



ASAM REVIEW COURSE 2025

Prevention and Public Health: From Theory to Practice

Amutha Rajagopal, MD, MPH

Assistant Professor

Addiction Medicine & Infectious Diseases

UC San Francisco





Financial Disclosure

Amutha Rajagopal, MD, MPH

- No relevant disclosures

Learning Objectives

- Describe the importance of preventing unhealthy substance use
- Describe risks and protective factors for the development of substance use disorders
- Describe a public health approach to addressing unhealthy substance use
- Describe evidence-based prevention interventions

National Survey on Drug Use and Health (NSDUH)

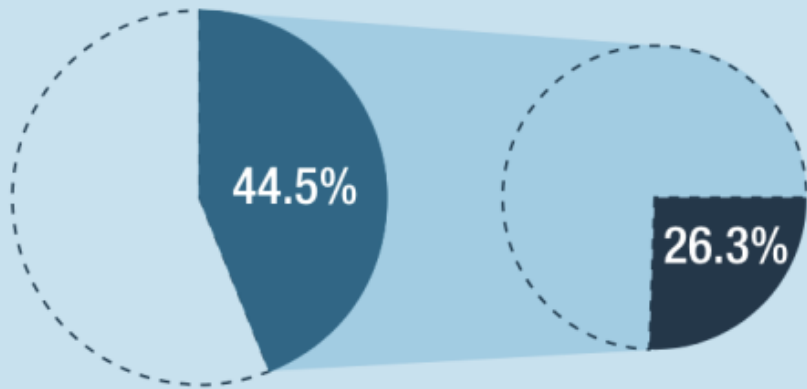
- Provides nationally representative data on the use of tobacco, alcohol, and illicit drugs, SUD, and receipt of treatment among the non-institutionalized US population 12 years and older



2022 National Survey of Drug Use and Health (NSDUH) releases. SAMHSA.gov.

Aged 12 or Older Binge Drinking

Heavy Alcohol Use



A little less than half of people who drank alcohol in the past month were binge drinkers, or **about 1 in 5 overall.**

About a quarter of people who were binge drinkers in the past month were heavy alcohol users, or **about 1 in 20 overall.**

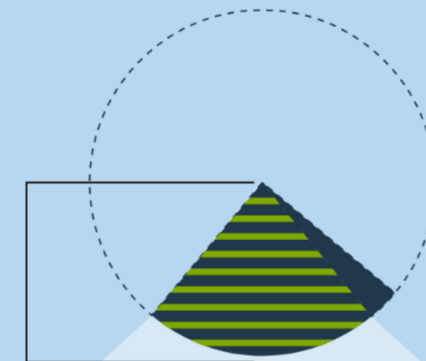
Results from the 2022 National Survey on Drug Use and Health: A Companion Infographic

Substance Use

Illicit Drug Use in the Past Year

NSDUH asked respondents aged 12 or older about their use of drugs in the 12 months before the interview.

70.3 million
1 in 4
(24.9%) used
illicit drugs in
the past year.



24.7 million
(8.8%) used illicit drugs
other than marijuana in
the past year.

61.9 million
(22%) used marijuana
in the past year.

Substance Use Disorder

Drug Use Disorder | Opioid Use Disorder | Alcohol Use Disorder in the Past Year

NSDUH asked respondents aged 12 or older about the effects of their drug or alcohol use on their lives in the 12 months before the interview.



Substance Use Disorder (SUD)

48.7 million (17.3%)

Among people aged 12 or older, about 17% had an SUD in the past year.

