



*Weekly, Dr. Sbarbaro and Dr. Johnson, center, meet with staff to discuss how they can help their patients to a better life.*

## **Johnson's Vision**

Neighborhood based comprehensive, continuous, family centered health care providing therapeutic & preventive health services (*physical, mental, social, & environmental*) - and employment - all delivered without financial, geographic, transportation, language or cultural barriers.

## **Frieder's Vision**

Supported Johnson's vision plus integration of federal, state, & local funds into a single health system under the control of local government -- funding source to be imperceptible to both employees and patients.

# Alcohol: Prevention & Public Health Perspectives

**Timothy Naimi M.D., M.P.H**

**Boston Medical Center**

**Boston University School of Public Health**

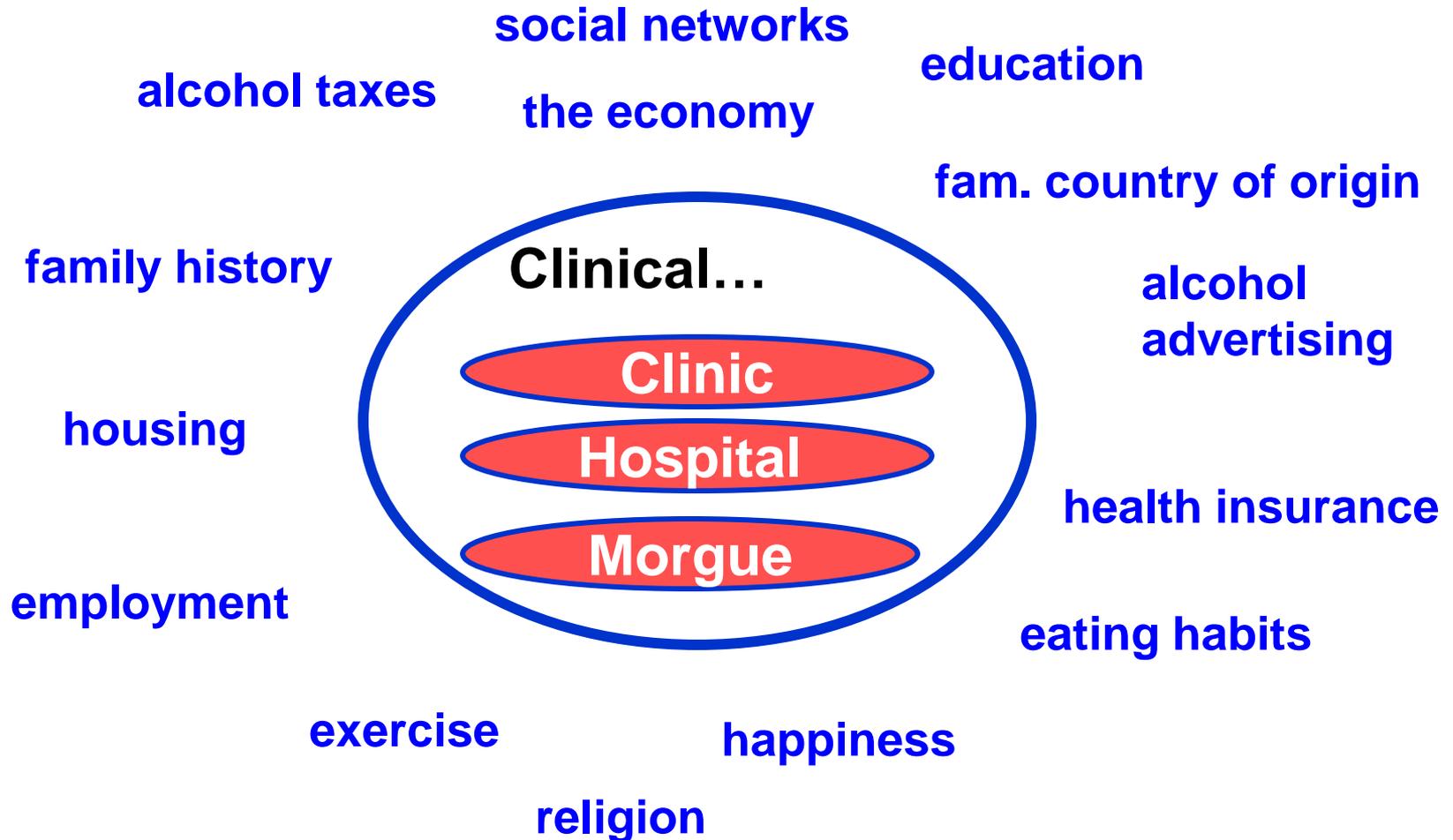
[tim.naimi@bmc.org](mailto:tim.naimi@bmc.org)



# Outline

- **Paradigms of how to conceptualize, frame problems arising from alcohol consumption**
- **What constitutes excessive drinking**
- **Health and Social impacts: U.S., Colorado, Denver**
- **Barriers, opportunities for action**

# Alcohol: What Matters Most Is Outside the Realm of Healthcare



# Traditional Paradigm: The Bio-Medical Model

- **Problem**: disease of alcohol dependence (DSM-IV)
- **Solution**: specialty treatment
  
- **Problems with the problem:**
  - Non-dependent folks cause & incur harms!
  - Prevention?
  
- **Problems with the solution:**
  - Few engage in treatment
  - Treatment is expensive, difficult

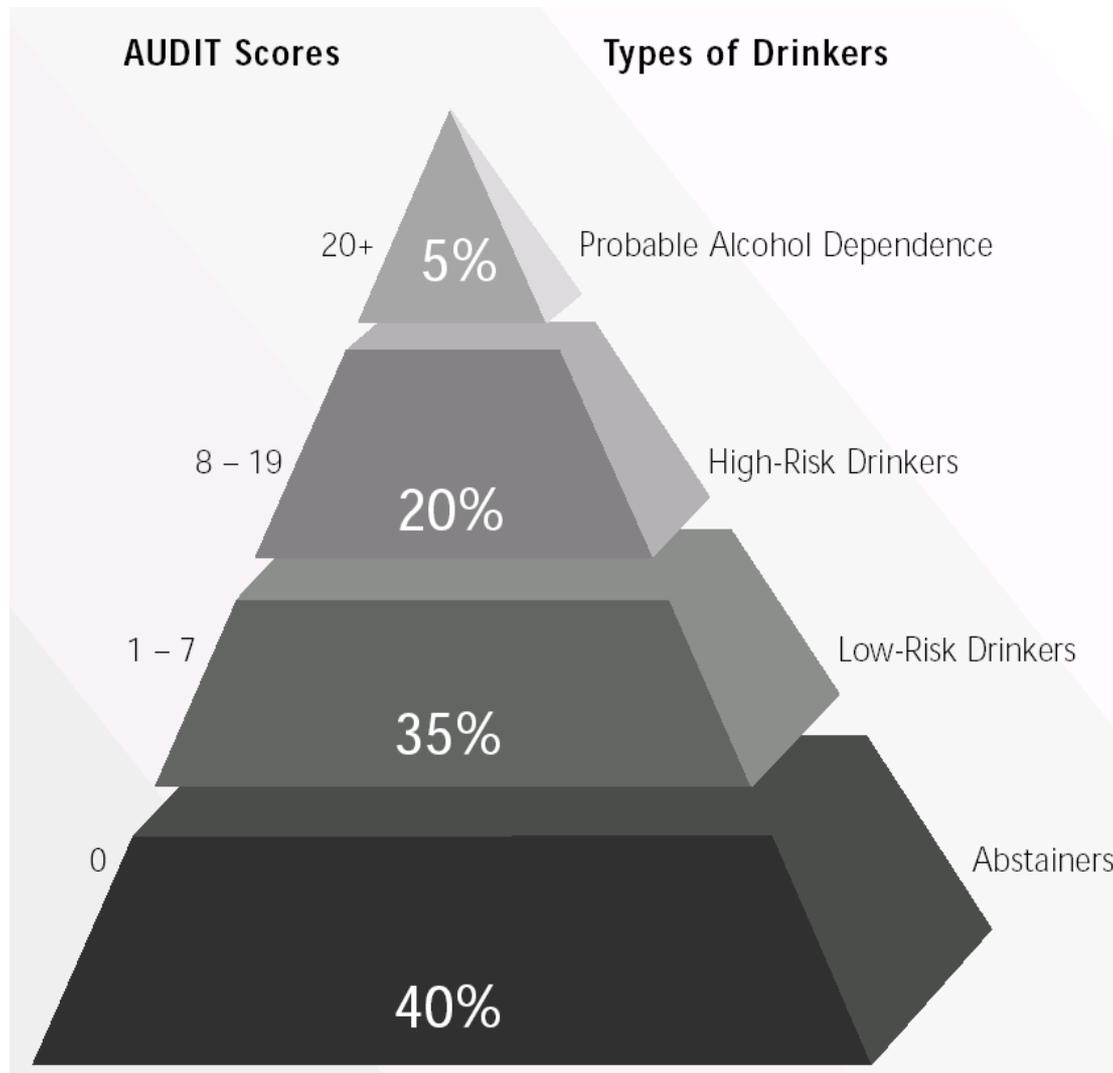
# **Compare Bio-Medical Model of Alcohol with Other Examples**

- **Smoking**
  - Recognized as a risk behavior, not disease (despite 80+% dependent)
  - Public health and policies emphasized
- **Stroke**
  - Clinical entity, event
  - Focus is still prevention, control of risk factors (e.g., HTN)

# Emerging Paradigm

- **Alcohol is cross-cutting risk factor for multiple health and social problems**
- **Problems aren't just confined to youth, alcoholics, 'hard core' drunk drivers**
- **Focus on excessive drinking, and the continuum of risk**

# The Drinker's Pyramid



# What is Excessive Alcohol Use?



SOURCE: CDC Vital Signs. January 2014. [www.cdc.gov/vitalsigns](http://www.cdc.gov/vitalsigns).  
American Journal of Preventive Medicine, 2011; Volume 41.

# Standard Drinks Sizes Vary by Beverage Type and Alcohol Concentration



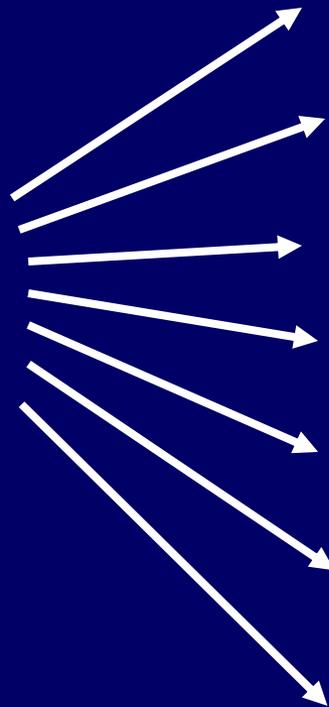
**Note: A U.S. Standard Drink Contains 14 grams (0.6 ozs) of Ethanol**

U.S. Department of Health and Human Services and U.S. Department of Agriculture. [2015 – 2020 Dietary Guidelines for Americans](#). 8th Edition, Washington, DC; 2015.

