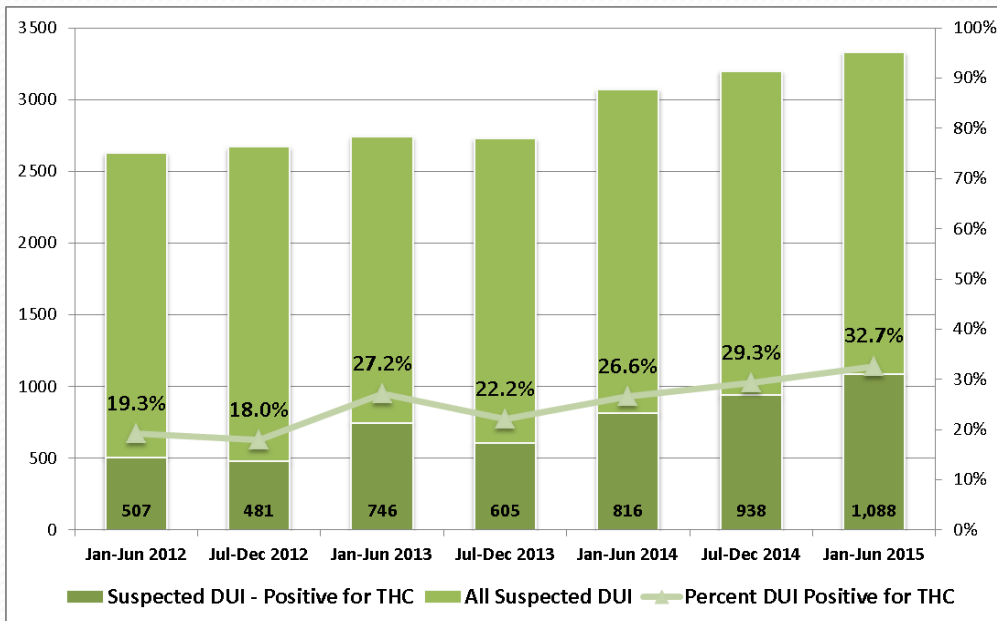


*Categories are not mutually exclusive.