FACING ADDICTION IN AMERICA

The Surgeon General's Report on Alcohol, Drugs, and Health

A Vision for the Future



#FacingAddiction

Surgeon General Issues Landmark Report on Alcohol, Drugs and Health

Announcement

Thursday, November 17, 2016

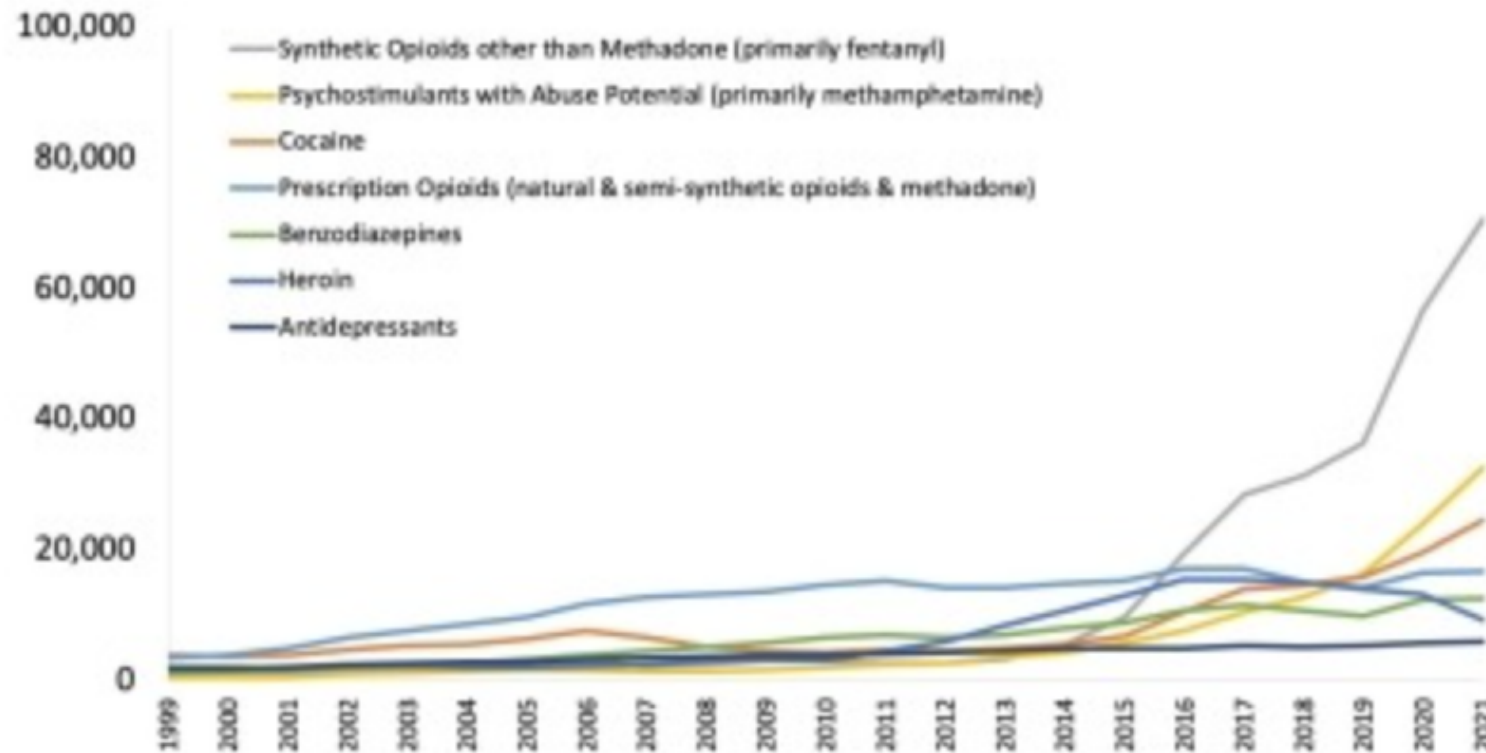
"How we respond to this crisis is a test for America"

A new Surgeon General's report finds alcohol and drug misuse and severe substance use disorders, commonly called addiction, to be one of America's most pressing public health concerns. Nearly 21 million Americans – more than the number of people who have all cancers combined – suffer from substance use disorders.

"Alcohol and drug addiction take an enormous toll on individuals, families, and communities," said U.S. Surgeon General Dr. Vivek Murthy. "Most Americans know someone who has been touched by an alcohol or a drug use disorder. Yet 90 percent of people with a substance use disorder are not getting treatment. That has to change."



Figure 2. National Drug-Involved Overdose Deaths*, Number Among All Ages, 1999-2021