RISK FACTOR

OUTCOME

***Binge  
Drinking***  
(5+/4+)



**Injuries**

**Liver disease**

**Violence, Sexual Assault**

**Cancers, GI disorders**

**Unintended Pregnancies**

**Cardiovascular disease**

**Child Neglect**

**Crime, legal costs**

**Lost productivity, absenteeism**

**Alcohol Use Disorders**

# Binge Drinking is the Most Deadly, Costly, & Common Pattern of Excessive Drinking

**≥4 drinks per occasion for  
women and ≥5 for men**

**54%** of  
the deaths  
due to  
excessive  
drinking



**Binge Drinking**

**66%** of  
the Years of  
Potential  
Life Lost  
(YPLL)

**77%** of  
economic  
costs

# Public Health Value, Substance Use

	Public Health Impact	Preventable Fraction	Second-Hand Effects
<u>Substance</u>			
Tobacco	++++	++++	+
Marijuana	+	++?	+
Opioids	++	++	++
Alcohol	+++	++++	+++

# Wide scope of 2<sup>nd</sup> hand effects

Safety & Health	Society	Children	Fetal effects
Road crashes	Healthcare costs	Impaired health for children of problem drinkers	Fetal alcohol spectrum disorder (FASD), including fetal alcohol syndrome (FAS)
Pedestrian injuries	Policing costs		
Assault	Court costs	Parental neglect	
Sexual violence	Prison costs	Poor school grades	Low birthweight
Homicide	Lost productivity	Future mental health and substance use problems	Epigenetic effects on future social, physical and cognitive development
Workplace injuries	Property damage, vandalism		
Fires	Public nuisance	Domestic violence, including child abuse	
Infectious disease e.g. AIDS/HIV, hepatitis, TB and sexually transmitted disease	Intimidation, other forms of social disruption	Financial problems	
		Divorce	

# Comparative risks of different drugs to user and others (Nutt, *Lancet*)

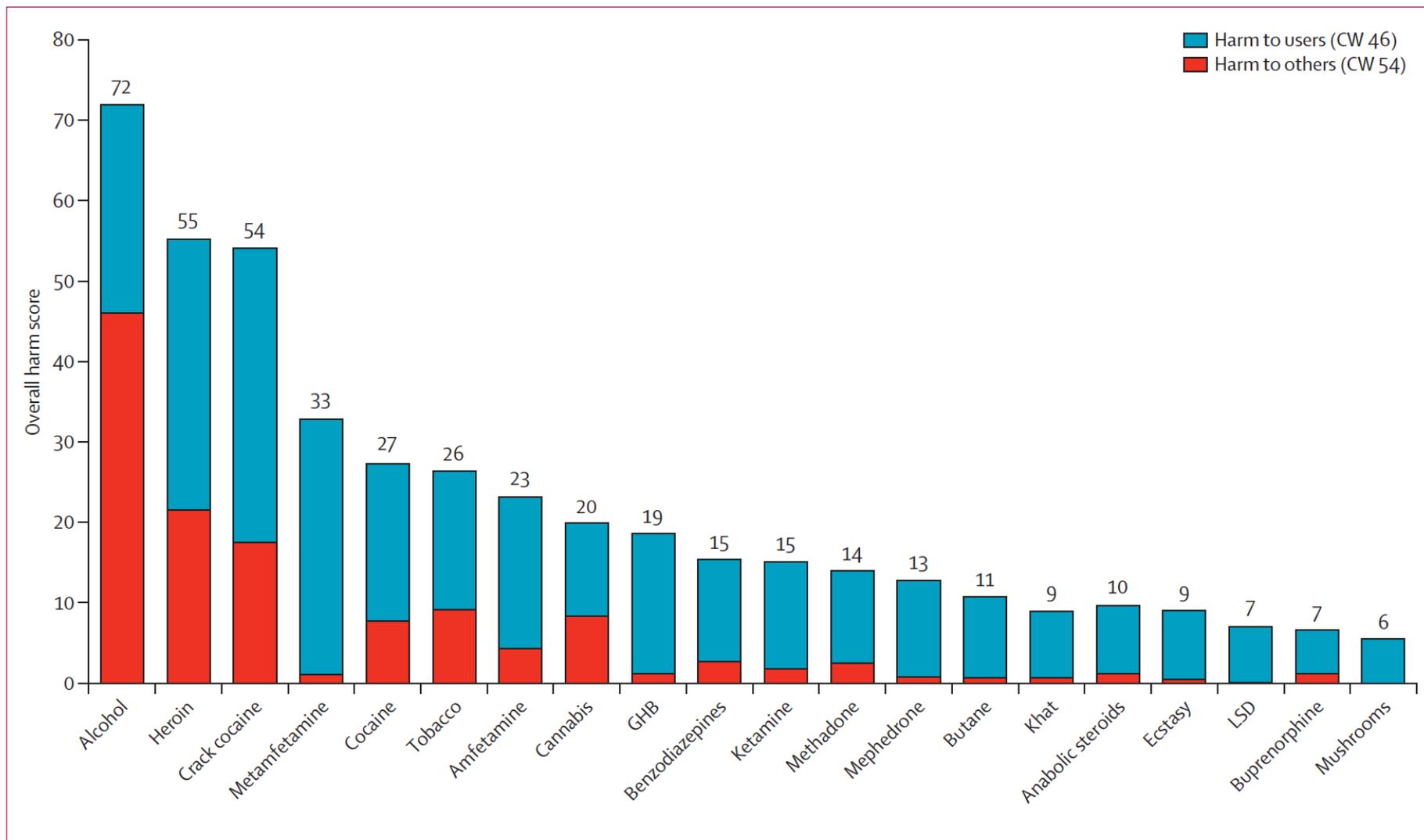


Figure 2: Drugs ordered by their overall harm scores, showing the separate contributions to the overall scores of harms to users and harm to others

# Impacts

- **~106,000 deaths in U.S. annually**
- **4<sup>th</sup> leading behavior-related cause of death**
- **30 years of potential life lost per A-A death**
- **\$249 billion per year in costs (~\$2/drink), 40% paid by government (taxpayers)**

# Deaths from Excessive Drinking, U.S.

<u>Acute</u>	<u># Deaths</u>	<u>Chronic</u>	<u># Deaths</u>
Motor Veh.	13,000	ESLD	20,000
Other Injury	12,000	CVD	5,000
Violence	15,000	Cancer	19,000
<u>Other</u>	<u>3,000</u>	<u>Other</u>	<u>1,000</u>
<i>Total</i>	<i>43,000</i>	<i>Total</i>	<i>45,000</i>

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# What's Our Menu of Options to Reduce Excessive Drinking??



- 
- **Education?**
  - **Screening and brief intervention?**
  - **Treatment?**
  - **Alcohol control policies!**

# **Alcohol Policies as a “Solution” to Alcohol-Related Problems**

- **Effective**
- **Population-based**
- **Protect vulnerable populations**
- **Don't rely on persuasion, “will power”, health consciousness, civic responsibility**
- **Change social expectations, norms**
- **Cost-efficient, cost saving**
- **Promote liberty ... allow use, “freedom from”**

# **Community Guide Recommended Strategies to Reduce Excessive Drinking**

- Increase alcohol taxes**
- Regulate alcohol outlet density**
- Dram shop (commercial host) liability**
- Avoid further privatization of alcohol sales**
- Maintain limits on days of sale**
- Maintain limits on hours of sale**
- Enhance enforcement of laws prohibiting alcohol sales to minors**

# Challenges

- **Anti-regulatory movement**
- **Federal tax cuts (16%), on top of erosion**
- **State “modernization” = deregulation initiatives – more outlets, more hours, threats to 3-tier system**
- **Poor enforcement of illegal alcohol sales**
- **More marketing**

# Changes in Implementation of Policy Groups, US States, 1999-2011

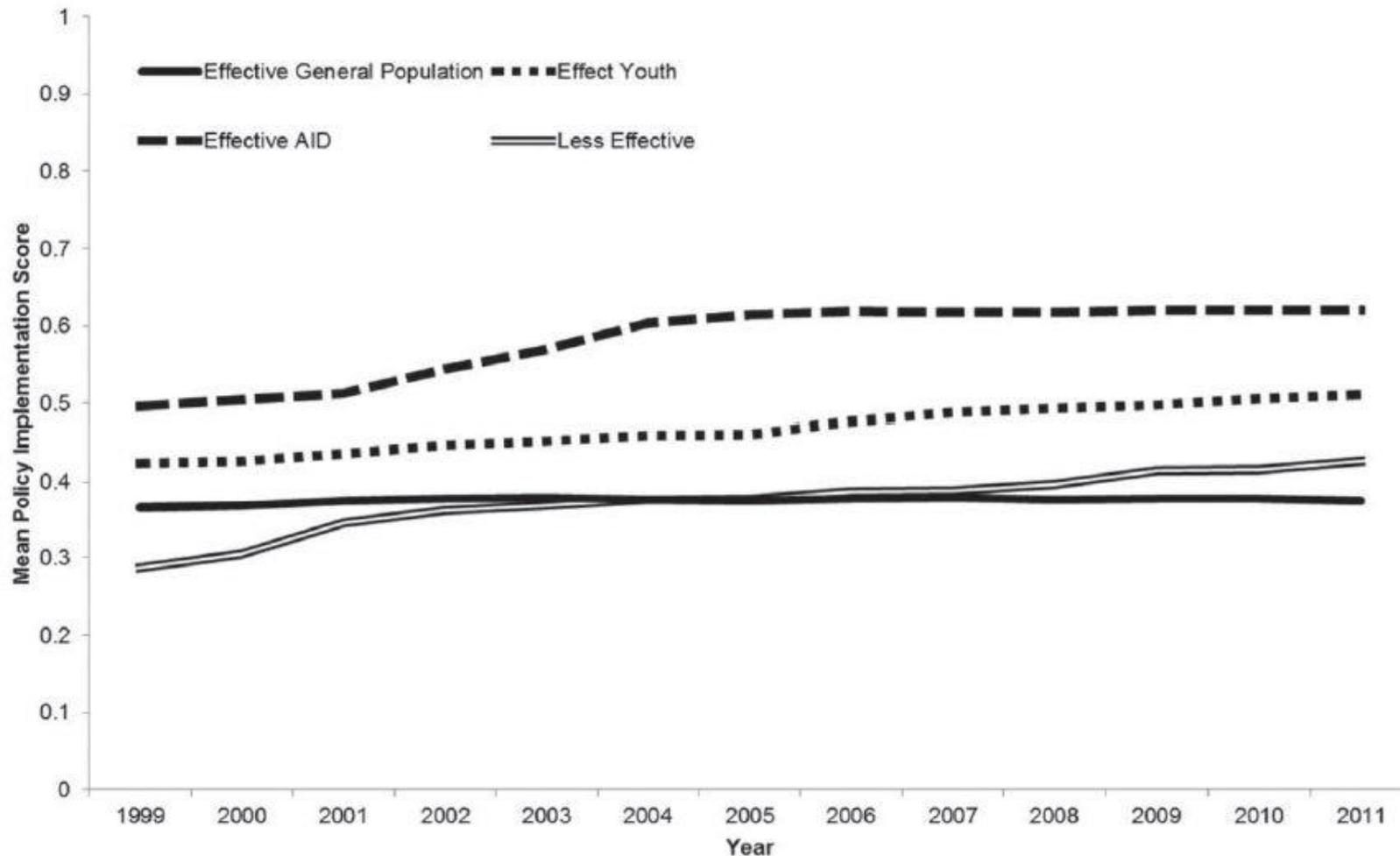
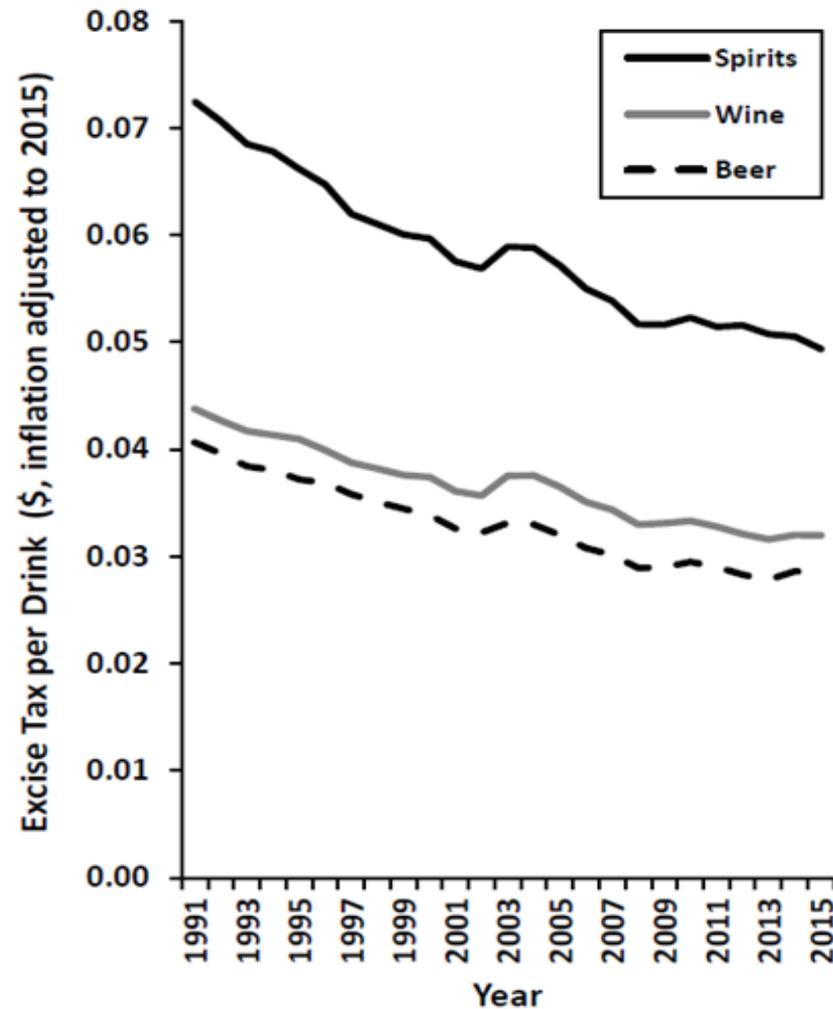