Increase in pot-impaired driving

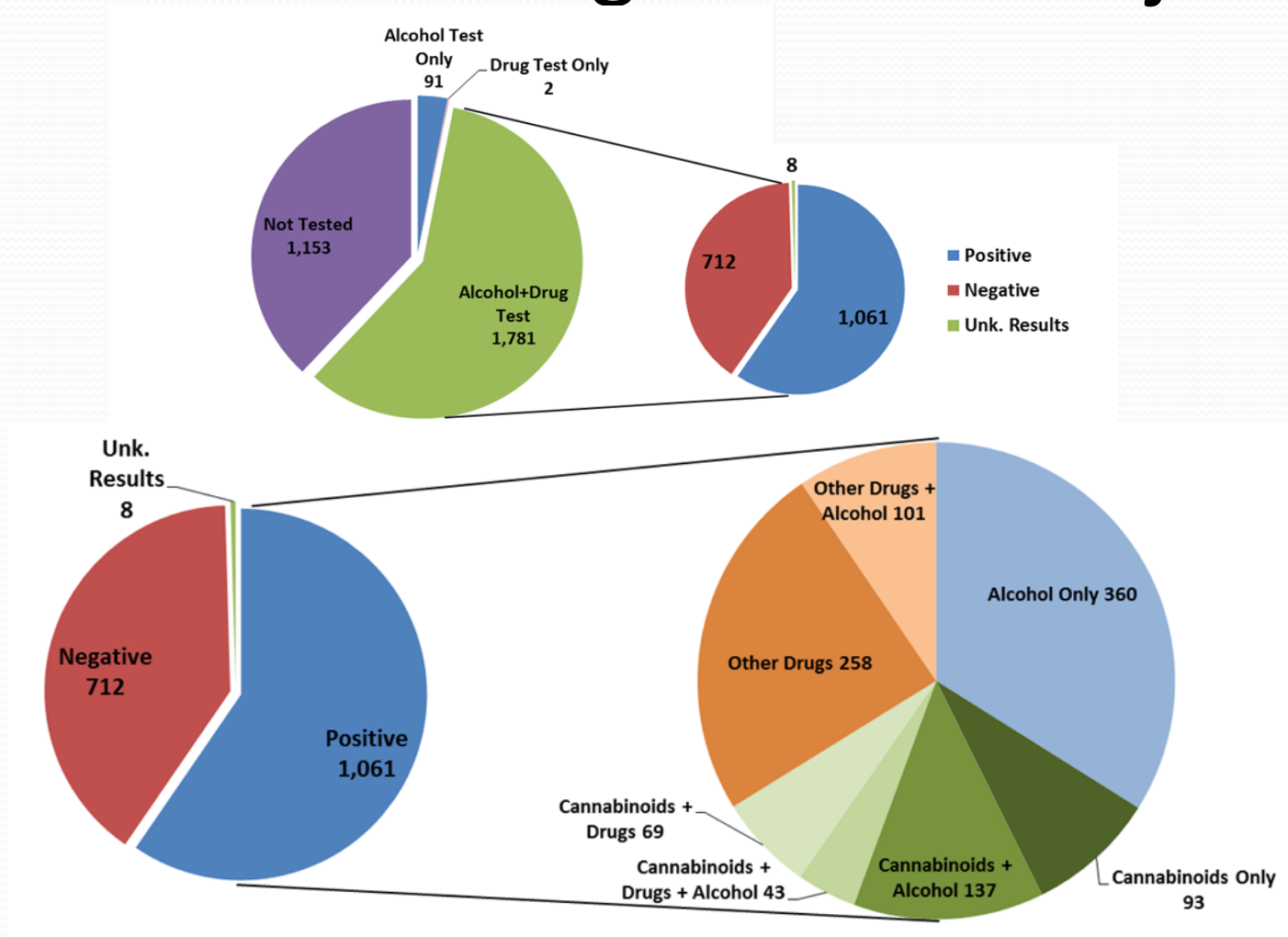
2012-2015Q2 WSP Toxicology Lab Samples:

- Full panel testing on all samples since January 2013
- Marijuana DUI increasing