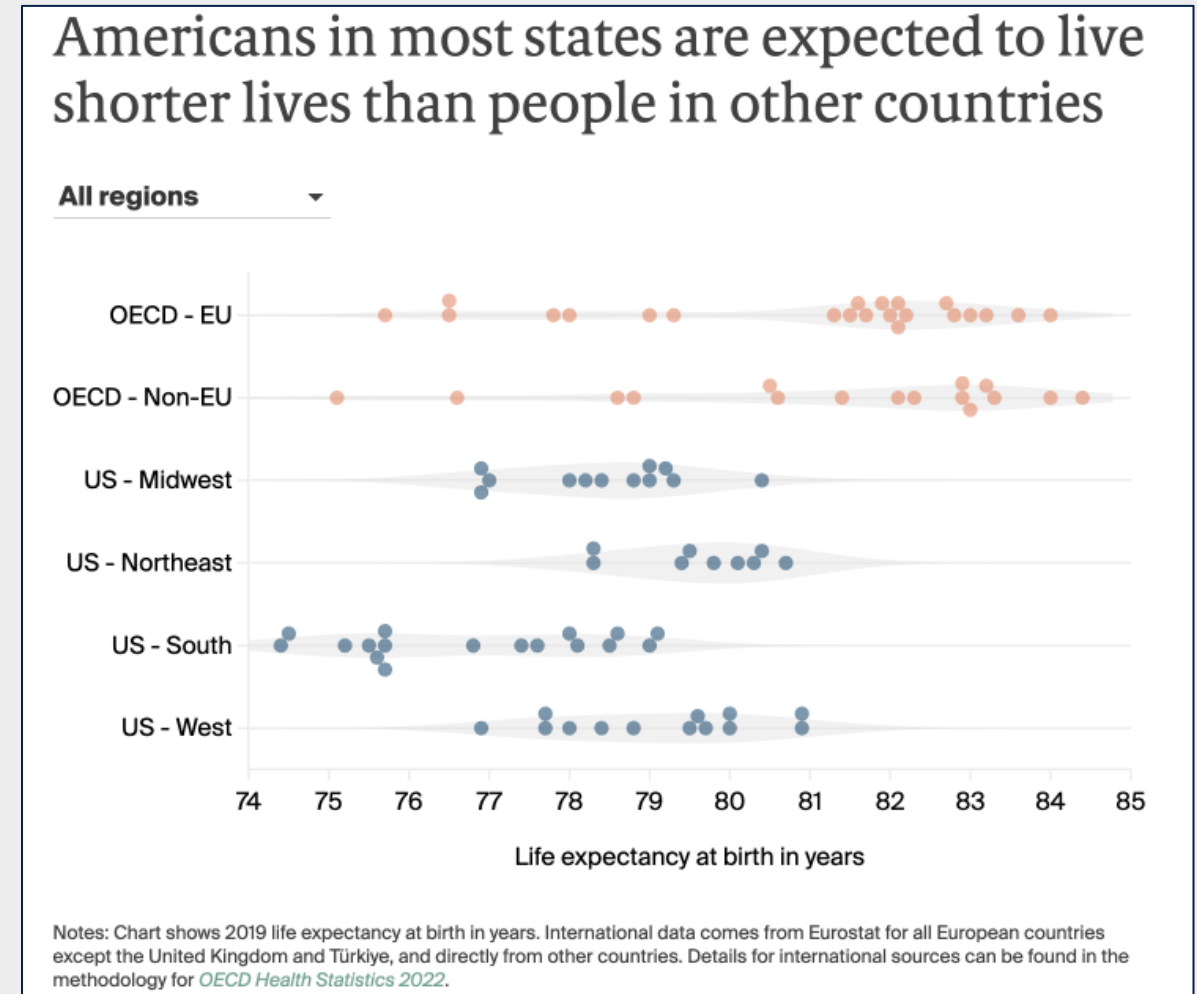


*Includes deaths with underlying causes of unintentional drug poisoning [X40–X44], suicide drug poisoning [X60–X64], homicide drug poisoning [X85], or drug poisoning of undetermined intent [Y10–Y14], as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999–2021 on CDC WONDER Online Database, released 1/2023.

- The US is experiencing the most significant drug overdose epidemic in history:
 - **107,573 drug overdose deaths during the 12-month period ending in December 2022**

Costs of Unhealthy Substance Use

- Data from CDC show that opioid use disorder and opioid overdose alone cost the United States \$1.02 trillion in 2017



Evidence-Based Prevention

- Evidence-based prevention interventions, carried out before the need for treatment, can delay early use and stop the progression from use to problematic use



SAMHSA. *Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health*. 2016

Risk Factors for Adolescent and Young Adult Substance Use

Risk Factors	Definition	Adolescent Substance Use	Young Adult Substance Use
Individual/Peer			
Early initiation of substance use ^{46,47}	Engaging in alcohol or drug use at a young age.	✓	✓
Early and persistent problem behavior ^{48,49}	Emotional distress, aggressiveness, and "difficult" temperaments in adolescents.	✓	
Rebelliousness ^{48,50}	High tolerance for deviance and rebellious activities.	✓	✓
Favorable attitudes toward substance use ^{51,52}	Positive feelings towards alcohol or drug use, low perception of risk.	✓	✓
Peer substance use ⁵³⁻⁵⁵	Friends and peers who engage in alcohol or drug use.	✓	✓
Genetic predictors ⁵⁶	Genetic susceptibility to alcohol or drug use.	✓	✓

Table 1: Risk Factors for Adolescent and Young Adult Substance Use

Risk Factors	Definition	Adolescent Substance Use	Young Adult Substance Use
Family			
Family management problems (monitoring, rewards, etc.) ⁵⁷⁻⁶⁰	Poor management practices, including parents' failure to set clear expectations for children's behavior, failure to supervise and monitor children, and excessively severe, harsh, or inconsistent punishment.	✓	✓
Family conflict ⁶¹⁻⁶³	Conflict between parents or between parents and children, including abuse or neglect.	✓	✓
Favorable parental attitudes ^{64,65}	Parental attitudes that are favorable to drug use and parental approval of drinking and drug use.	✓	✓
Family history of substance misuse ^{66,67}	Persistent, progressive, and generalized substance use, misuse, and use disorders by family members.	✓	✓

Risk Factors for Adolescent and Young Adult Substance Use

Risk Factors	Definition	Adolescent Substance Use	Young Adult Substance Use
School			
Academic failure beginning in late elementary school ^{68,69}	Poor grades in school.	✓	✓
Lack of commitment to school ^{70,71}	When a young person no longer considers the role of the student as meaningful and rewarding, or lacks investment or commitment to school.	✓	✓

Risk Factors for Adolescent and Young Adult Substance Use

Risk Factors	Definition	Adolescent Substance Use	Young Adult Substance Use
Community			
Low cost of alcohol ^{30,72}	Low alcohol sales tax, happy hour specials, and other price discounting.	✓	✓
High availability of substances ^{73,74}	High number of alcohol outlets in a defined geographical area or per a sector of the population.	✓	✓
Community laws and norms favorable to substance use ^{75,76}	Community reinforcement of norms suggesting alcohol and drug use is acceptable for youth, including low tax rates on alcohol or tobacco or community beer tasting events.	✓	✓
Media portrayal of alcohol use ⁷⁷⁻⁷⁹	Exposure to actors using alcohol in movies or television.	✓	
Low neighborhood attachment ^{80,81}	Low level of bonding to the neighborhood.	✓	
Community disorganization ^{82,83}	Living in neighborhoods with high population density, lack of natural surveillance of public places, physical deterioration, and high rates of adult crime.	✓	
Low socioeconomic status ^{84,85}	A parent's low socioeconomic status, as measured through a combination of education, income, and occupation.	✓	
Transitions and mobility ^{80,86}	Communities with high rates of mobility within or between communities.	✓	