Figure 1 Mean policy implementation score by policy grouping, US states 1999–2011

# Erosion of State Alcohol Excise Taxes, 1991-2015



# Summary: Alcohol Policy

- The problem is excessive/risky drinking, not a genetically pre-determined disease
- The problem is rooted in the broader environment, and is *amenable to change*
- Policies are a critical part of solution
- Key policy goals: increased prices, reduced availability, reduced illegal alcohol sales, reduced marketing

# Alcohol and Public Health: Colorado & Denver



# *Impact of Excessive Drinking in CO*

## *Kacy Crawford*

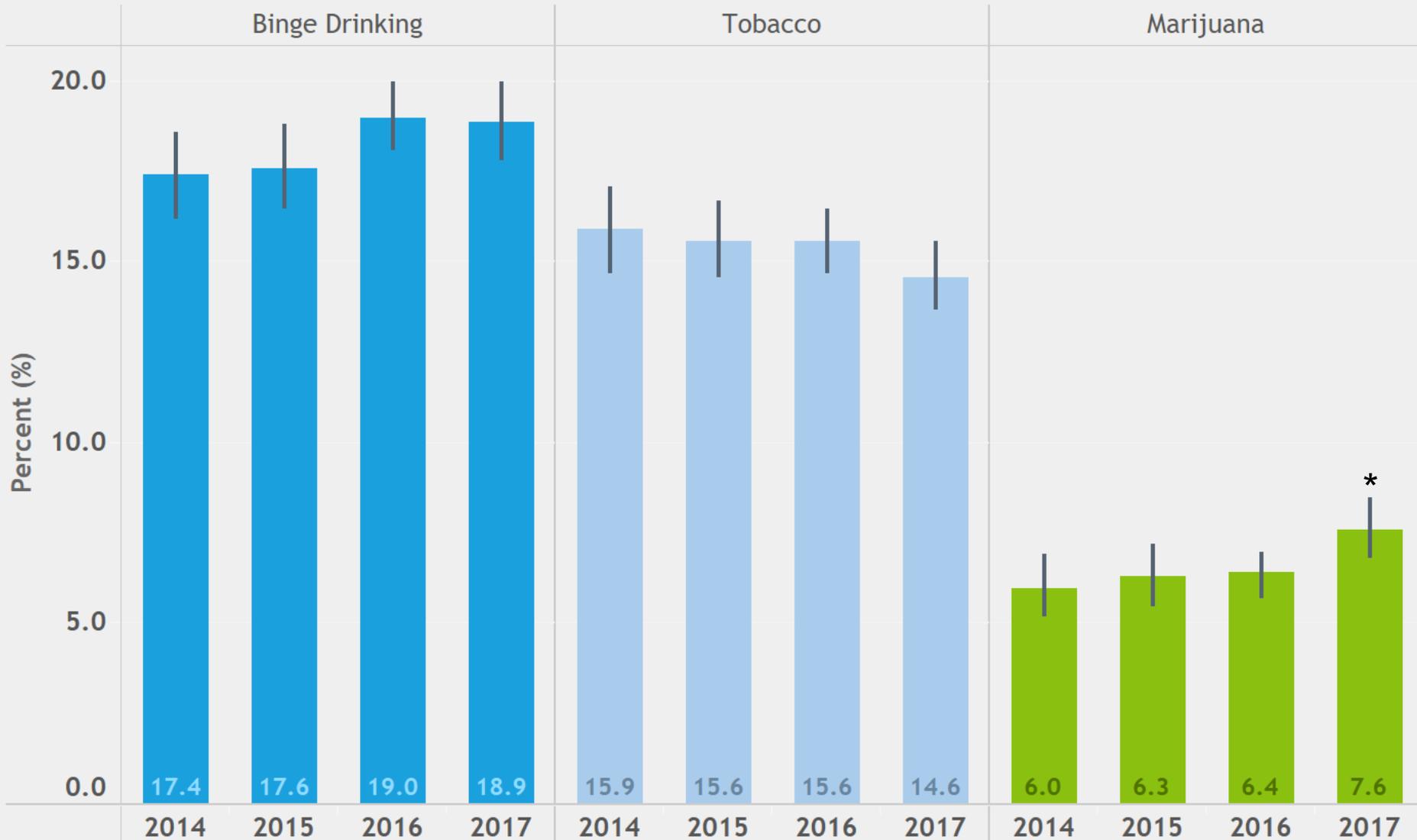
- ~5 deaths each day
- 1 in 7 deaths among working-age adults ages 20-64
- \$5 billion in economic costs (2010)
  - ~\$2.15 for each drink

