



# *Epidemiology of Alcohol Problems In the United States*

NIAAA Social Work Education

Module 1

(revised 03/04)



# *Objectives*

- A.** Describe demographic characteristics and historical trends of alcohol use, alcohol abuse/dependence and other alcohol-related problems
- B.** Identify the relationship between level of alcohol consumption and health effects
- C.** Recognize the implications of utilizing epidemiological data for early intervention and prevention of alcohol problems, and for evaluating intervention impact




# *Epidemiologic Rates*

- *Incidence Rate* = The rate at which new cases occur in a population during a specific period (e.g., over one year)
- *Prevalence Rate* = The proportion of a cases that exist in a population at a point in time



# *Epidemiologic Approach to Alcohol Problems*

- An ecological model
- Addresses etiology, natural history
- Identifies interaction of vulnerability, risk, and resilience factors
- Study of alcohol use, abuse, and dependence in communities, populations



# *Differing Measures across Studies*

## *“New Case” can be defined as:*

- Age or year of first use or first intoxication

*versus*

- Age of onset of alcohol dependence (age of first experience of any clinical criterion symptoms for diagnosis)

*versus*

- Age of occurrence of the third dependence symptom or age when symptoms first “cluster” (2 or more symptoms in a year)

# Standard Drink Measure

**12 oz. of  
beer or  
cooler**



**12 oz.**

**8-9 oz. of  
malt liquor**

8.5 oz. shown in a 12-oz. glass that, if full, would hold about 1.5 standard drinks of malt liquor



**8.5 oz.**

**5 oz. of  
table wine**



**5 oz.**

**3-4 oz. of  
fortified  
wine**

(such as sherry or port) 3.5 oz. shown



**3.5 oz.**

**2-3 oz. of  
cordial,  
liqueur, or  
aperitif**

2.5 oz. shown



**2.5 oz.**

**1.5 oz. of  
brandy**

(a single jigger)



**1.5 oz.**

**1.5 oz. of  
spirits**

(a single jigger of 80-proof gin, vodka, whiskey, etc.) Shown straight and in a highball glass with ice to show level before adding mixer



**1.5 oz.**

**Note:** People buy many of these drinks in containers that hold multiple standard drinks. For example, malt liquor is often sold in 16-, 22-, or 40 oz. containers that hold between two and five standard drinks, and table wine is typically sold in 25 oz (750 ml.) bottles that hold five standard drinks.



# *Defining Alcohol Consumption*

- Prior to 1970, per capita consumption =  
$$\frac{\text{total alcohol beverage sales}}{\text{total population over age 15 years}}$$
- Since 1970, per capita consumption =  
$$\frac{\text{total alcohol beverage sales}}{\text{total population over age 14 years}}$$
- The 1997 per capita consumption was 2.18 gallons of ethanol per person



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# *Drinking Patterns* (Defined according to quantity & frequency of alcohol consumption)

- Abstainer: has never drank or drinks < once/yr
- Less Frequent: drinks 1-3 times/month and may or may not drink 5 or more drinks at least once/yr
- Frequent: drinks at least once a week and may or may not drink 5 or more drinks at one sitting
- Frequent Heavy Drinker: drinks at least once a week and has 5 or more drinks at one sitting at least once per week



# *Drinking Episodes Defined*

## *(NIAAA Advisory Council Task Force)*

- A drinking “binge” is a pattern of drinking that brings blood alcohol concentrations (BAC) to 0.08 or above.
- Typical adult males: 5 or more drinks in about 2 hours
- Typical adult females: 4 or more
- For some individuals, the number of drinks needed to reach “binge” level BAC is lower

# *Drinking Episodes Defined*

*(National Household Survey)*

- **Binge Drinking** as 5 or more drinks per occasion
- **Heavy alcohol use** as 5 or more drinks for 5 or more days per month





# *Drinking Episodes Defined*

*(NIAAA Advisory Council Task Force)*

- Binge drinking is distinct from:
  - “risky” drinking (reaching a peak BAC between .05 gm% and .08 gm%)
  - a “bender” (2 or more days of sustained heavy drinking)



# *Drinking Episodes Defined*

## *(NIAAA Advisory Council Task Force)*

- People with risk factors for the development of alcoholism have increased risk with any alcohol consumption, even that below a “risky” level.
- For pregnant women, any drinking presents risk to the fetus.
- Drinking by persons under the age of 21 is illegal.
- *“Binge drinking is clearly dangerous for the drinker and society.”*



## *At Risk or Problem Use*

- Drinking above established cut-off limits

AND

- No current problems associated with drinking

OR

- Alcohol use in risky situations



# *Definition of Alcohol Abuse*

Maladaptive alcohol use causes clinically important distress or impairment, shown in a single 12-month period by one or more of the following:

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>• Failure to carry out major obligations at work, home or school because of repeated alcohol use</li><li>• Repeated use of alcohol even when it's physically dangerous to do so.</li></ul> | <ul style="list-style-type: none"><li>• Repeated experience of legal problems</li><li>• Continued alcohol use despite knowing that it has caused or worsened social or interpersonal problems</li></ul> |
|--|---|