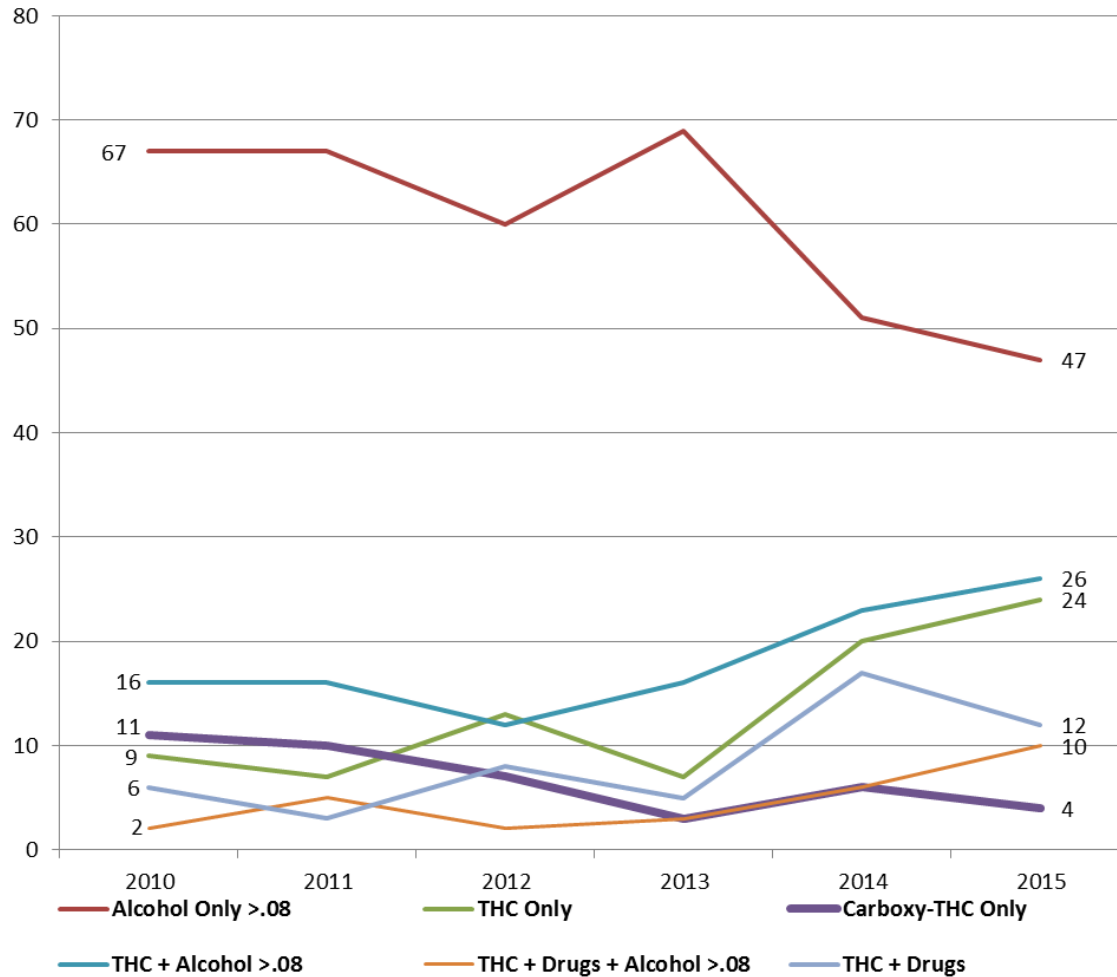


Drivers in Fatal Crashes 2010-2014

WTSC Drug Abstract Project

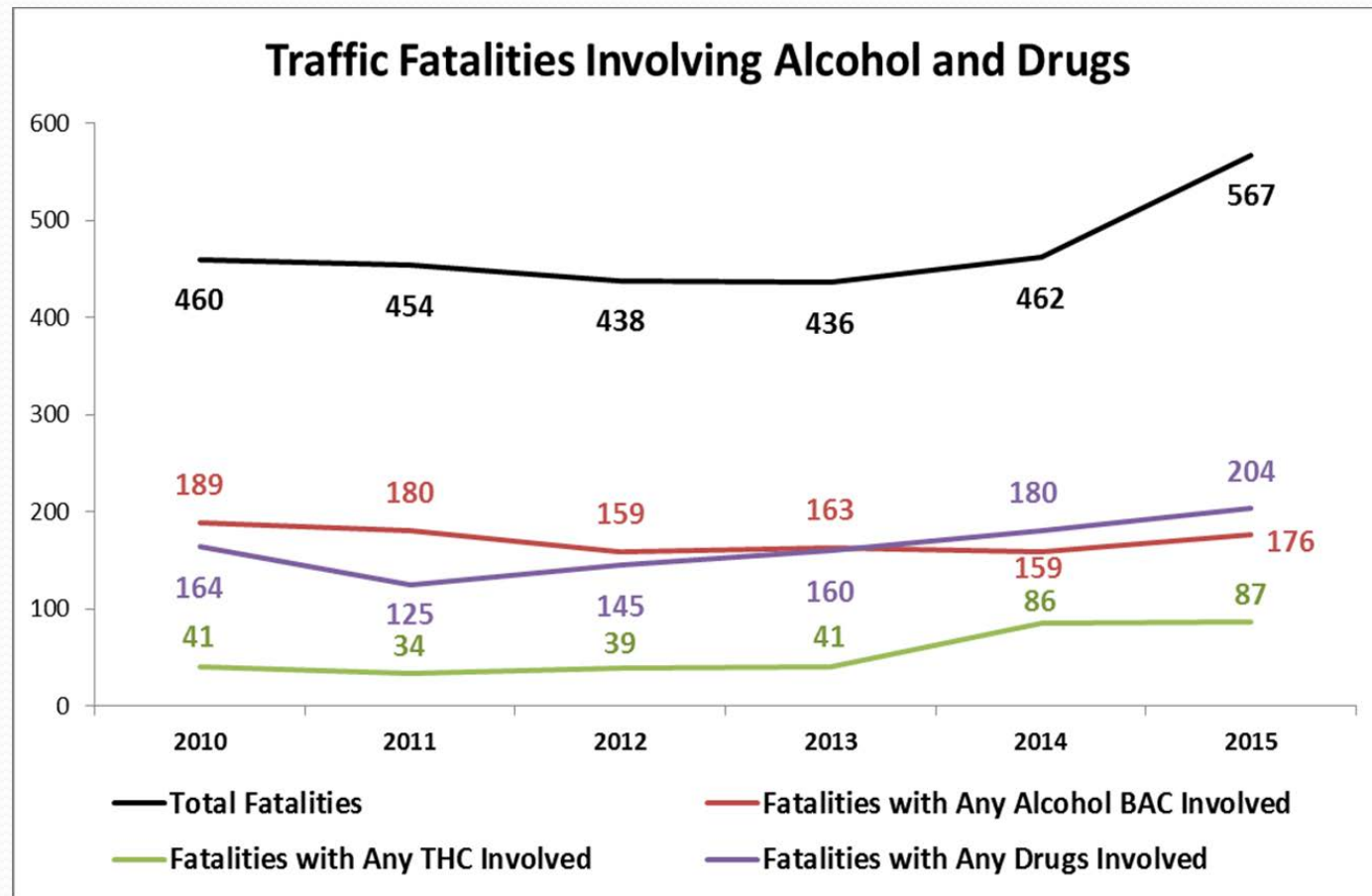


Number of Drivers Involved in Fatal Crashes by Select Drug Test Outcomes

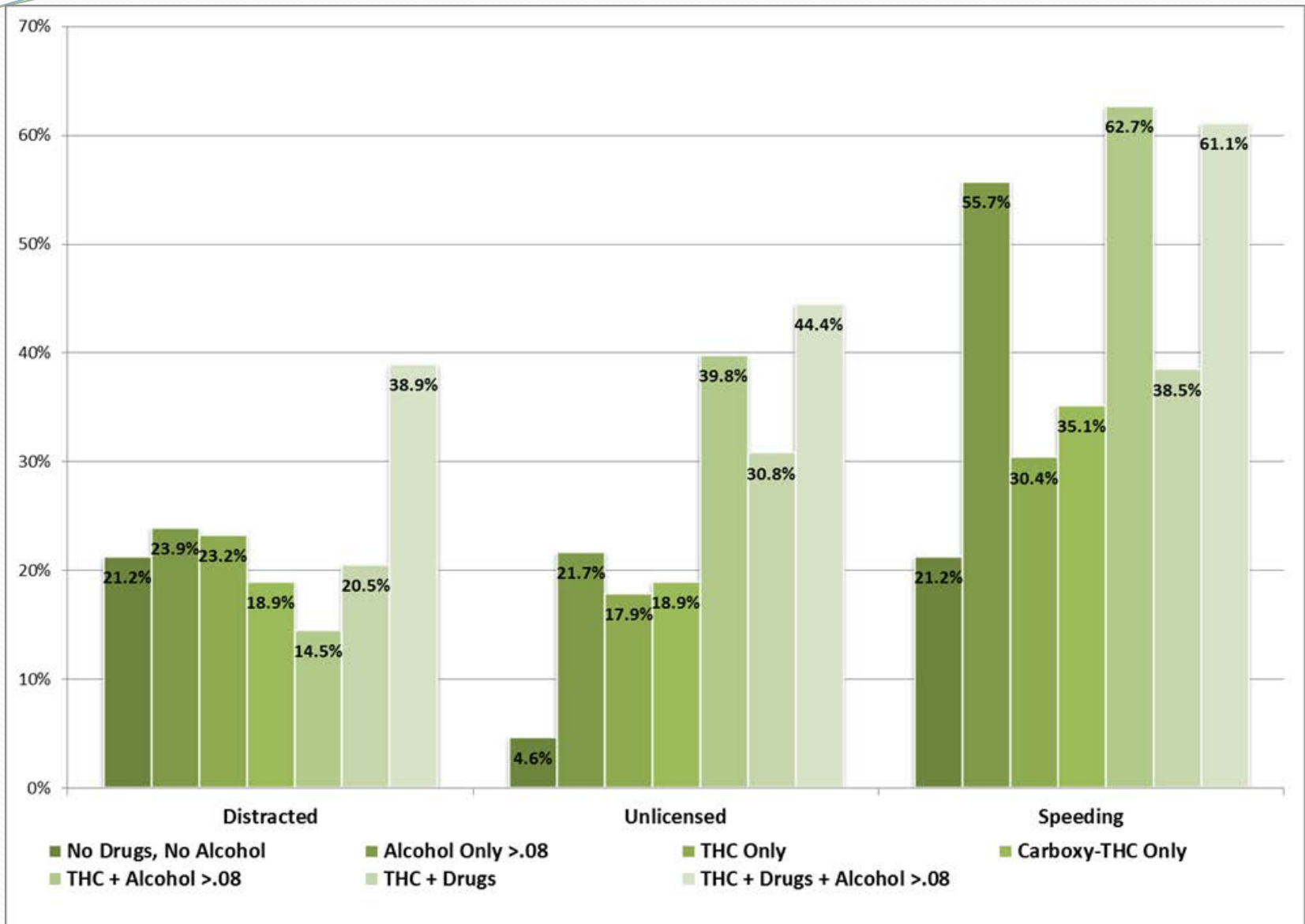


Fatalities Involving Drivers Positive for Alcohol and Delta-9 THC

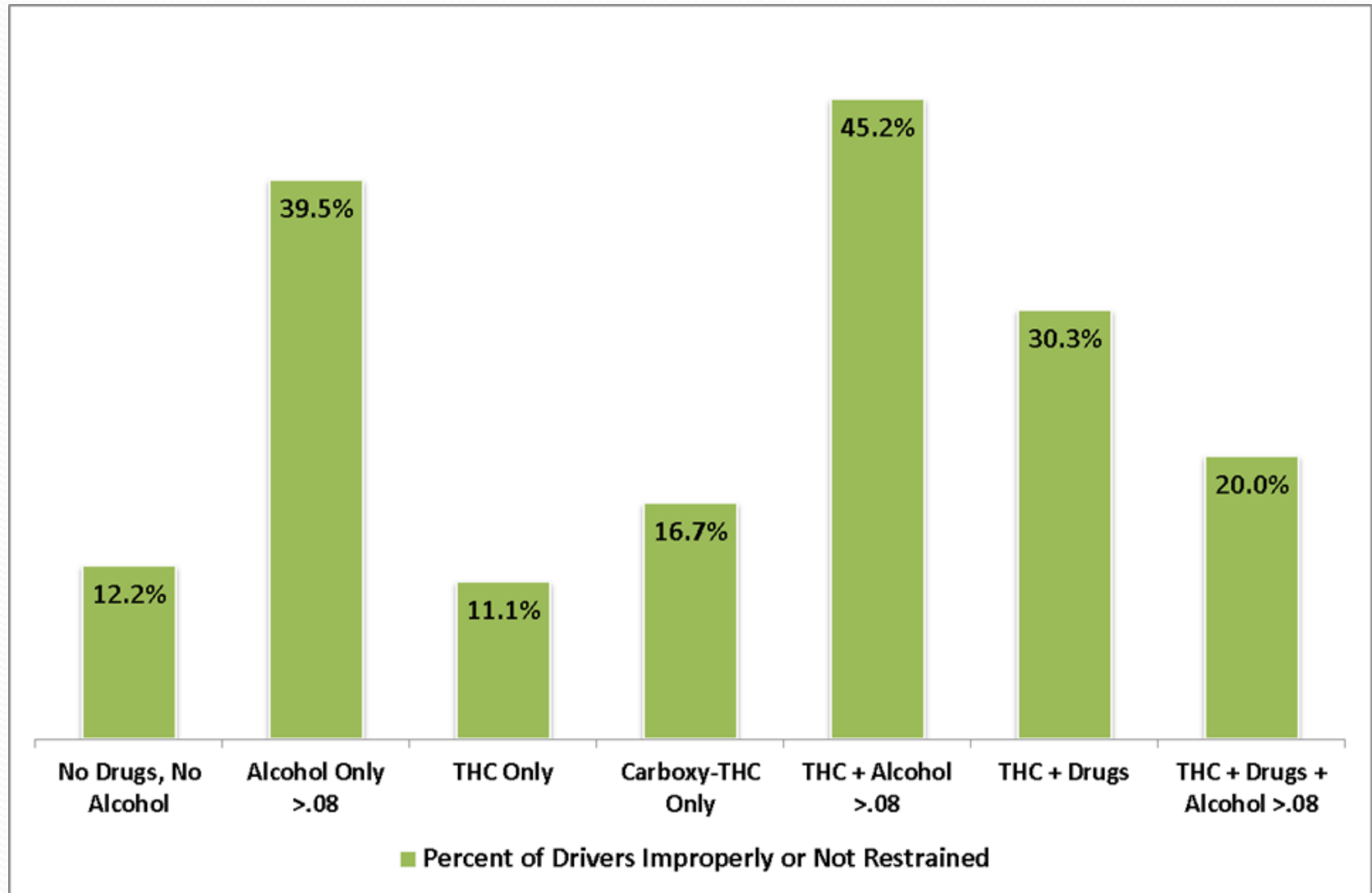
- In 2010, 44.4% of cannabinoid-positive drivers were positive for delta-9 THC.
- In 2014, 84.3% of cannabinoid-positive drivers were positive for delta-9 THC.
- From 2010-2014, half or more of drivers positive for delta-9 THC exceeded the 5ng/ml per se.



Impaired Driver Crash Factors



Impaired Driver Restraint Use