# *Impact of Excessive Drinking in CO*

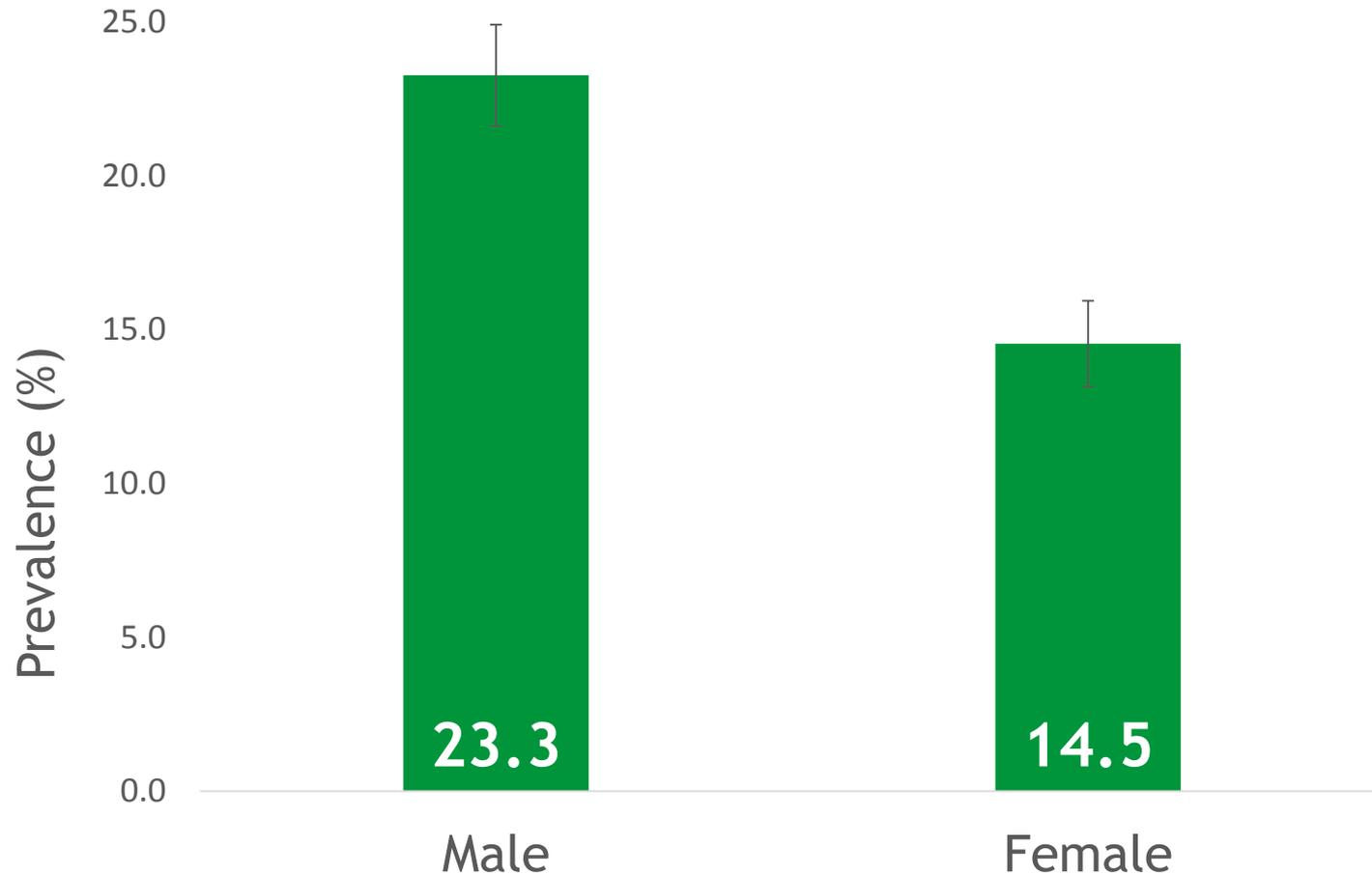
61

people under 21 years of age die in Colorado each year due to excessive drinking

# Binge drinking, tobacco use, and daily/near daily marijuana use Colorado adults, 2014-2017

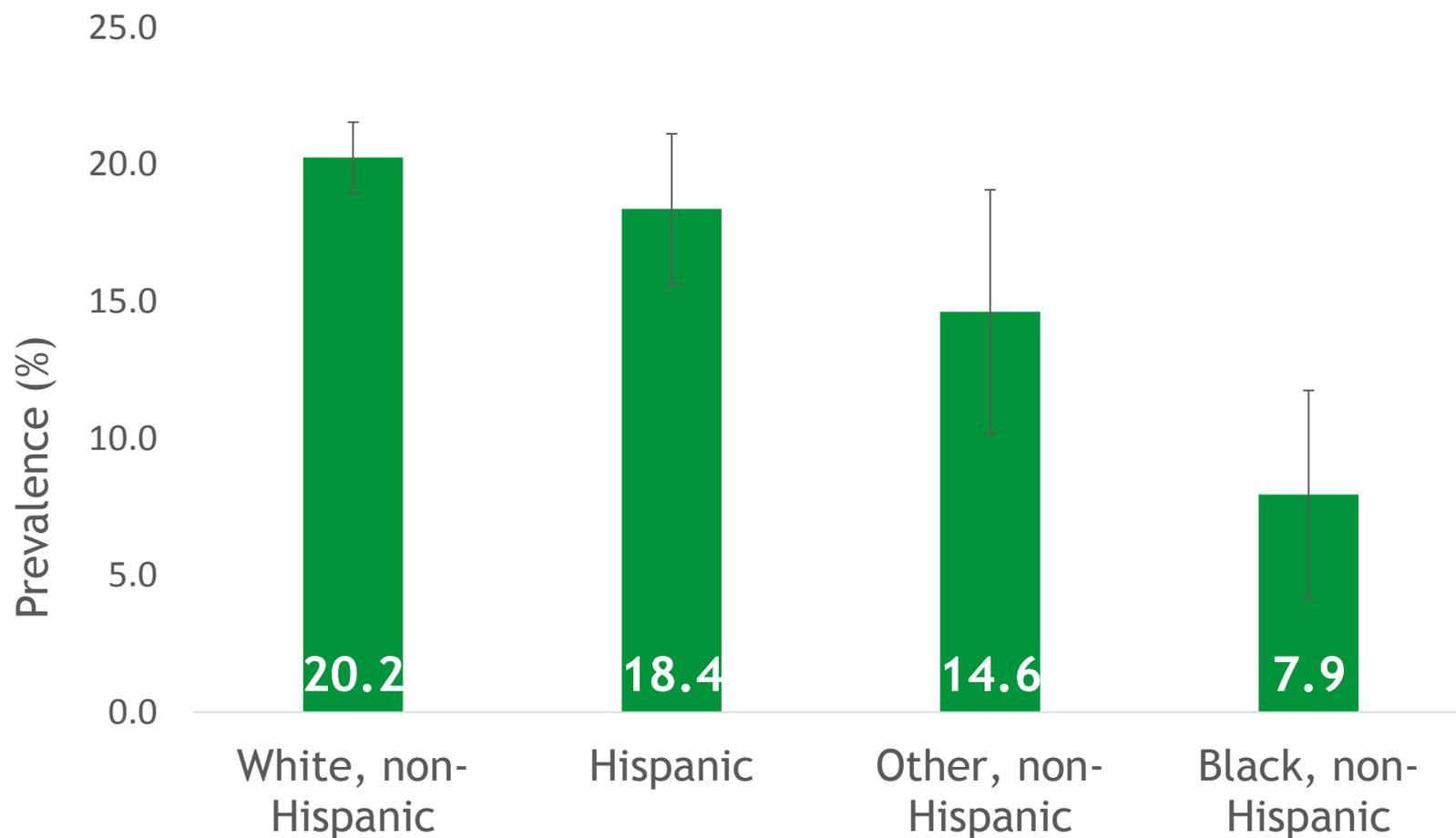


# Colorado Binge Drinking by Gender, 2017

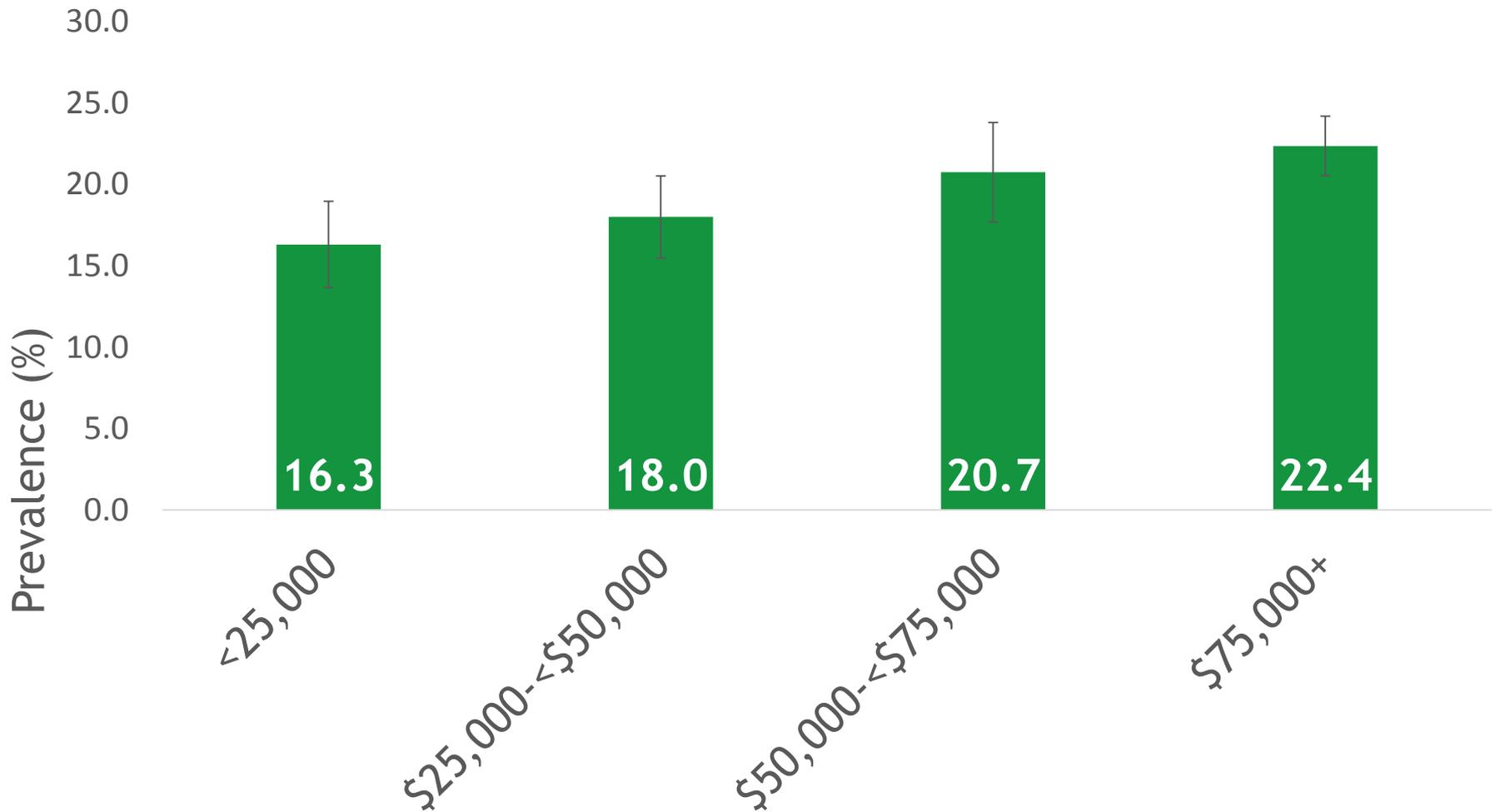


Source: Colorado BRFSS (2017)

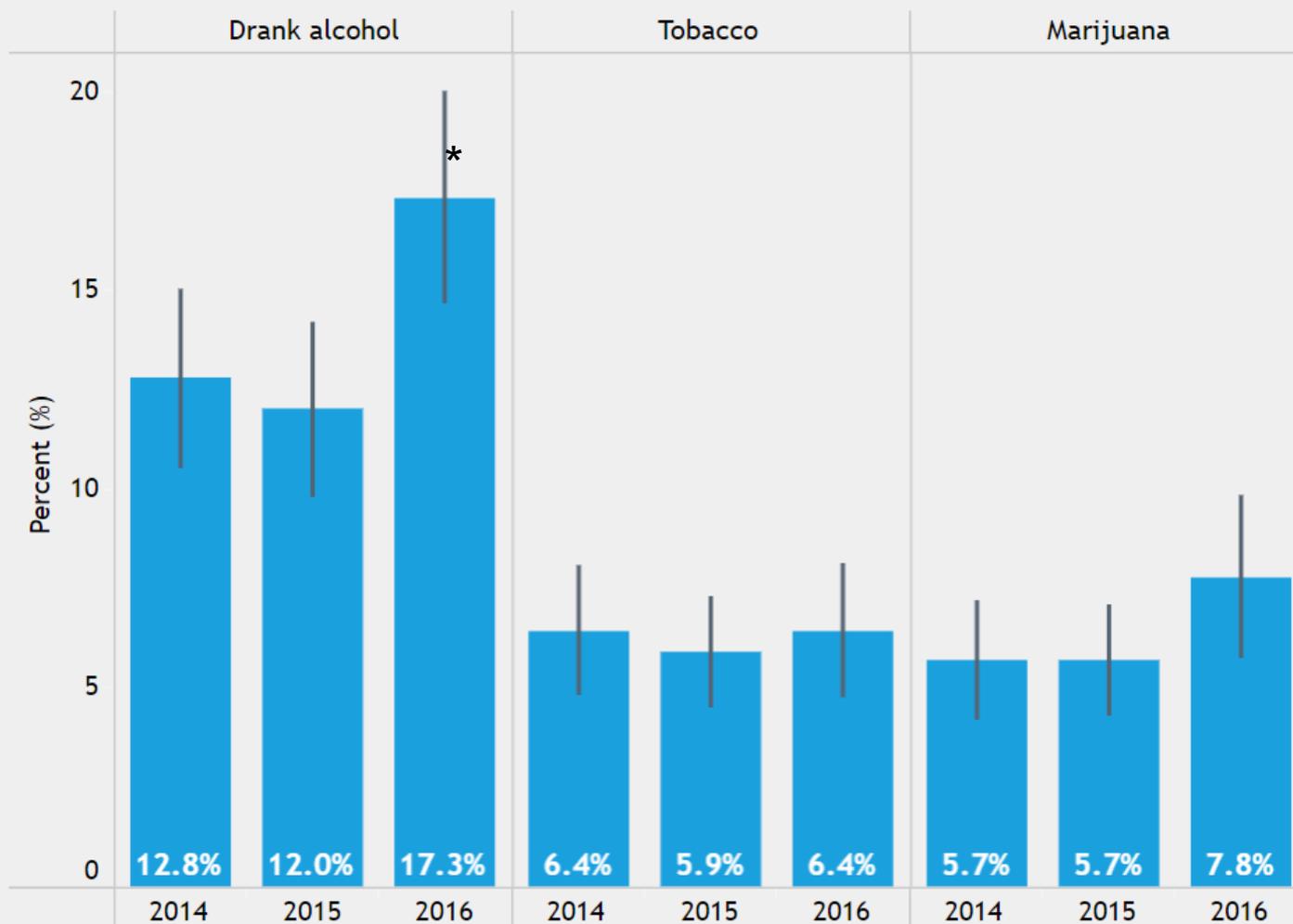
# Colorado Binge Drinking by Race/Ethnicity, 2017