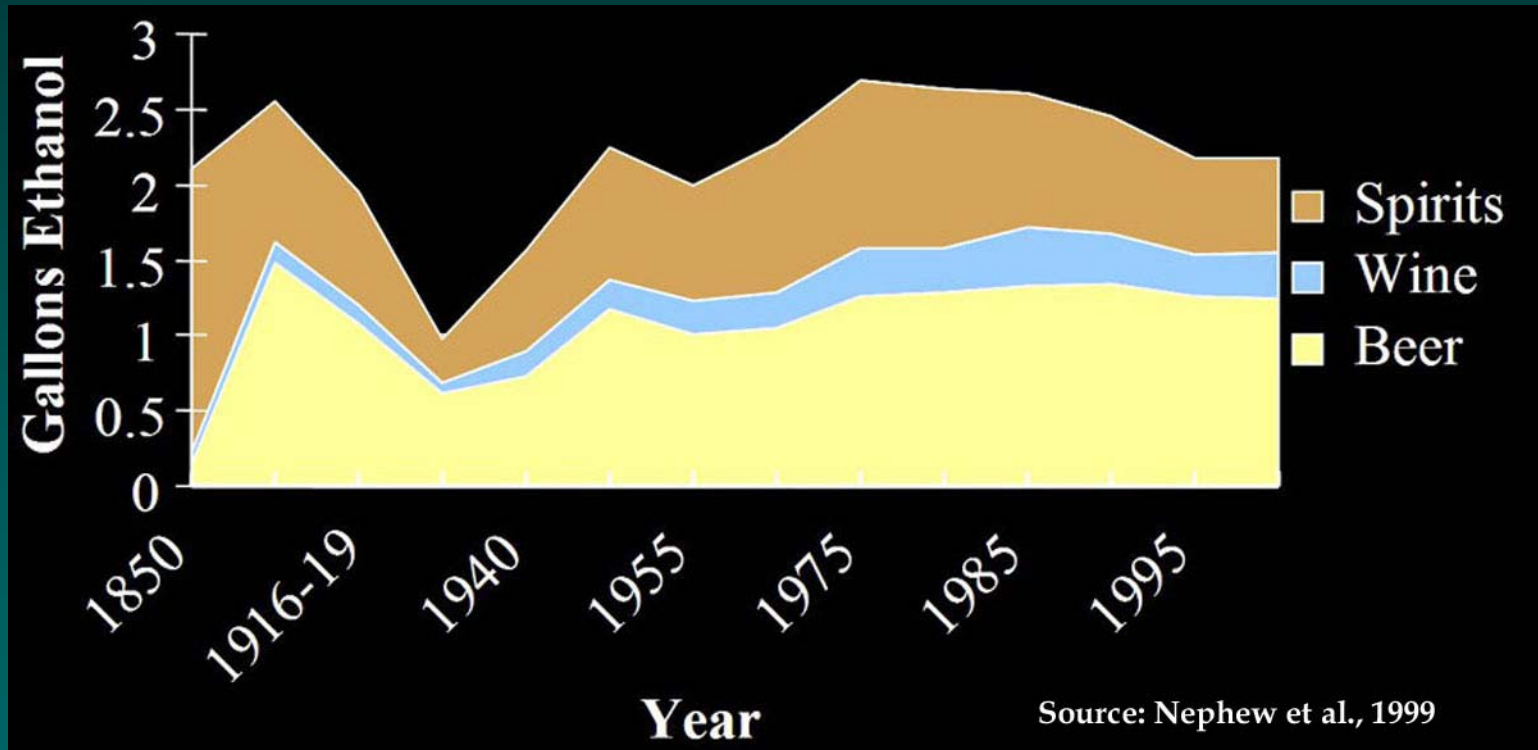
# *Definition of Alcohol Abuse*

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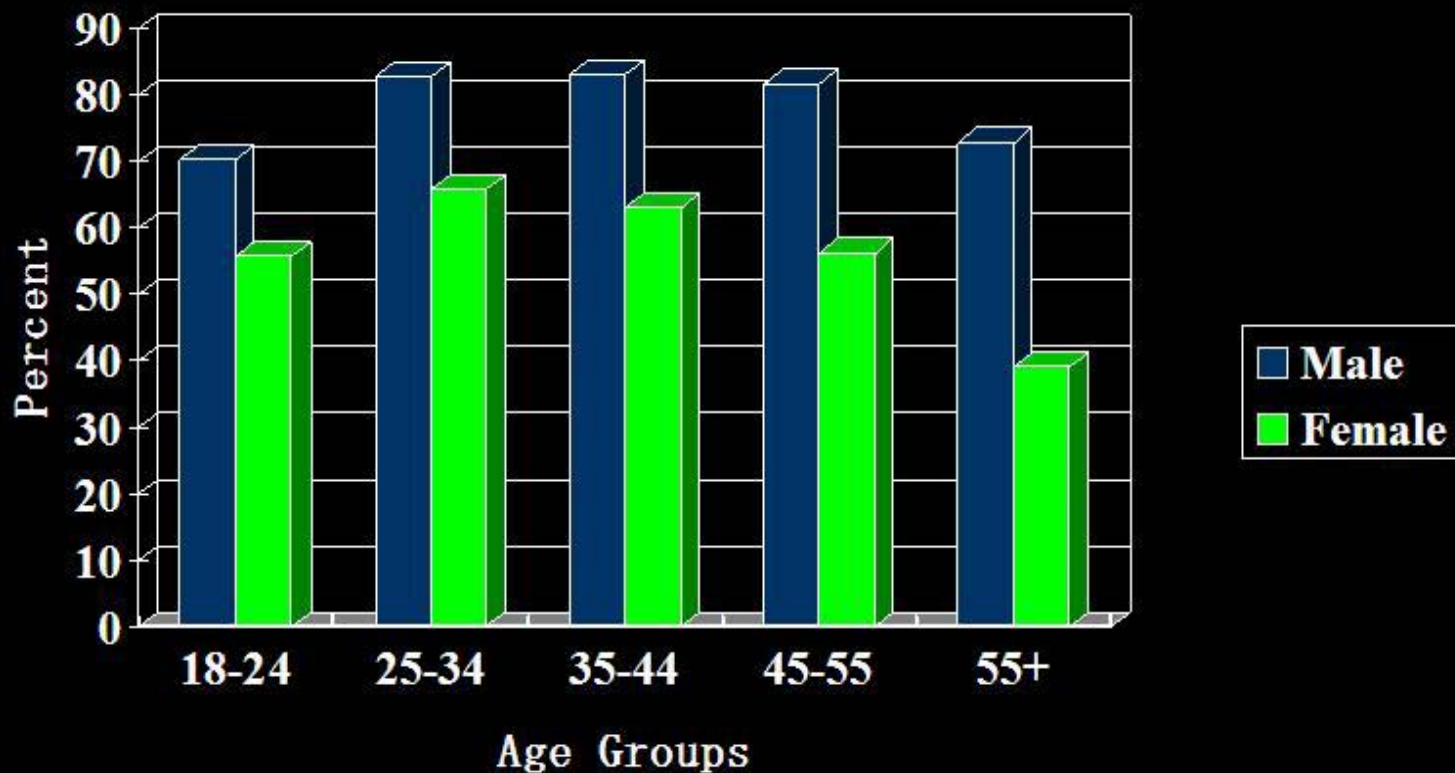
- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Tolerance or withdrawal</li><li>• Amount/duration of use greater than intended.</li><li>• Unsuccessful efforts to control or reduce use</li><li>• Spending much time using alcohol, recovering from its effects, or trying to obtain it.</li></ul> | <ul style="list-style-type: none"><li>• Reducing or abandoning important work, social or leisure activities because of alcohol use.</li><li>• Continued alcohol use despite knowing that it has probably caused ongoing physical or psychological problems</li></ul> |
|--|--|