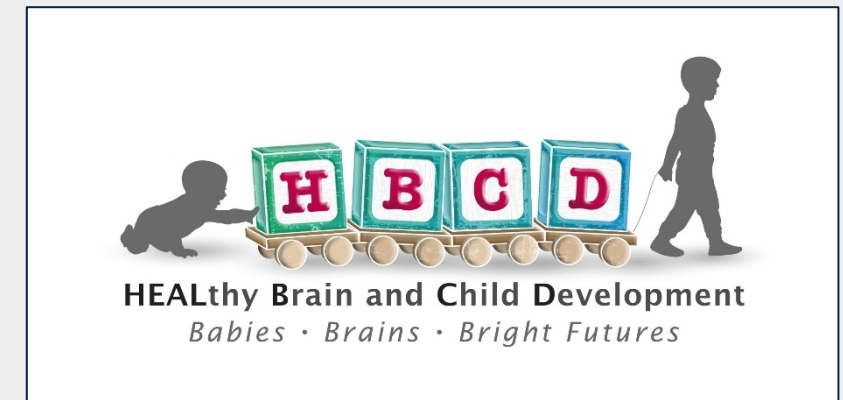
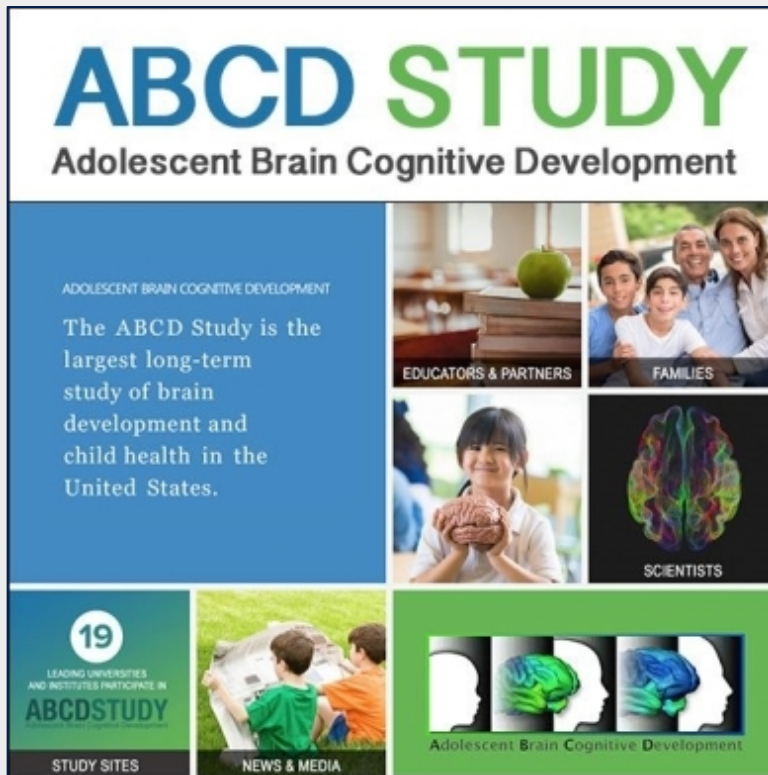
Table 3.2: Protective Factors for Adolescent and Young Adult Substance Use

Protective Factors	Definition	Adolescent Substance Use	Young Adult Substance Use
Individual			
Social, emotional, behavioral, cognitive, and moral competence ^{87,88}	Interpersonal skills that help youth integrate feelings, thinking, and actions to achieve specific social and interpersonal goals.	✓	✓
Self-efficacy ^{89,90}	An individual's belief that they can modify, control, or abstain from substance use.	✓	✓
Spirituality ^{91,92}	Belief in a higher being, or involvement in spiritual practices or religious activities.	✓	✓
Resiliency ⁸⁸	An individual's capacity for adapting to change and stressful events in healthy and flexible ways.	✓	✓
Family, School, and Community			
Opportunities for positive social involvement ^{93,94}	Developmentally appropriate opportunities to be meaningfully involved with the family, school, or community.	✓	✓
Recognition for positive behavior ⁵¹	Parents, teachers, peers and community members providing recognition for effort and accomplishments to motivate individuals to engage in positive behaviors in the future.	✓	✓
Bonding ⁹⁵⁻⁹⁷	Attachment and commitment to, and positive communication with, family, schools, and communities.	✓	✓
Marriage or committed relationship ⁹⁸	Married or living with a partner in a committed relationship who does not misuse alcohol or drugs.		✓
Healthy beliefs and standards for behavior ^{51,99}	Family, school, and community norms that communicate clear and consistent expectations about not misusing alcohol and drugs.	✓	✓

Note: These tables present some of the key risk and protective factors related to adolescent and young adult substance initiation and misuse.

Evidence-Based Prevention

- Most risk factors and protective factors are modifiable through preventive programs and policies that reduce vulnerability at multiple levels: federal, state, community, family, school, and individual levels