# Colorado Binge Drinking by Income Level, 2017



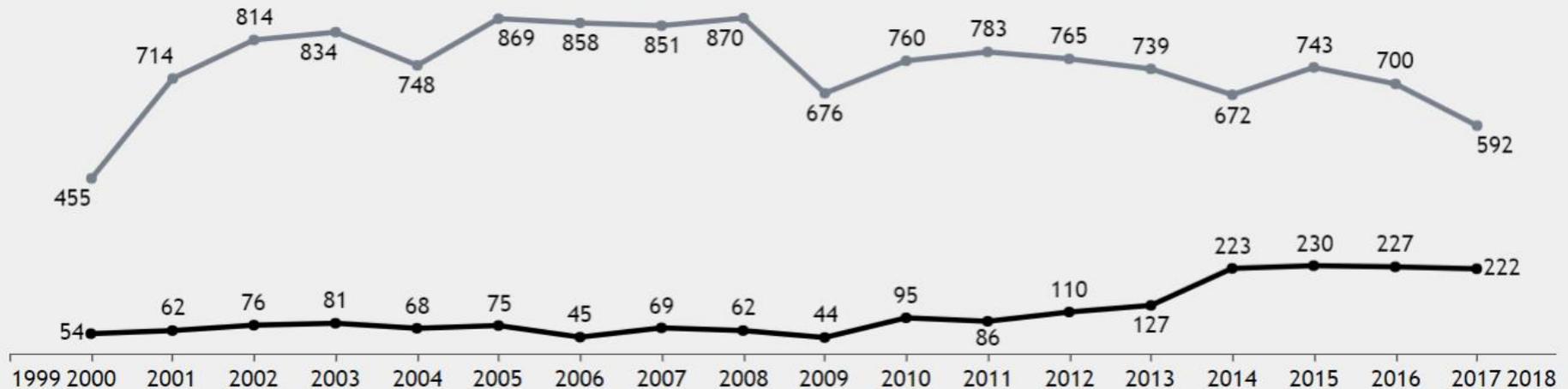
# Alcohol, tobacco, and marijuana use during pregnancy, 2014-2016



**NOTE:** For alcohol and tobacco, data are reported in the last trimester of pregnancy. For marijuana, data are reported as any use during the pregnancy.

# Number of marijuana and alcohol exposures reported to the poison center from Colorado, 2000-2017

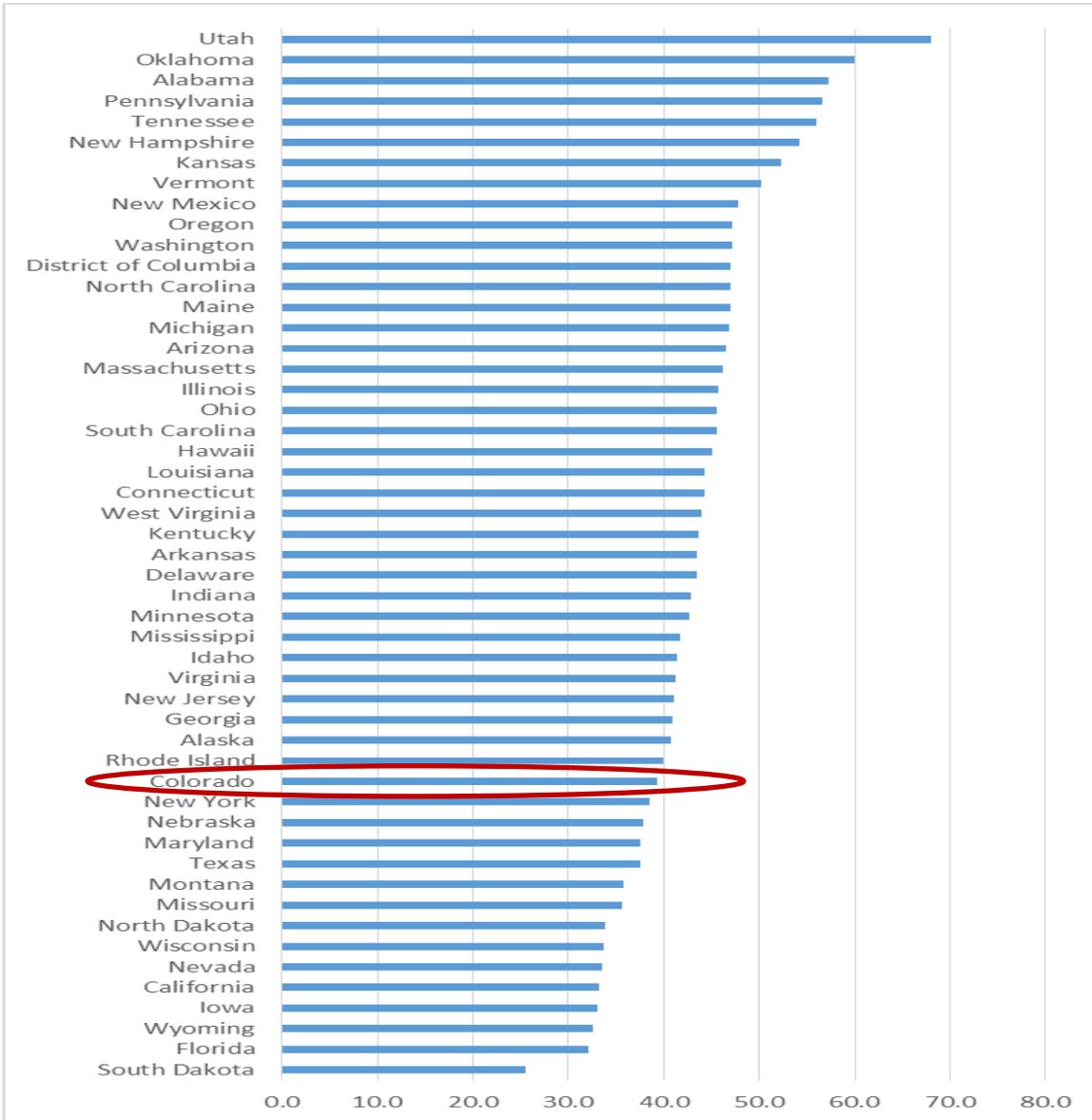
Exposure: ■ Alcohol ■ Marijuana



<https://www.colorado.gov/pacific/cdphe/marijuana-health-effects-poison-center-calls>

# Alcohol Policy Scale Scores, 2018

(lower score = less restrictive)



# **CO: Poor Capacity to Reduce Illegal Alcohol Sales**

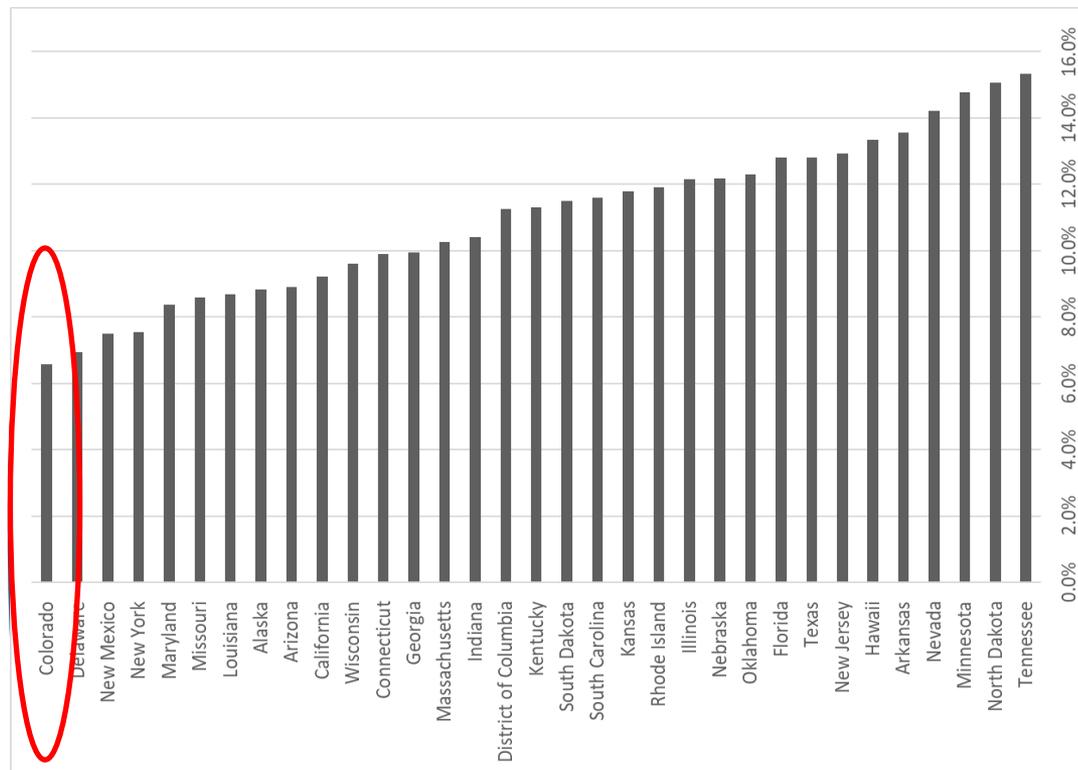
- **11,735 outlets, 2018**
- **10 enforcement agents, 2018**

# Colorado Alcohol Excise Taxes and Tax Erosion, By Beverage Type

(Inflation adjusted to 2015 dollars)

	Beer	Beer Erosion		Spirits	Spirits Erosion		Wine	Wine Erosion
Current	\$0.0075	--		\$0.03			\$0.01	
1991	\$0.013	-42%		\$0.05	-42%		\$0.02	-42%
1934	\$0.05	-85%		\$0.17	-84%		\$0.17	-92%

# Proportion of costs due to excessive alcohol use accounted for by total alcohol taxes among the 32 license states in the U.S., 2010