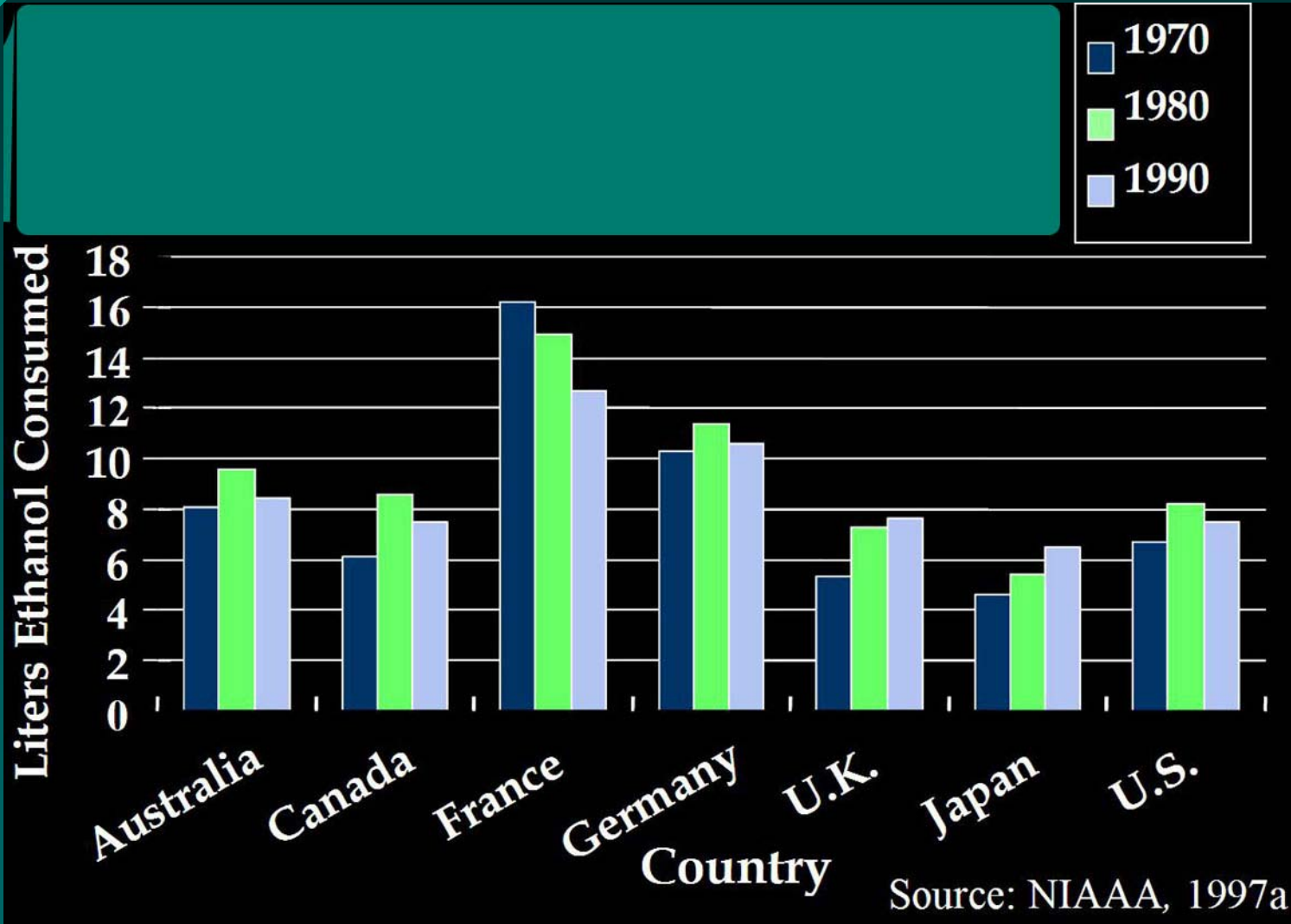
# Historical Trends: 1850-1997



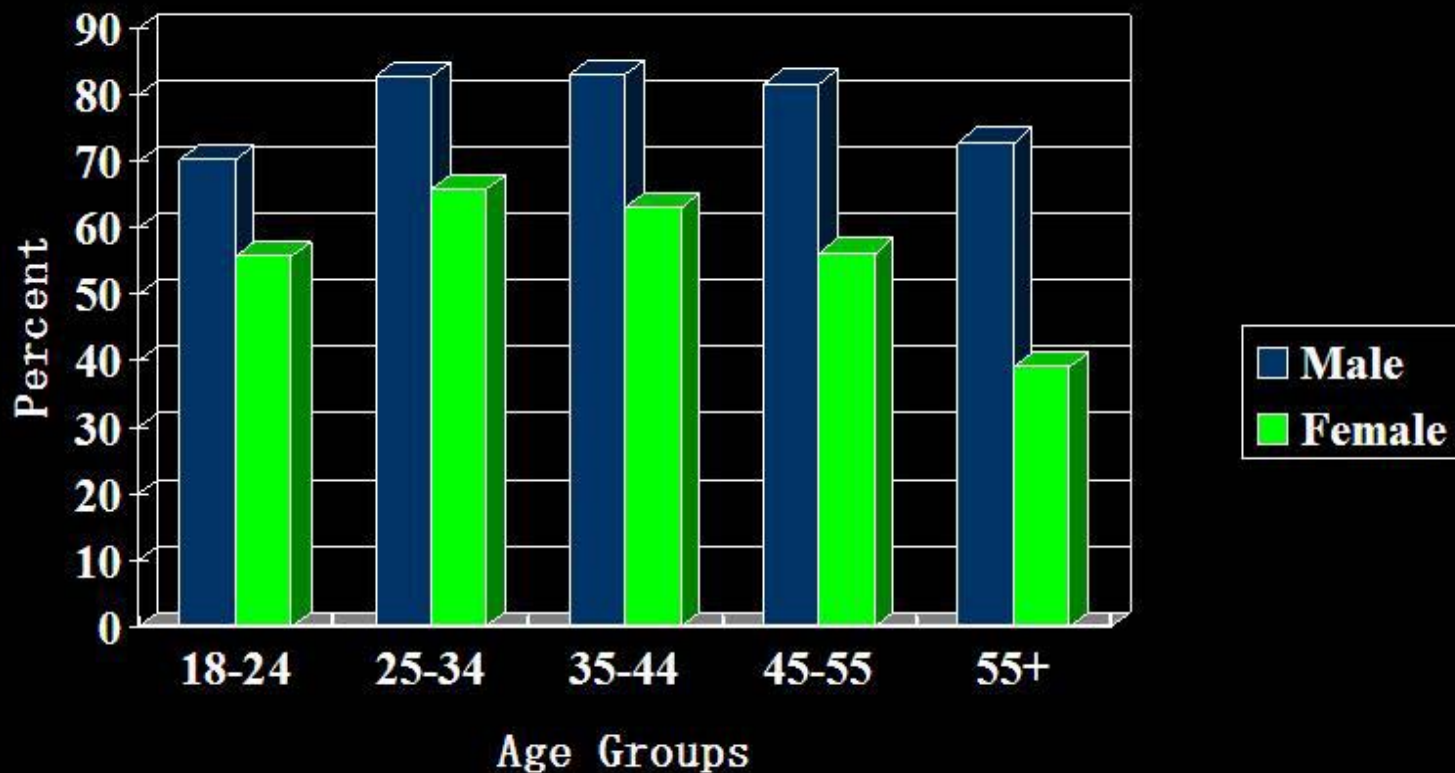
# *Prevalence of Lifetime Alcohol Use by Age and Gender*