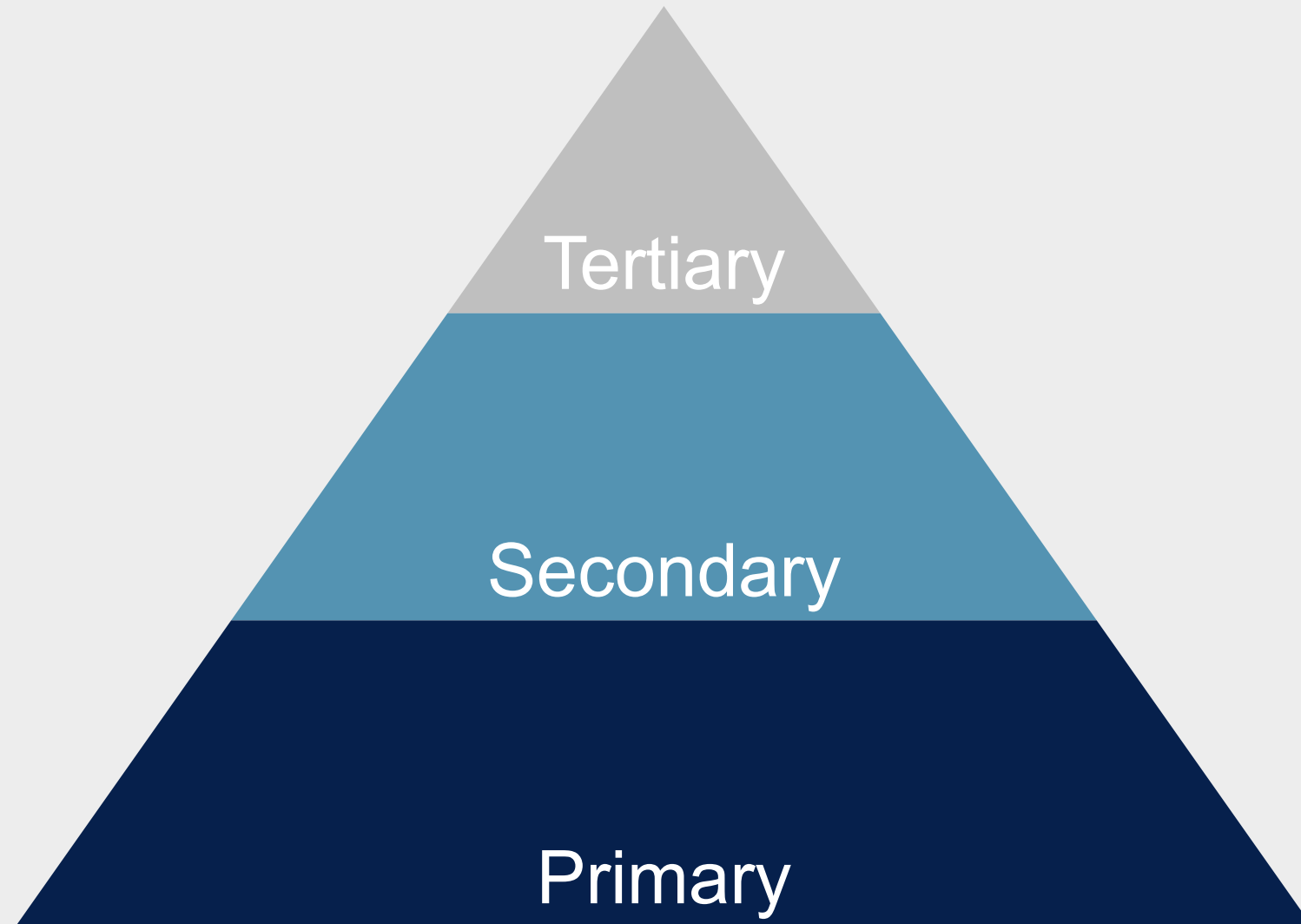
The Public Health Systems Approach



Priorities of Research on Prevention of Substance Use Problems

- Identifying and targeting biological factors
- Identifying risk and protective factors for substance use and misuse, substance use disorders, and related health and safety problems
- Enhancing people's resilience and buffering against stressors to help prevent substance use and promote healthy behaviors across the lifespan.
- Developing strategies to prevent substance use and the progression of substance use to harmful use
- Understanding why and how effective prevention approaches work and improving their uptake and reach.
- Developing tailored prevention strategies to help underserved or low-resource populations with risk factors for substance use and related health problems.
- Supporting research to evaluate effective harm reduction approaches
- Addressing stigma towards people who use drugs.
- Including local partners, end users, and potential funders in the research process, including the development and testing of potential strategies, and ways to communicate findings.