# **The Epidemiology of Alcohol & Health in Denver**

**-Ken Scott**

**May 23, 2019**



**DENVER  
PUBLIC HEALTH™**

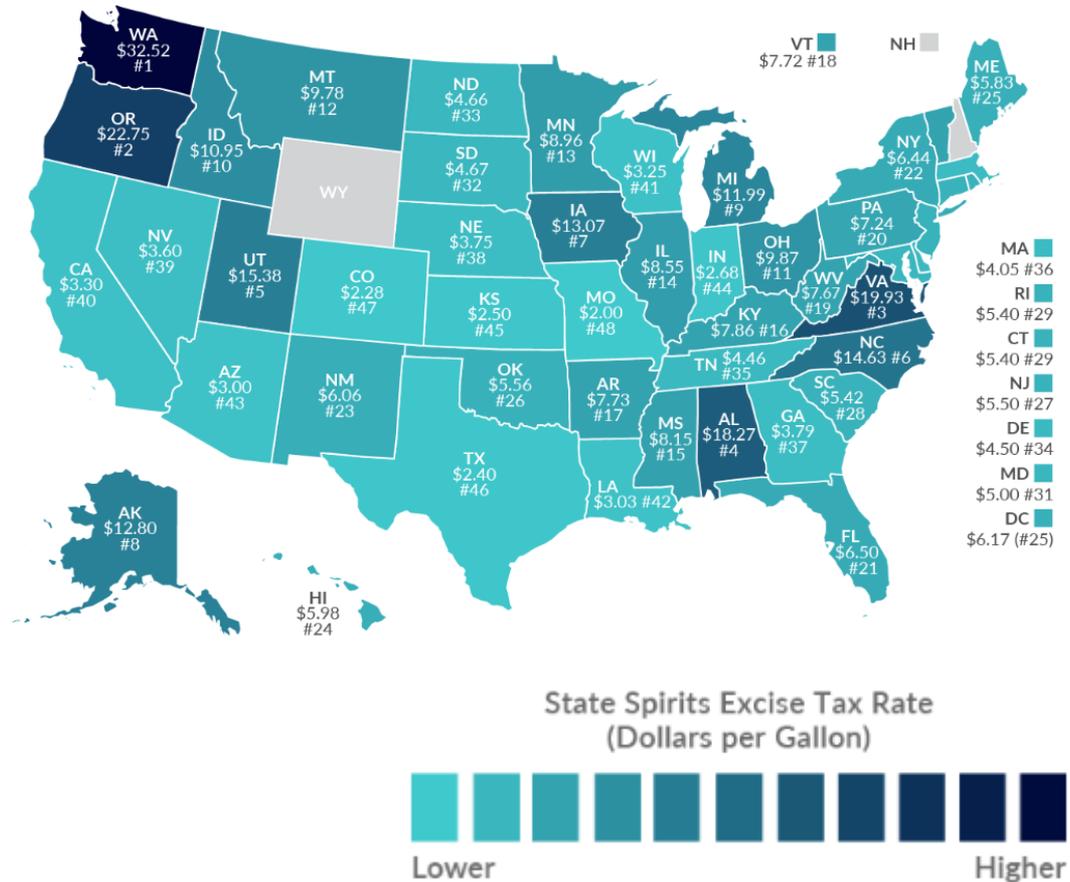
# PRICE

The US Community Preventive Services Task Force recommends alcohol taxes as a strategy to curb excessive alcohol consumption and related harms, based on **strong evidence**.

Colorado ranks 39<sup>th</sup> in its taxes on wine, 46<sup>th</sup> in its taxes on beer, and 47<sup>th</sup> in its taxes on spirits.

## How High Are Spirits Taxes in Your State?

State Spirits Excise Tax Rates (Dollars per Gallon), 2018



# ACCESS

The US Community Preventive Services Task Force recommends limiting the density of alcohol outlets to curb excessive alcohol consumption and related harms, based on **sufficient evidence**.

Compared to all **3,142 US** counties and county equivalents, Denver has the **20<sup>th</sup> most** alcohol accessibility.

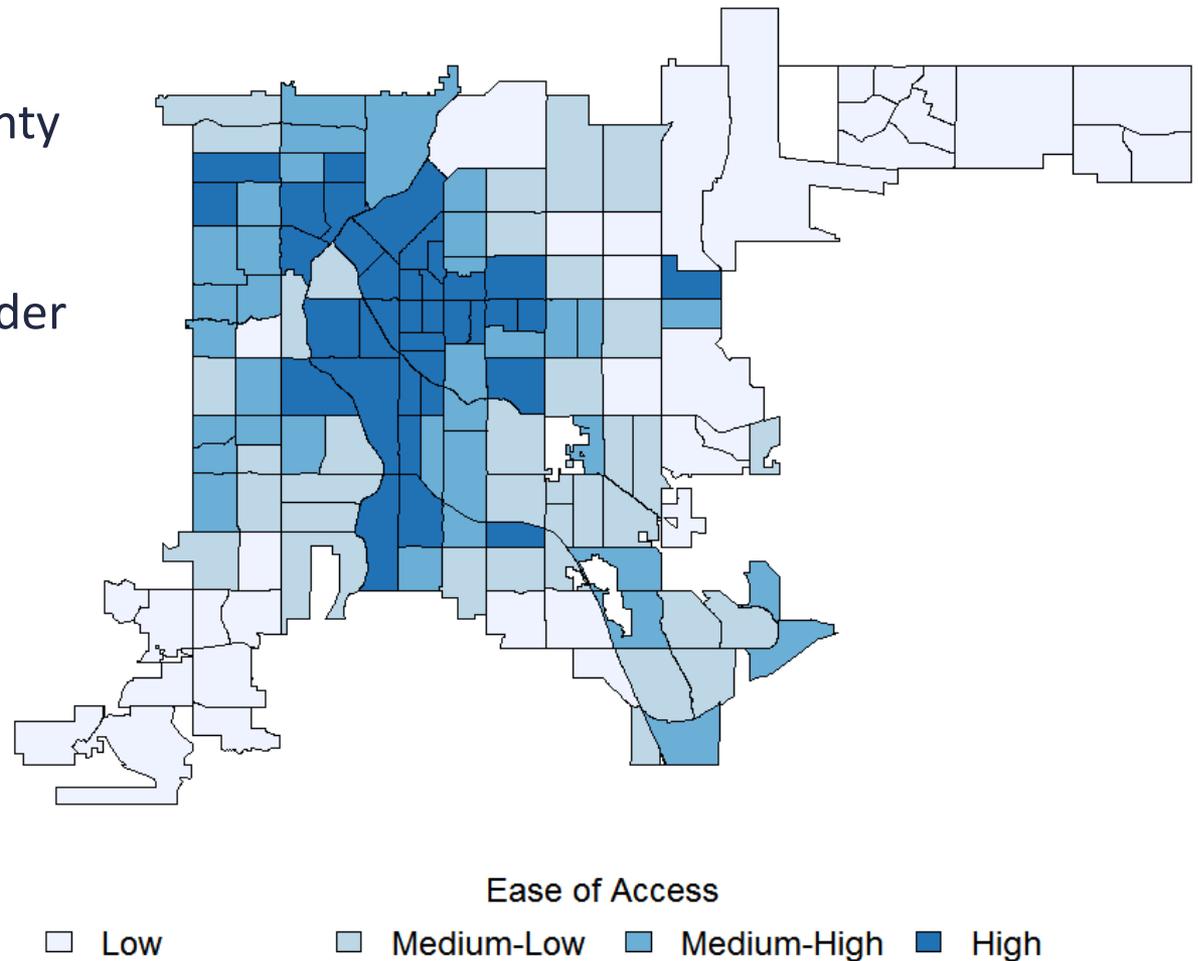
Rank	County	State	Rank	County	State
1	New York	NY	11	Milwaukee	WI
2	San Francisco	CA	12	Orleans	LA
3	Hudson	NJ	13	Passaic	NJ
4	Kings	NY	14	Cook	IL
5	Philadelphia	PA	15	District of Columbia	
6	Bronx	NY	16	Multnomah	OR
7	Queens	NY	17	San Juan	CO
8	Suffolk	MA	18	Essex	NJ
9	Baltimore	MD	19	Skagway	AK
10	St. Louis	MO	<b>20</b>	<b>Denver</b>	<b>CO</b>

Lu H, Zhang X, et al. International Journal of Health Geographics, 2018

## Accessibility of Alcohol in Denver by Census Tract, 2015

### ACCESS

Within the City and County of Denver, it is easier to access alcohol in some parts of the city and harder in others.



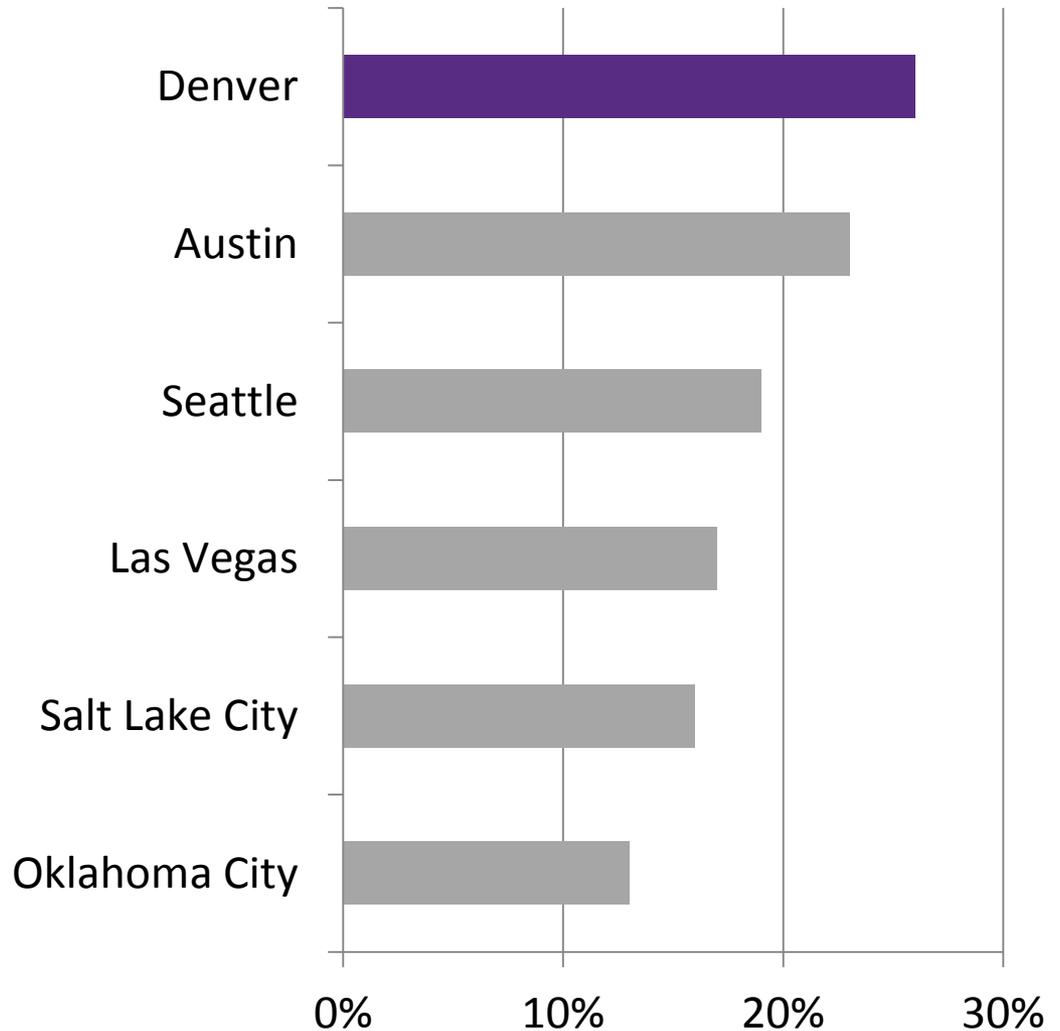
Lu H, Zhang X, et al. International Journal of Health Geographics, 2018

## Prevalence of Excessive Drinking in Denver, Compared to Western Peer Cities

### CONSUMPTION

Compared to similar cities, Denver has higher prevalence of excessive drinking.

Excessive drinking is the percentage of adults that report either binge drinking (on one occasion) or heavy drinking (day-to-day).