Marijuana infused products

- Edibles – control consumption
- Dabs – highly concentrated THC
- E-cigs – hard to spot in schools (no smell)
- Youth coming into treatment are sicker
- Drop in IQ, affects brain development
- Increased access by youth?



Reports of pot-edible exposure to Poison Center spike

JULY
2015

14 INCIDENTS THIS YEAR INVOLVED MINORS

Role of legal pot unclear

By BOB YOUNG
Seattle Times staff reporter

The number of King County residents reporting marijuana edibles exposure to the Washington Poison Center has increased this year, with roughly one-third of the reports involving minors.

But it's unclear what, if any, role legal pot played in the spike.

The number of edible-exposure calls to the poison center from King County totaled 39 through this May; there were 38 such calls in all of last year, according to the center.

Fourteen incidents this year involved minors, including six who were under 6 years old. Last year there were 20 calls, with 11 incidents involving children under 6 years of age.

The majority of child exposures occur unintentionally when kids find and consume pot-infused chocolate or baked goods in homes, say health officials. "Marijuana edibles left lying around on the coffee table or next to snacks can easily fall into the hands of young kids," said Dr. Alexander Garrard of the Washing-

ton Poison Center.

Pot intoxication in children can lead to anxiety attacks, psychotic-like symptoms and respiratory depression, according to health officials. Most cases, though, do not require hospital admissions, Garrard said, as children are evaluated, treated and released.

The data does not indicate if people reporting exposure were intoxicated, Garrard said. That's why he uses the term "exposures."

The reports also don't indicate if the edibles come from medical-marijuana shops, the illicit market or legal retail stores.

"I'd be very surprised if any instances came from legal retail

stores," said Seattle City Attorney Pete Holmes, a sponsor of the state's legal pot law.