Public Health Frameworks: Tiers of Prevention

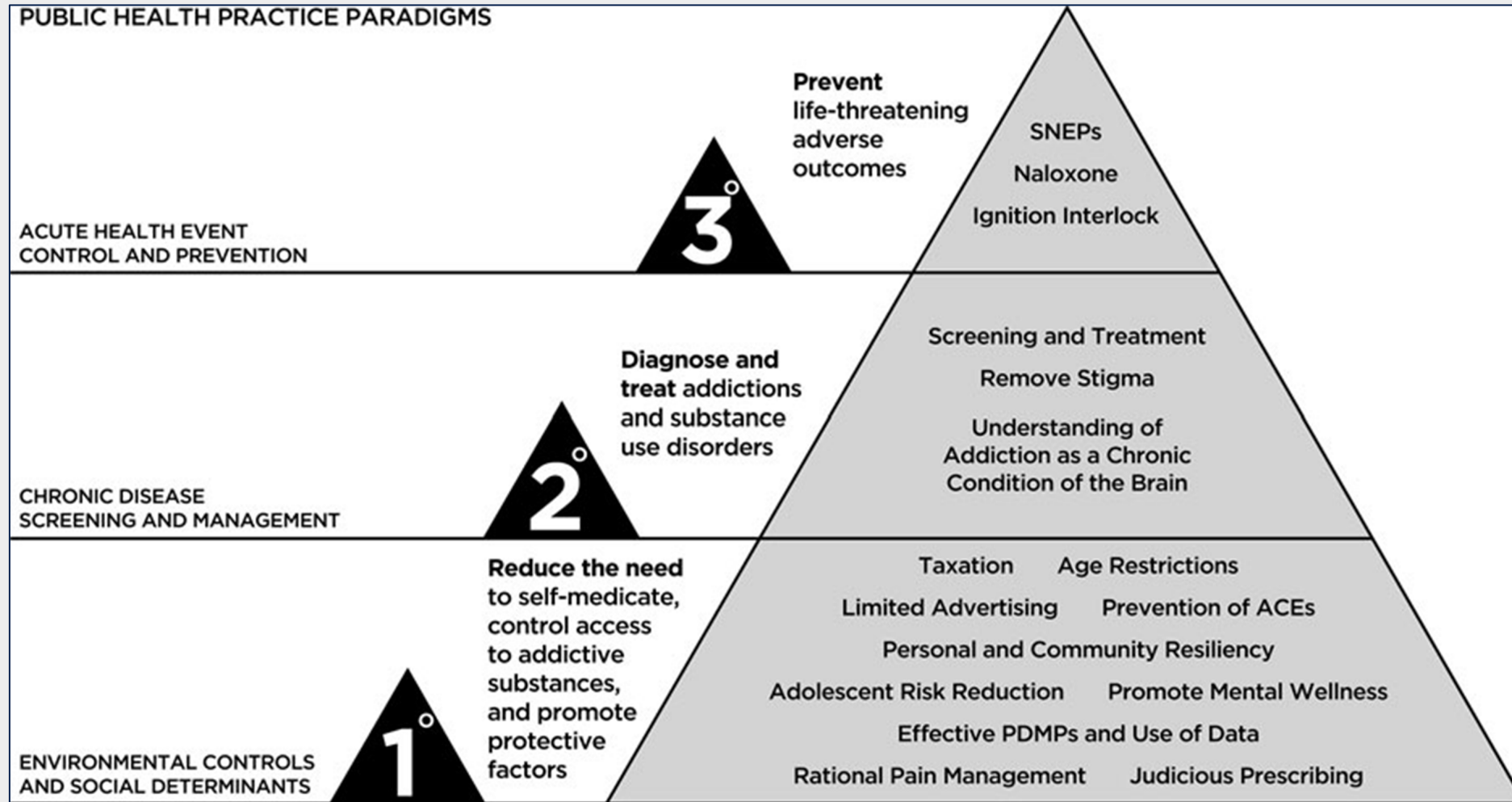


<https://www.iwh.on.ca/what-researchers-mean-by/primary-secondary-and-tertiary-prevention>

Levels of Prevention

- **Primary prevention** aims to prevent disease or injury before it ever occurs
- **Secondary prevention** aims to reduce the impact of a disease or injury that has already occurred
- **Tertiary prevention** aims to soften the impact of an ongoing illness or injury that has lasting effects

Public Health Approaches to Preventing Substance Use Problems



Butler JC. 2017 ASTHO President's Challenge: Preventing Substance Misuse and Addiction. *J Public Health Manag Pract.* 2017;23(5):531-536.

Institute of Medicine Intervention Classifications

- **Universal:** broad approaches for the public or everyone
- **Selective:** strategies aimed at a subgroup determined to be at the highest risk for substance use
- **Indicated:** strategies designed to prevent the onset of substance use problems in individuals who are showing early danger signs



Harm Reduction

- Programs aimed toward minimizing negative health, social and legal impacts associated with drug use while grounded in human rights



Harm Reduction Services

- Overdose reversal education and training services
- Navigation services to ensure linkage to HIV and viral hepatitis prevention, testing, treatment and care services, including antiretroviral therapy for HCV and HIV, pre-exposure prophylaxis (PrEP), post-exposure prophylaxis (PEP), prevention of mother to child transmission and partner services
- Referral to hepatitis A and hepatitis B vaccinations to reduce risk of viral hepatitis infection
- Provision of education on HIV and viral hepatitis prevention, testing, and referral to treatment services
- Provision of information on local resources and/or referrals for PrEP

Harm Reduction Supplies

- Overdose reversal supplies, including the purchase of naloxone kits (this may include syringes for the purpose of administering injectable naloxone only)
- Substance test kits, including fentanyl test strips
- Safer sex kits, including condoms
- Sharps disposal and medication disposal kits
- Wound care supplies
- Medication lock boxes
- Supplies to promote sterile injection and reduce infectious disease transmission through injection drug use, exclusive of sterile needles, syringes, and other drug paraphernalia*
- Safer smoking kits to reduce infectious disease transmission, excluding pipes/pipettes and other drug paraphernalia**

Evidence-Based Prevention Interventions

- Programs and policies supported by research that reduce unhealthy substance use and related threats to public health
- Long-term and cost saving benefits
- Prevent other undesirable outcomes among youth: delinquency, psychiatric conditions, violence, and school dropout
- Vast majority of studies have been conducted on children, adolescents, and young adults
- Remain underutilized

School-Based Interventions

- Strong study habits, academic support, bonding to school, self-efficacy and assertiveness, social problem-solving, emotional awareness and strong communication skills are correlated with decreasing risk of future drug use among youth
- Focus on building social, emotional, cognitive, and substance refusal skills and provide accurate information on rates and amounts of peer substance use

School-Based Interventions

- Good Behavior Game
 - Classroom-centered Intervention
 - The Fast track Program
 - Life Skills Training
-
- Delayed and lowered rates of alcohol, tobacco, and other substance use in adulthood



Family-Based Interventions

- Focus on enhancing parenting skills
 - Nurse-Family Partnership
 - Strengthening Families Program: for Parents and Youth
 - Coping power
 - I Hear What You're Saying
 - Parent Handbook
- Reduce early alcohol and substance use



Healthcare-Based Interventions

- Brief alcohol screening:
 - associated with significant reductions in alcohol consumption and alcohol-related problems in both adults and adolescents
 - recommended by USPSTF and American Academy of Pediatrics
- Motivational interviewing
 - associated with reductions in drinking



Community Coalition-Based Interventions

- Change community-level physical, social and economic risk and protective factors
- Composed of representatives from multiple community sectors or organizations- government, law enforcement, health, and education
- Achieve community- wide reductions in substance use by planning and implementing prevention strategies