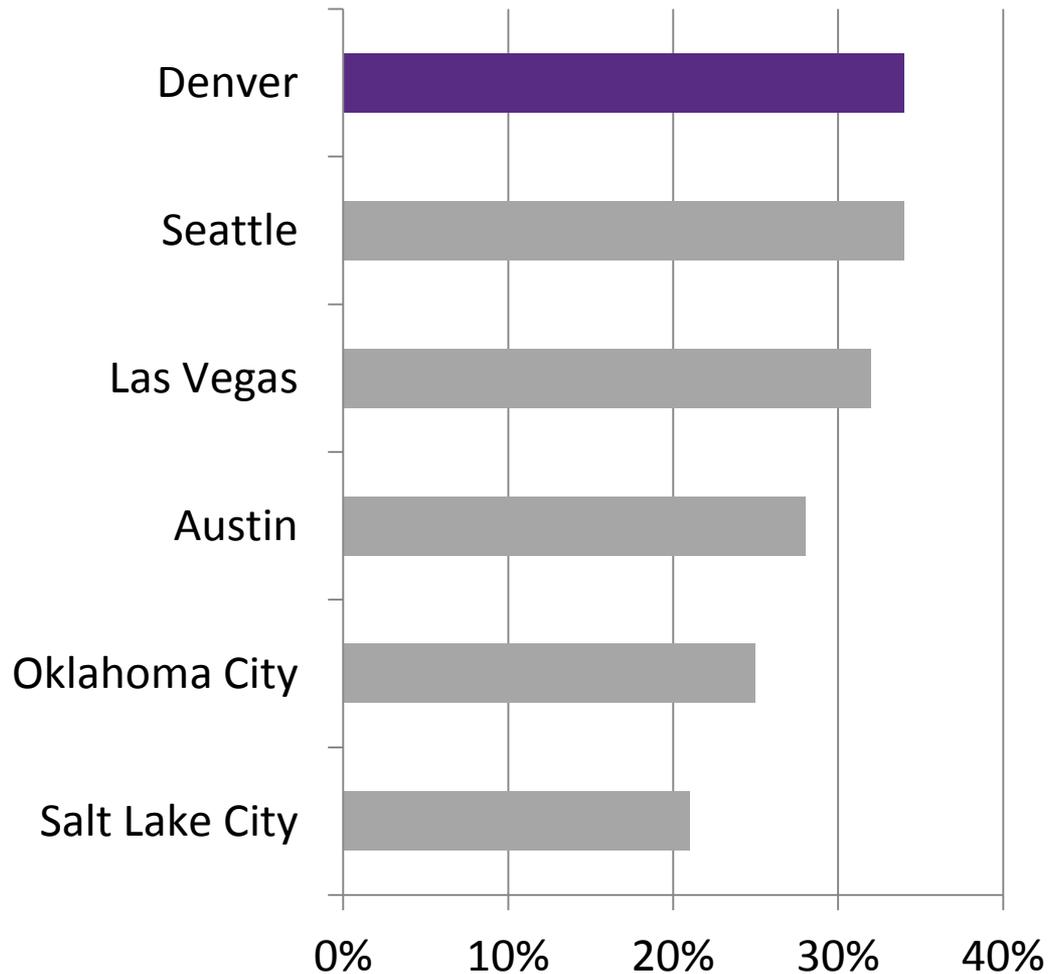
Steiner A, Shekiro E. Analysis of County Health Rankings & Roadmaps Data; BRFSS. 2018

# ACUTE HEALTH CONSEQUENCES

Some harms occur shortly after alcohol is consumed. Alcohol often contributes to injuries from impaired driving, violence, suicide, falls and other more immediate causes.

Compared to similar Western cities, Denver has a higher proportion of driving deaths involving alcohol.

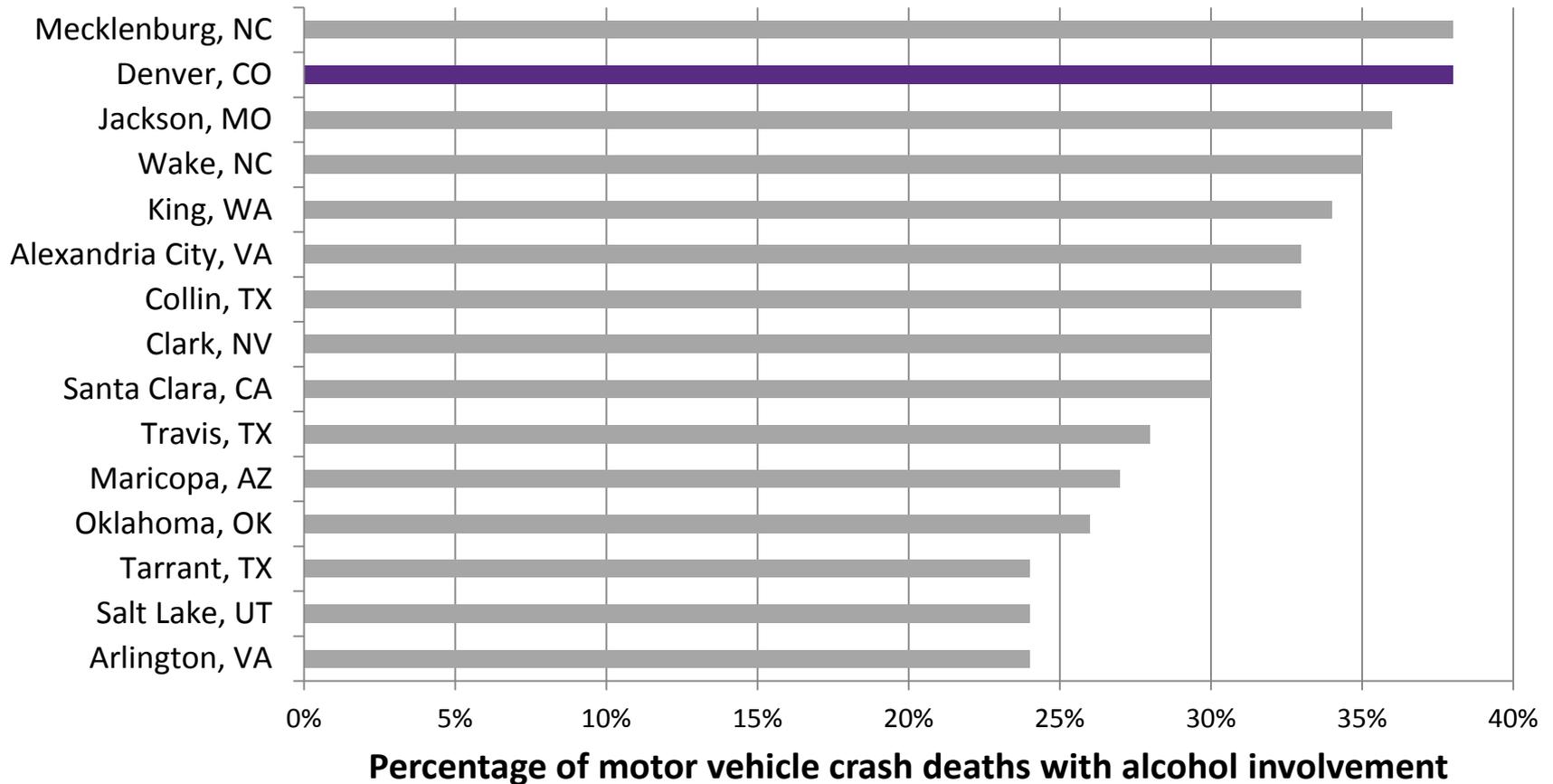
## Percentage of Motor Vehicle Crash Deaths with Alcohol Involvement in Denver, Compared to Western Peer Cities



Steiner A, Shekiro E. Analysis of County Health Rankings & Roadmaps Data; FARS. 2018

# ACUTE HEALTH CONSEQUENCES

## Alcohol-impaired driving deaths\*\*



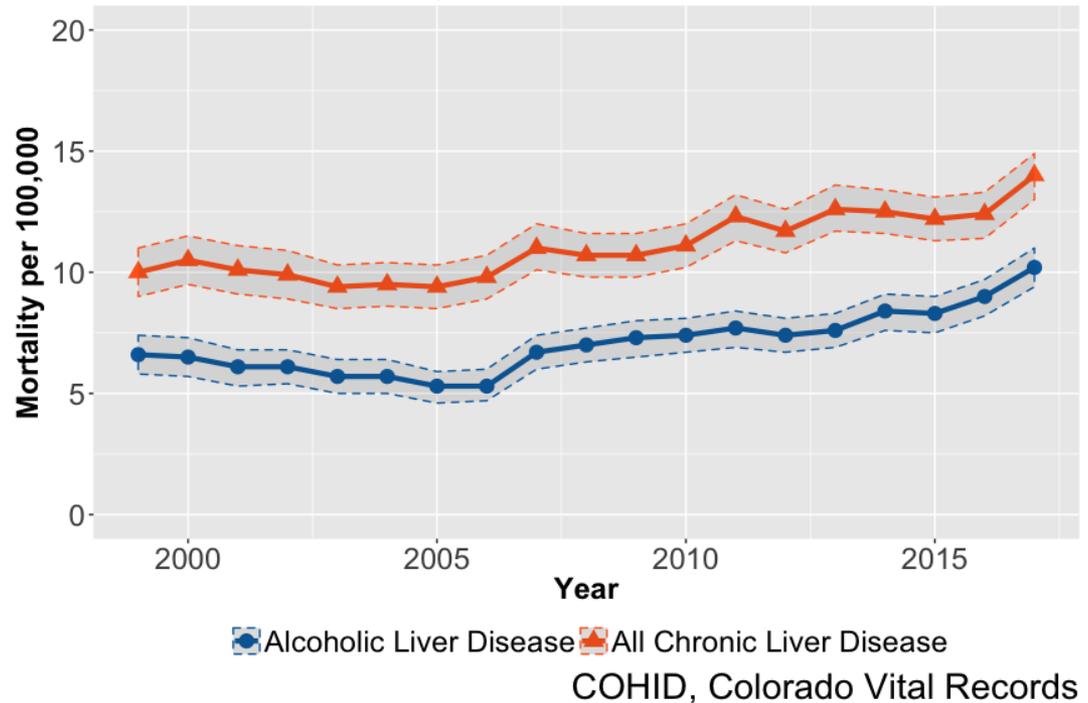
Steiner A, Shekiro E. Analysis of County Health Rankings & Roadmaps Data; FARS. 2018