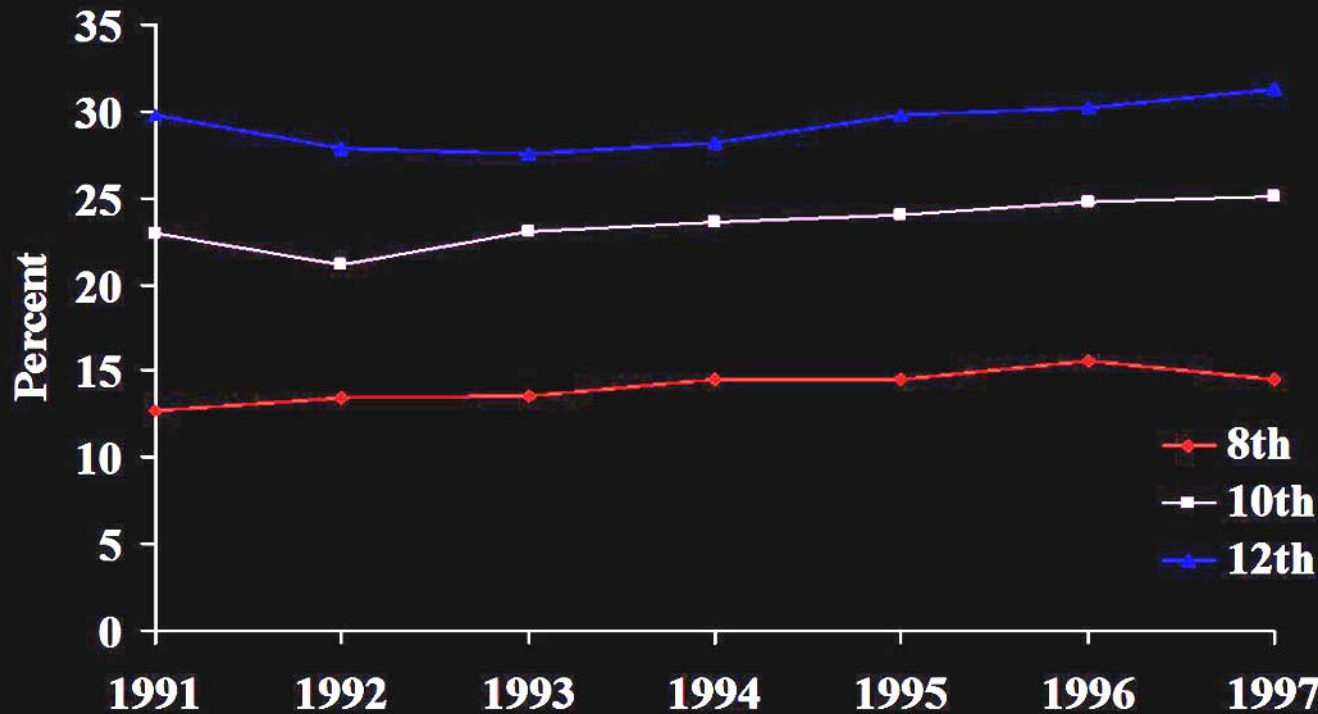
# National Trends



# *Prevalence of Lifetime Alcohol Use by Age and Gender*

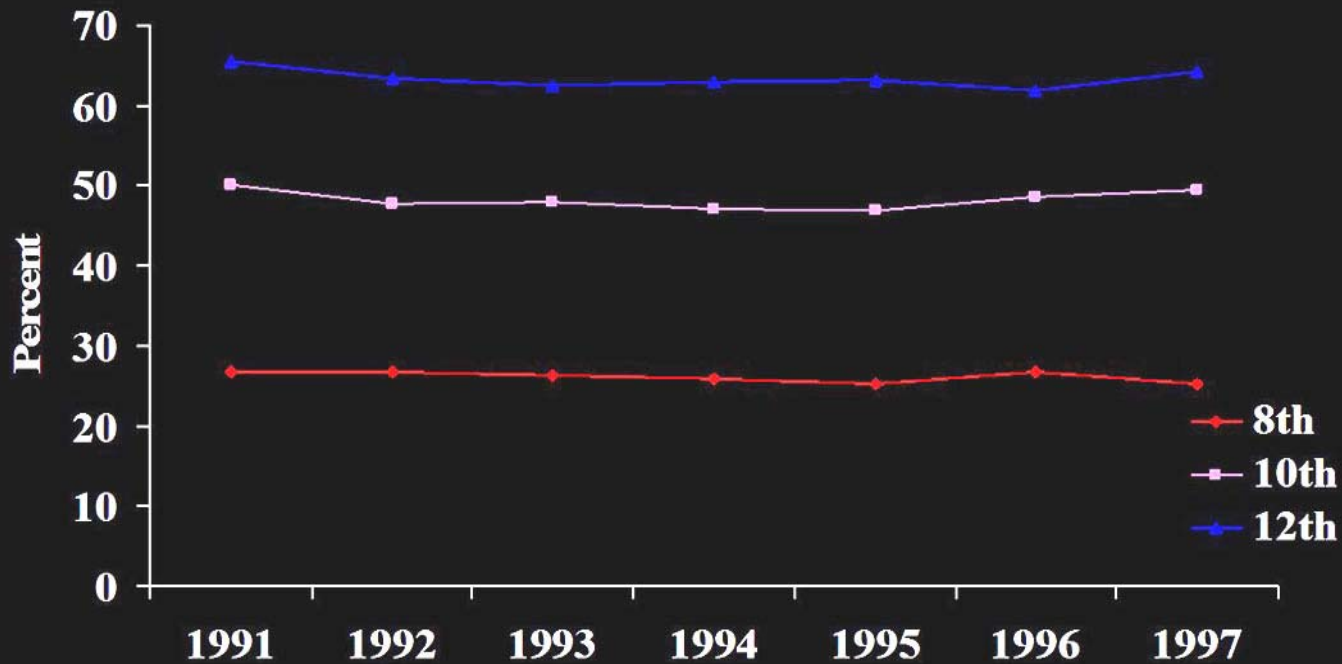


# Age Trends: Heavy Use in Past 30 Days



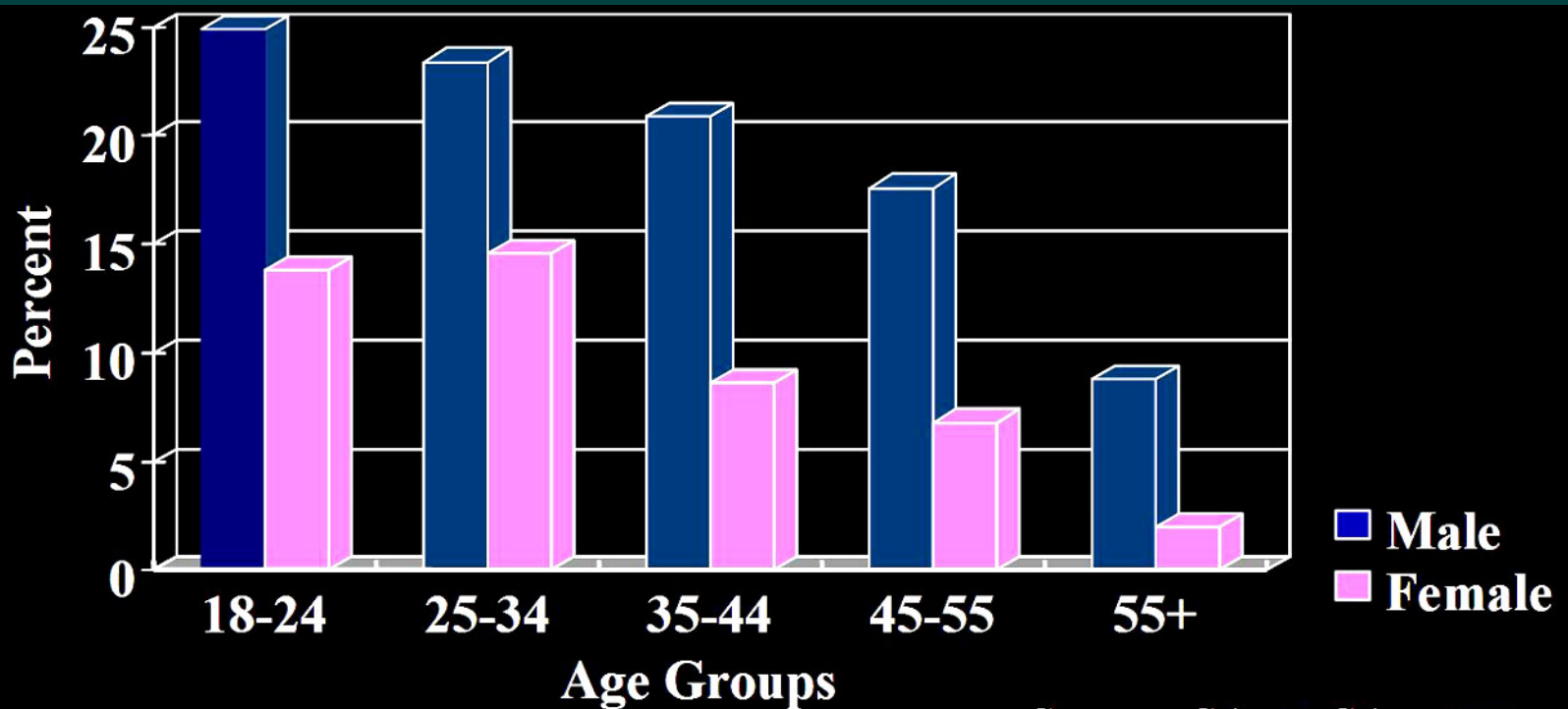
Source: Johnston et al., 1998

# Age Trends: Intoxication



Source: Johnston et al., 1998

# *Prevalence of Lifetime Alcohol Dependence (DSM-IV)*



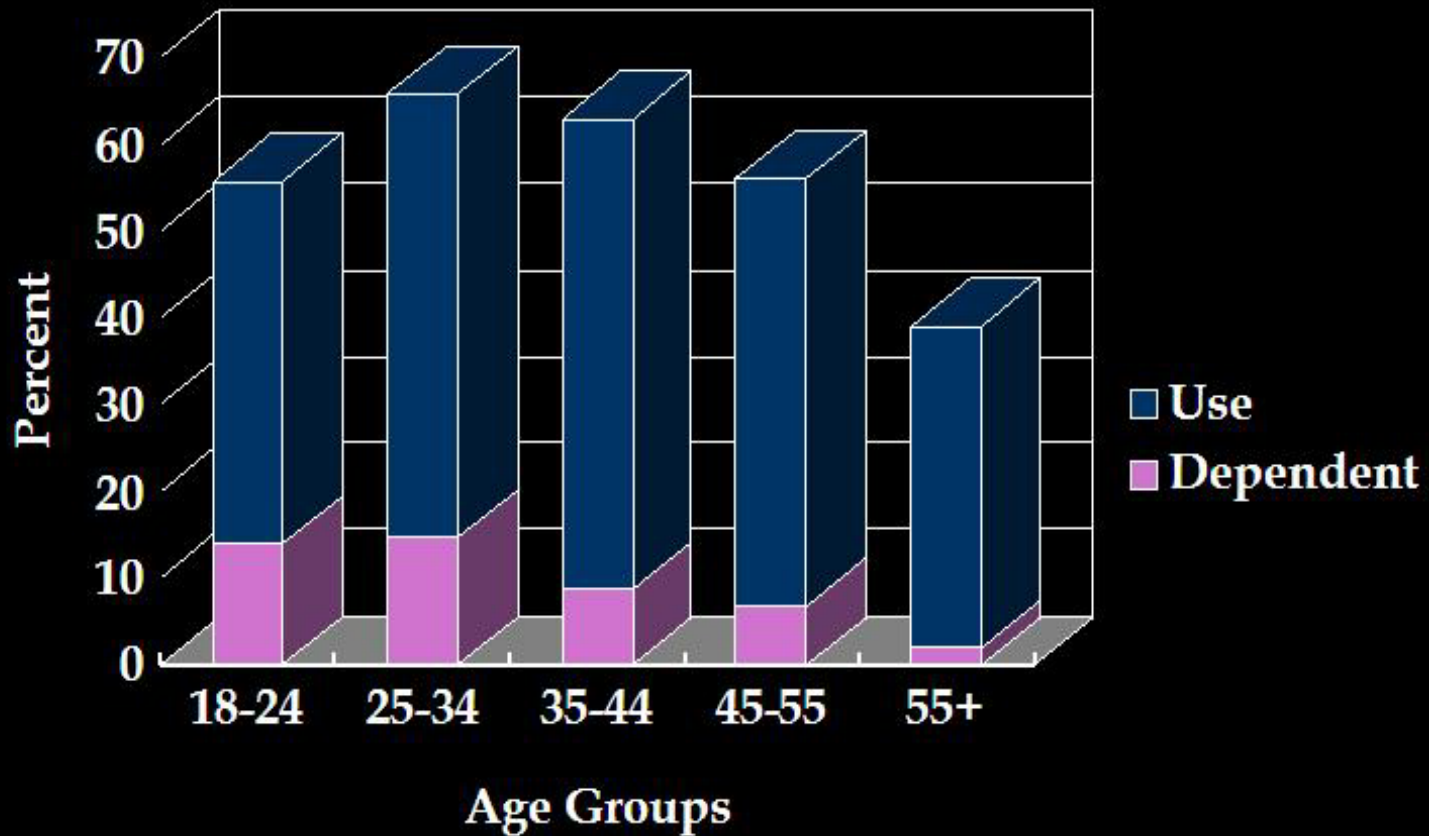
Source: SAMHSA, 2000a

# *Prevalence of Alcohol Use (Men) and Dependence by Age*





# *Prevalence of Alcohol Use (Women) and Dependence by Age*





# *Alcohol Use & Aging Populations*

- National Household Survey on Drug Abuse, 2000

- 1.6% of elders report heavy drinking in past 30 days

- Aging primary care patients

- 15% male, 12% female abuse alcohol

- Community sample 2.2 to 9.6% of elders abuse alcohol

- Hospitalized adults >40: 21% abused alcohol

- SAMHSA TIP Series, '98 Up to 17% of older adults are affected by alcohol and prescription drug problems



# *Additional Risks Related to Alcohol Use and Aging*

- Elderly individuals are more likely to be affected by chronic illness and use of medications.

- Alcohol and prescription drug problems are frequently:

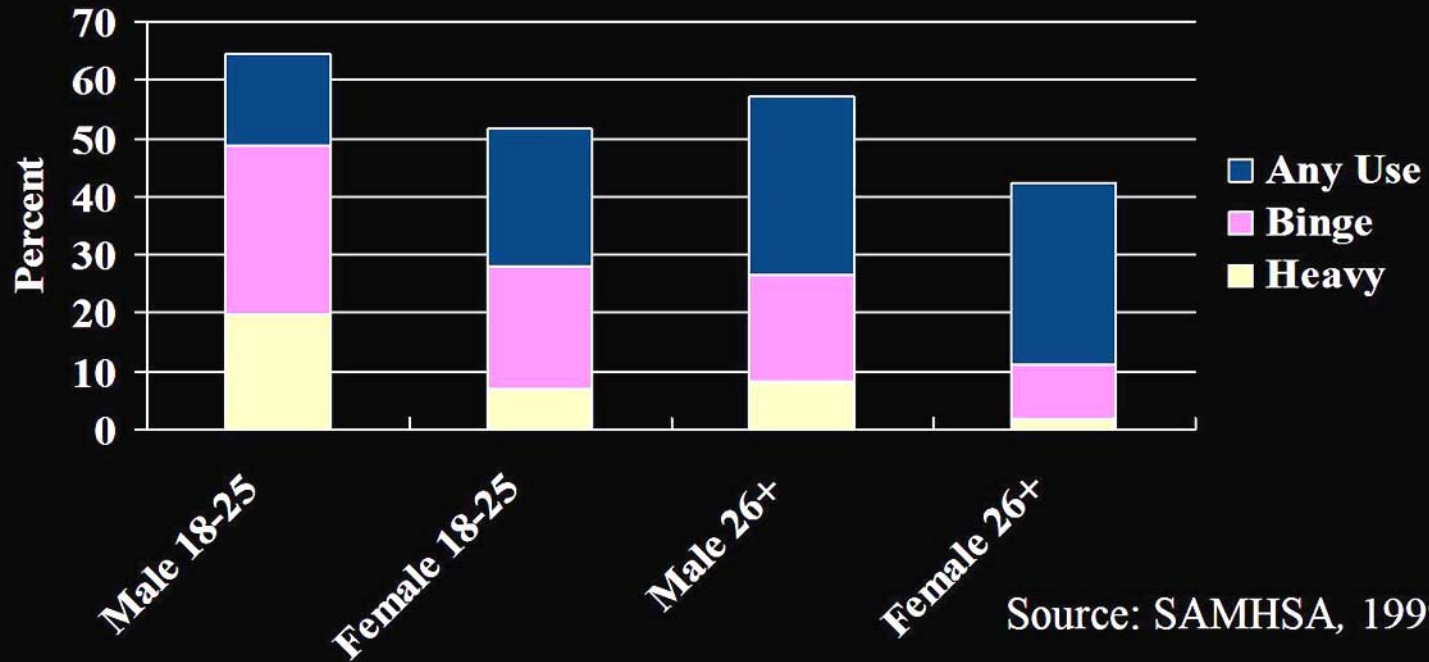
Under-identified

Under-treated

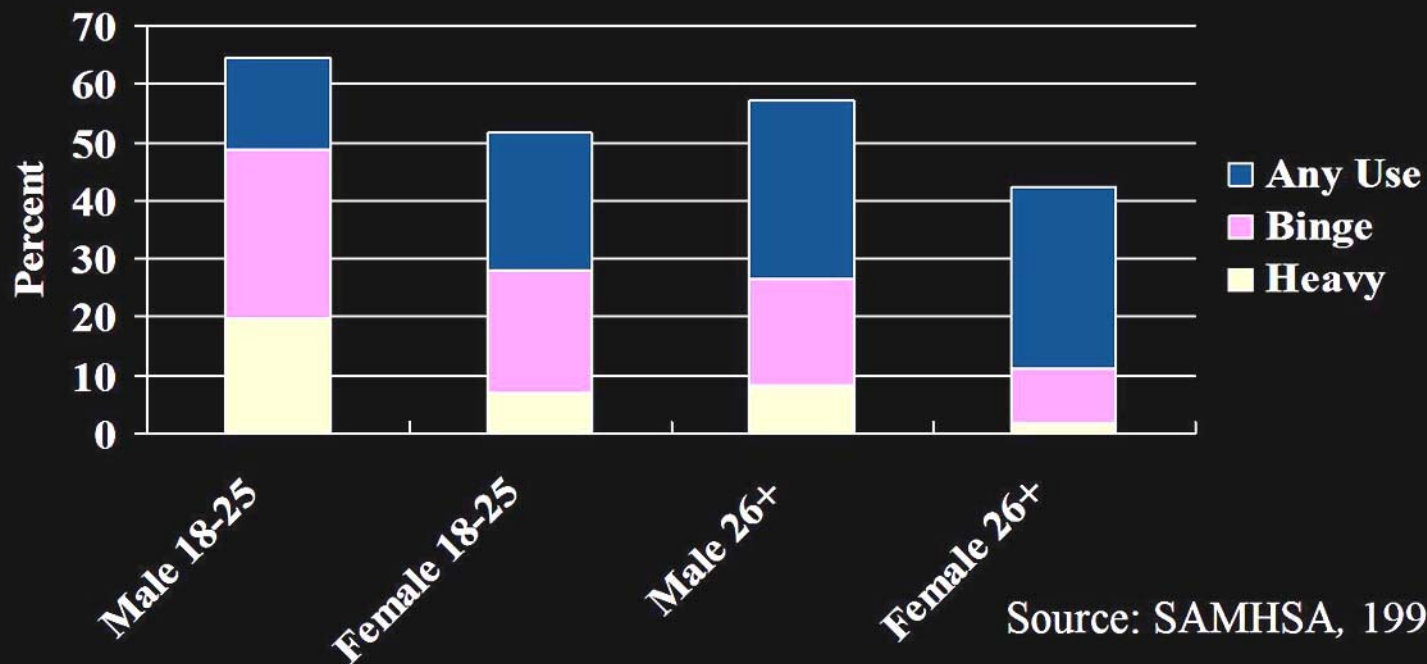
Under-diagnosed