Community Coalition-Based Interventions

- Communities that Care: community coalition tailors interventions to results of high school survey
 - associated with lower rates of alcohol and tobacco initiation in high school
- Communities Mobilizing for Change on Alcohol: aimed at reducing youth access to alcohol, increased enforcement of underage drinking laws, reduced availability of alcohol at community events, and media campaigns against underage drinking
 - associated with significant reductions in alcohol-related problem behaviors in young adults including DUIs

Drinking-Oriented Interventions

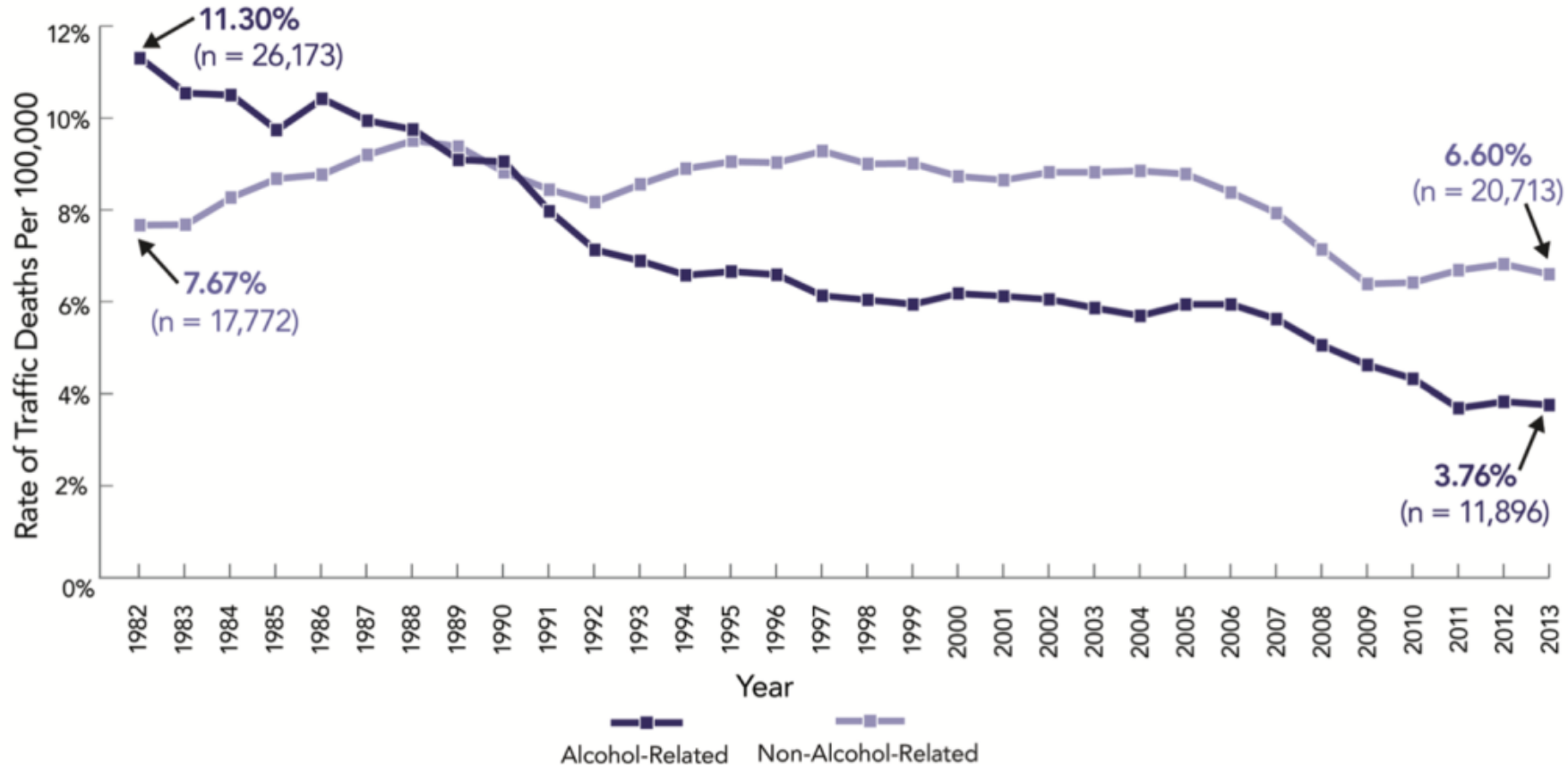
- Policies that reduce alcohol availability and increase the costs of alcohol have immediate benefits in reducing drinking and harms from alcohol use:
 - Decrease morbidity
 - Decrease mortality
 - Decrease crime and violence
- Drinking-oriented policies include:
 - Raising alcohol taxes
 - Reducing alcohol production
 - Reducing alcohol sales
 - Preventing alcohol sales to minors

Driving-Oriented Interventions

- Policies that prevent an intoxicated person from driving have been found to:
 - Reduce rates of drinking and driving
 - Traffic crashes
 - Injuries
 - Deaths
- Driving-oriented policies include:
 - Driving under influence (DUI) blood alcohol content (BAC) limits
 - Sobriety checkpoints
 - Lower BAC limits for people convicted of DUI
 - Mandatory assessment and treatment of persons convicted of DUI
 - Raising minimum legal drinking age
 - Zero tolerance laws
 - Use/lose laws