# CHRONIC HEALTH CONSEQUENCES

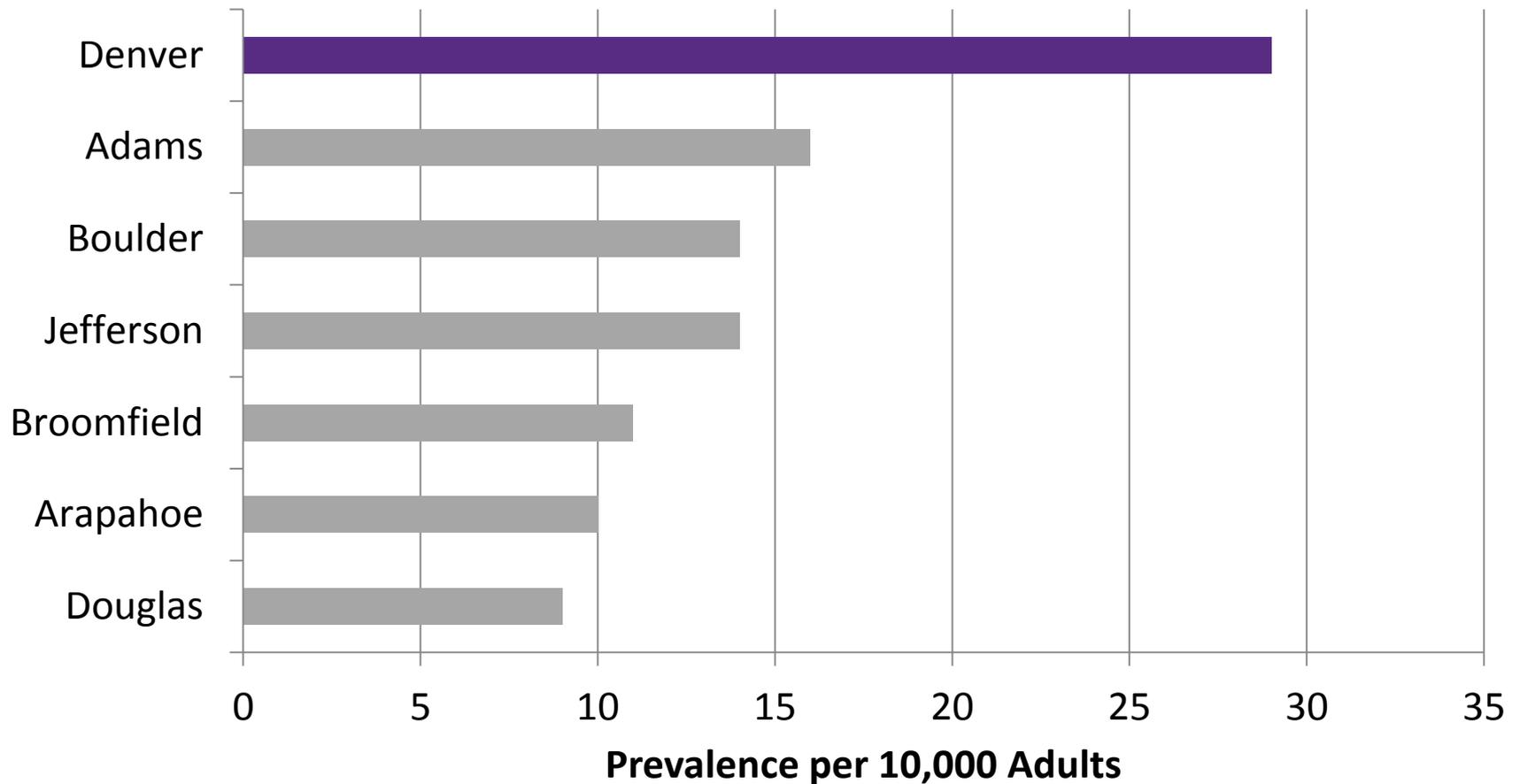
The US, Colorado and Denver have seen rising incidence of liver cancer, and rising death rates due to liver disease.

Death rates from alcoholic liver disease increased by 35% in Denver County from 1999-2017.

### Age-Adjusted Liver Disease Death Rates from 1999-2017, Colorado



# Prevalence of Diagnosed Cirrhosis Among Adults in the CHORDS Network, by County, 2018\*

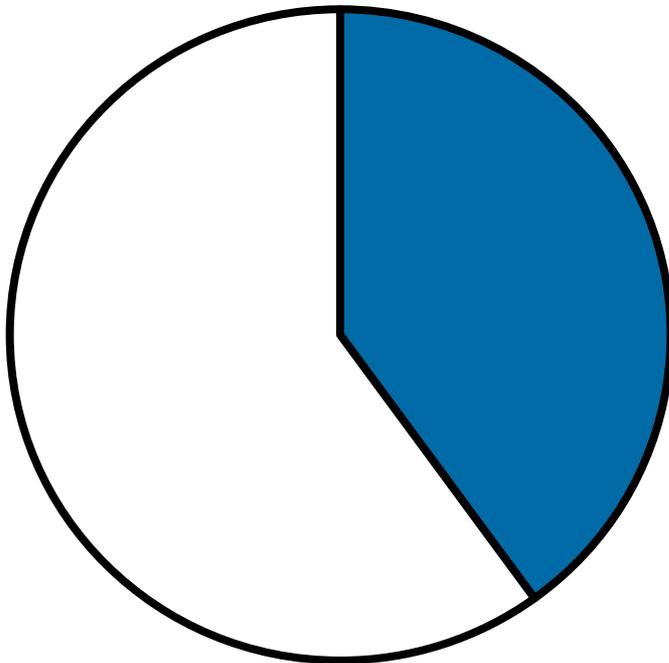


\*Prior to De-Duplication;  
Includes cirrhosis related to  
hepatitis, obesity or alcohol

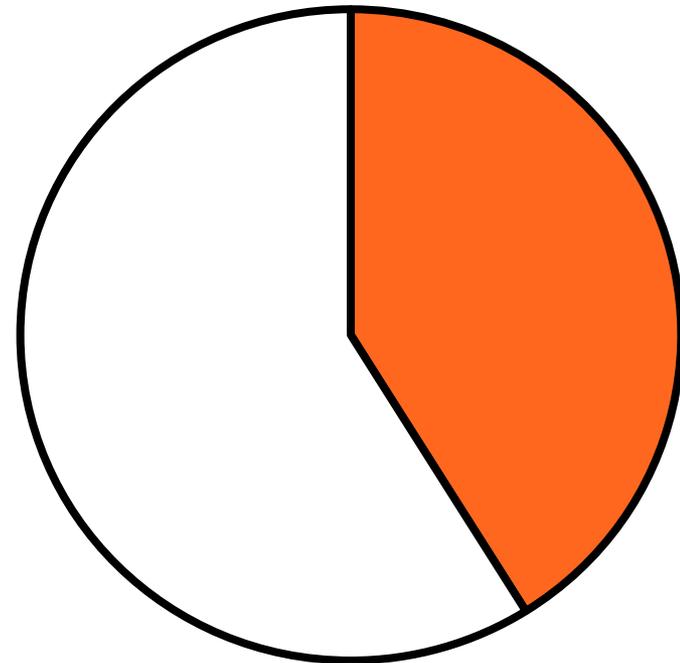
# BURDEN ON HEALTHCARE SYSTEM

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**Of 29,340 Substance ER Only Visits at DH in 2018, 36% Due to Alcohol**



**Of 4,857 Substance Hospital Admits at DH in 2018, 37% Due to Alcohol**



# BURDEN ON PUBLIC SAFETY SYSTEM

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- A Denver Health study of 169,642 calls to 911 estimated
  - **31%** (n=53,293) had indication of recent alcohol consumption or alcohol as a contributing factor to the call
  - **>\$7 million/year** in alcohol-related EMS costs

Joseph D., Vogel JA, et al.  
Prehosp Emerg Care, 2018

# SUMMARY: Colorado and Denver

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- Colorado and Denver, in particular, have conditions that support relatively high rates of alcohol consumption
  - Low alcohol excise taxes
  - Easy access
- Denver residents experience certain alcohol-related harms more often than residents of similar cities
- Chronic diseases related to alcohol have been increasing over time in Denver and in Colorado
- Financial costs of excessive alcohol consumption in Denver borne by society, taxpayers

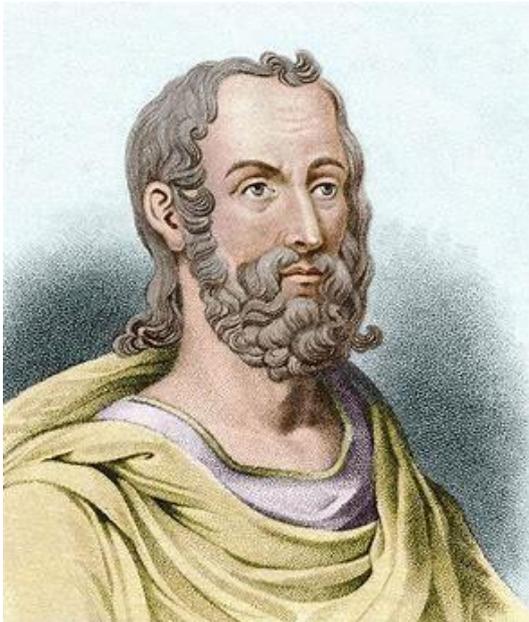
# Public Understanding, Community Engagement, Policymakers, Industry



# 'Moderate' Drinking Causes Confusion

"It is hard to say whether wine does  
good to more people than it harms...  
medical opinion is very divided"

- Pliny the Elder, Rome, 1<sup>st</sup> Century

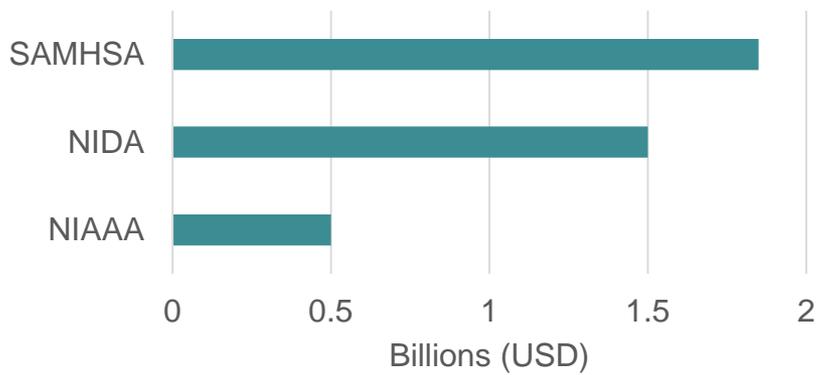


# Low Funding & Resources, Lack of Public Health Engagement

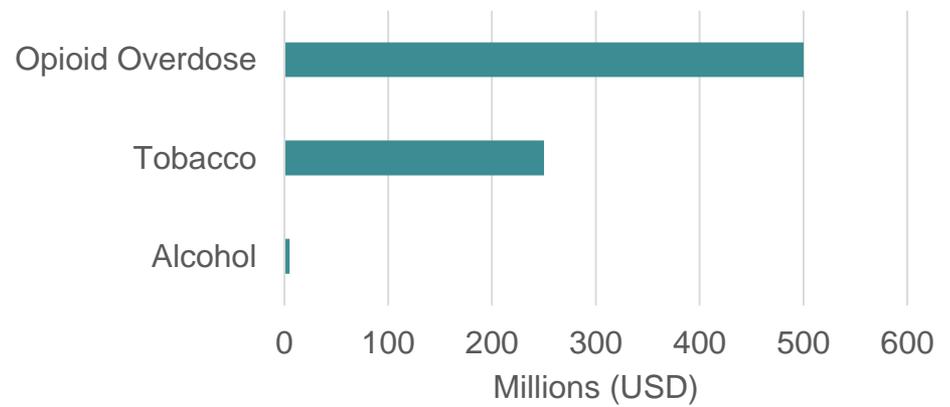


# Proposed Federal Spending FY 2020: Public Health-Oriented Alcohol Funding a Low Priority

Funding by Organization



Funding Within CDC



# Final Thoughts

- **Excessive drinking and related harms are of great public health significance ...**
- **And require both a public health approach, and robust PH response ...**
- **We're not there, yet!**

# Alcohol: Prevention & Public Health Perspectives

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EXCEPTIONAL CARE. WITHOUT EXCEPTION.