State rules prohibit edibles from featuring cartoon characters in their packaging, or other semblances to popular snacks. Rules also require child-resistant packaging and that every type of edible be approved by state regulators. "Kids are our number one priority" in reviewing edibles for approval, said Brian Smith, spokesman for the state Liquor Control Board.

The legal pot system has only captured about 10 percent of the overall marijuana market, according to a state estimate. That small share suggests that most of the edibles

consumed in the state are not bought from legal retail stores.

Steven Kessler, owner of a store on Bainbridge Island, Paper & Leaf, said he's not selling baked goods, candies or chocolate because of community concerns about children ingesting edibles.

Statewide data on calls to the poison center showed a similar increase in the first quarter of 2015 compared to last year. But Garrard said it's not clear if there is an actual increase in marijuana-exposure cases, or if more people feel comfortable calling the poison center because marijuana is now legal.

Bob Young: 206-464-2174 or
byoung@seattletimes.com

PIRE Roadside Survey

Pacific Institute for Research and Evaluation

- Data collection: June, 2014; Nov. 2014 and June, 2015
- Statewide sample -- six counties, five areas within each (Spokane, Yakima, King, Whatcom, Snohomish, Kitsap)
- Alcohol and drugs (75 types, with levels)



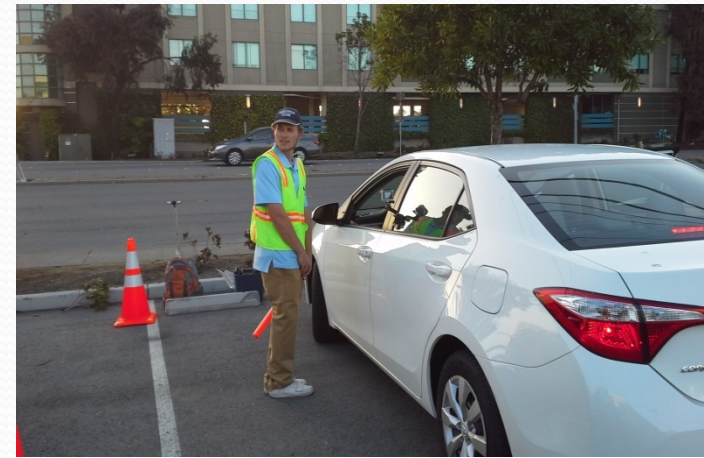
June Data Collection

- Six counties, 5 locations
- 926 drivers eligible
- 97% (917) breath tests
- 96% (902) saliva
- 74% (711) blood
- 95% K & A surveys

**Male drivers age 20 – 34
over-represented:**

*** 21% population**

*** 45% survey sample**



“Have you ever, even once, used marijuana?”

69% -- yes	T= 615	
31% -- no	T= 273	T= 888 respondents



Those who said they used marijuana in the last year were also asked: **“Have you used marijuana within two hours of driving?”**

44% -- yes	T= 97	
56% -- no	T = 123	T =220 respondents



The drivers who said they'd used marijuana within two hours of driving were also asked: when you used marijuana and drove, how do you think it affected your driving?

	Percentage of drivers:	Total number:	
Did not make any difference in my driving:	62%	60	
Made me a better driver:	25%	24	T = 84 (87%)
I don't know:	10%	10	
Made my driving worse:	3%	3	

Among the drivers surveyed, 877 answered the question:
“How likely do you think it is that marijuana impairs a person’s ability to drive safely if used within two hours of driving?”