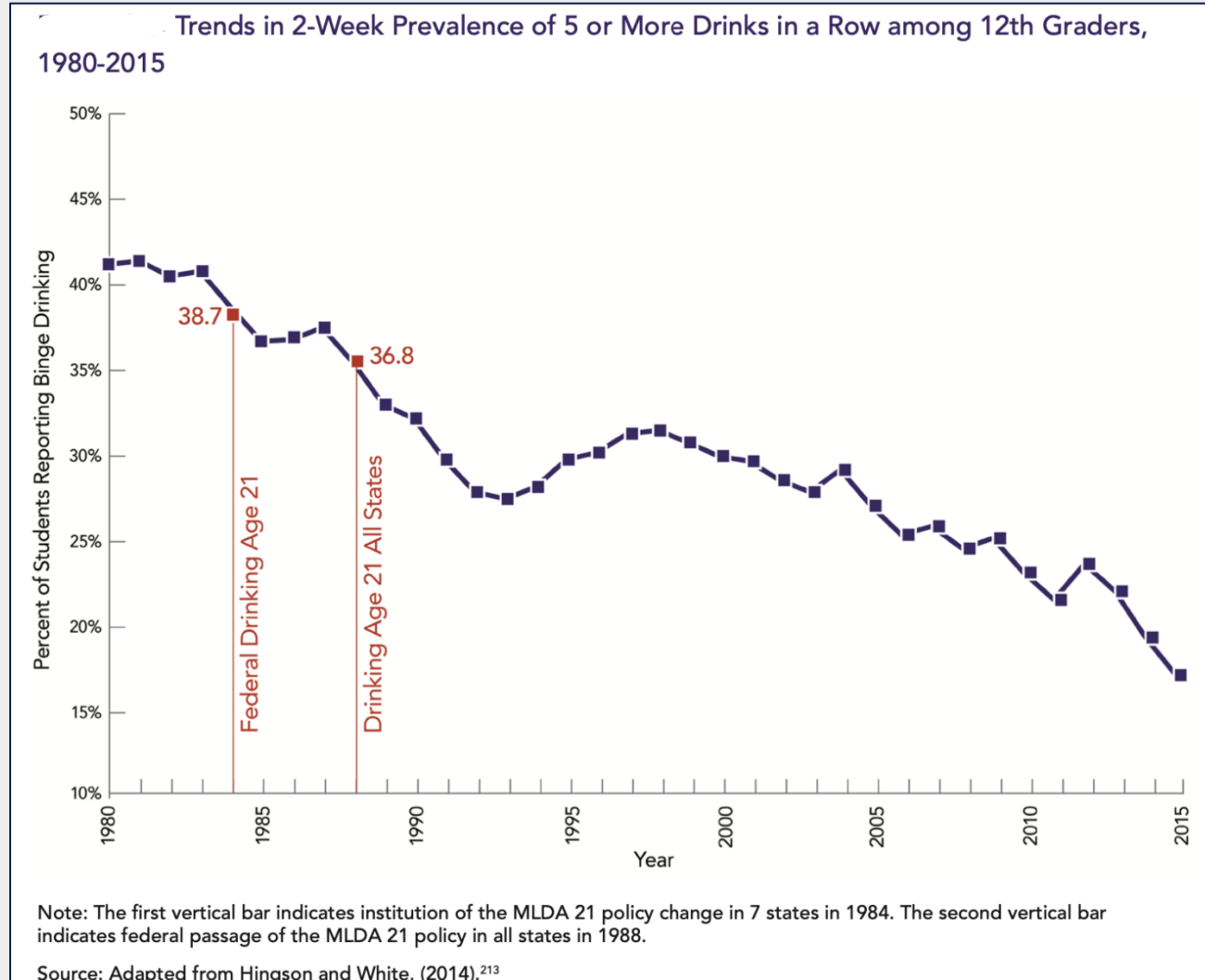
Driving-oriented Prevention Policies

Figure 32 Alcohol- Versus Non-alcohol-related Traffic Deaths, Rate per 100,000, All Ages, United States, 1982-2013



Source: Adapted from Hingson and White, (2014).²¹³

Driving-oriented Prevention Policies



Overall Benefits of Prevention Interventions

- Cost saving benefits for personal and public health
- Long-term positive effects that can last for generations

Economics of Prevention

The Washington State Institute for Public Policy developed a standardized model using scientifically rigorous standards to estimate the costs and benefits associated with various prevention programs. Benefit-per-dollar cost ratios for EBIs ranged from small returns per dollar invested to more than \$64 for every dollar invested. These estimates are illustrated below in [Table 3.3](#).

Table 3.3: Cost-Benefit of EBIs Reviewed by the Washington State Institute for Public Policy, 2016

Program	Benefit per Dollar Cost
Nurse-Family Partnership	\$1.61
Raising Healthy Children/SSDP	\$4.27
Good Behavior Game	\$64.18
LifeSkills Training	\$17.25
keepin' it REAL	\$11.79
Strengthening Families Program 10-14	\$5.00
Guiding Good Choices	\$2.69
Positive Family Support/ Family Check Up	\$0.62
Project Towards No Drug Abuse	\$6.54
BASICS	\$17.61

*Cost estimates are per participant, based on 2015 United States dollars.

Note: This is a general indication of the potential health and social value of EBIs. It is not possible to estimate specific cost-benefit for every EBI due to challenges in calculating accurate intervention effect sizes, the failure to document costs, the variation of methods used, and few mandates or incentives to complete this research. Reaching a consensus on standards for cost-benefit analyses and making them a routine part of prevention program evaluation could help policymakers choose EBIs that both prevent substance misuse and ensure that investments return benefits over the life course.

Source: Washington State Institute for Public Policy, (2016).¹⁷⁶



Conclusions

- A well-established body of evidence-based interventions exists
- More implementation, systematic monitoring and research are needed

Thank You!
amrajagopal@health.ucsd.edu



Get in Touch



301.656.3920



education@asam.org



www.asam.org