	Percentage:	Number of Respondents:	T= 877
Very likely	47%	409	
Likely	19%	162	
Somewhat likely	22%	197	T= 768 (88%)
Not at all likely	12%	109	

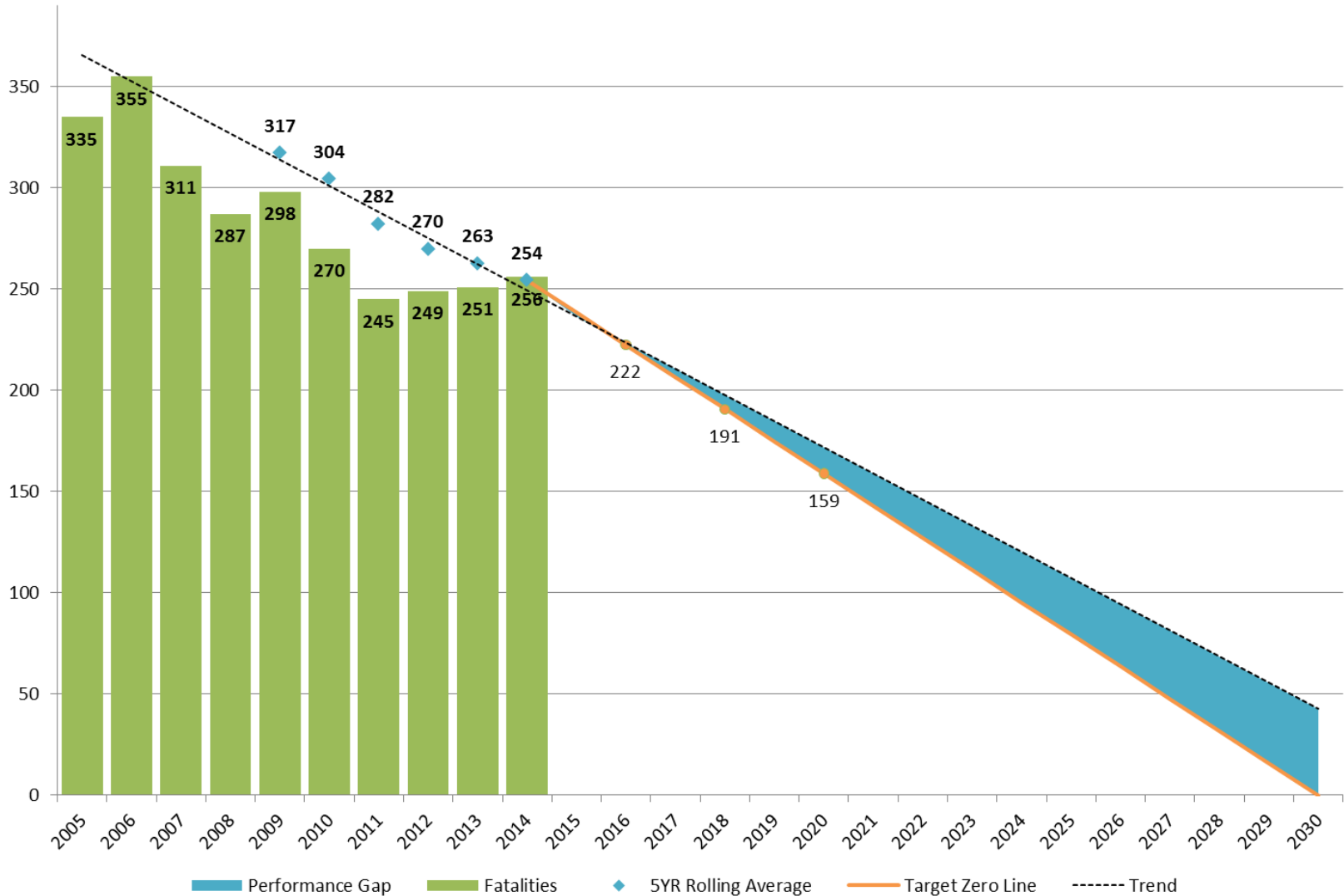


881 Survey respondents answered the question: **“How likely do you think it is that a person could be arrested for impaired driving after using marijuana within two hours of driving?”**

	Percentage:	Number of Respondents:	T= 881
Very likely	41%	360	
Likely	23%	204	
Somewhat likely	25%	219	T= 783 (89%)
Not at all likely	11%	98	

Target Zero: Our Plan For The Future:

Fatalities Involving Impairment





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Washington Traffic Safety
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