Under-estimated

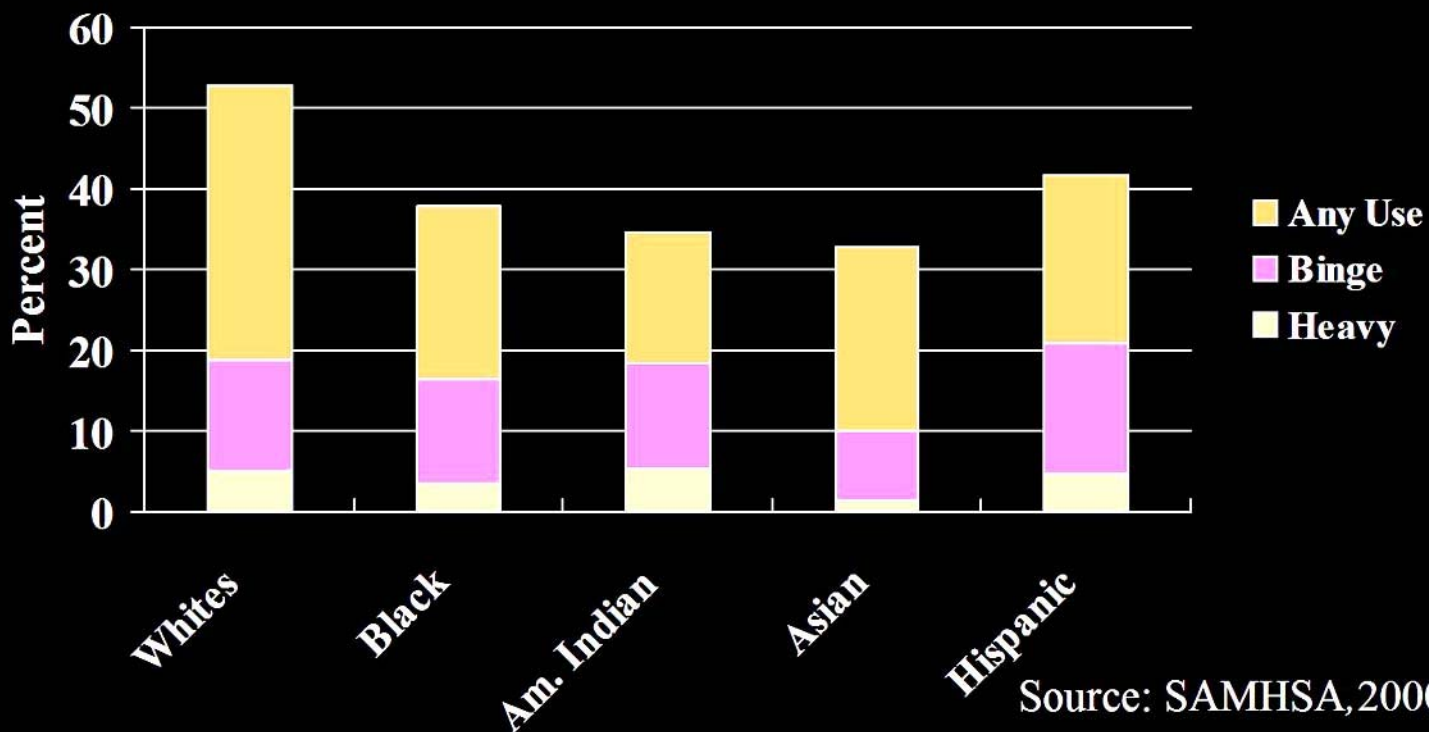
# Age and Gender Interactions



# Past Month Alcohol Use by Ethnicity: Ages 18-25

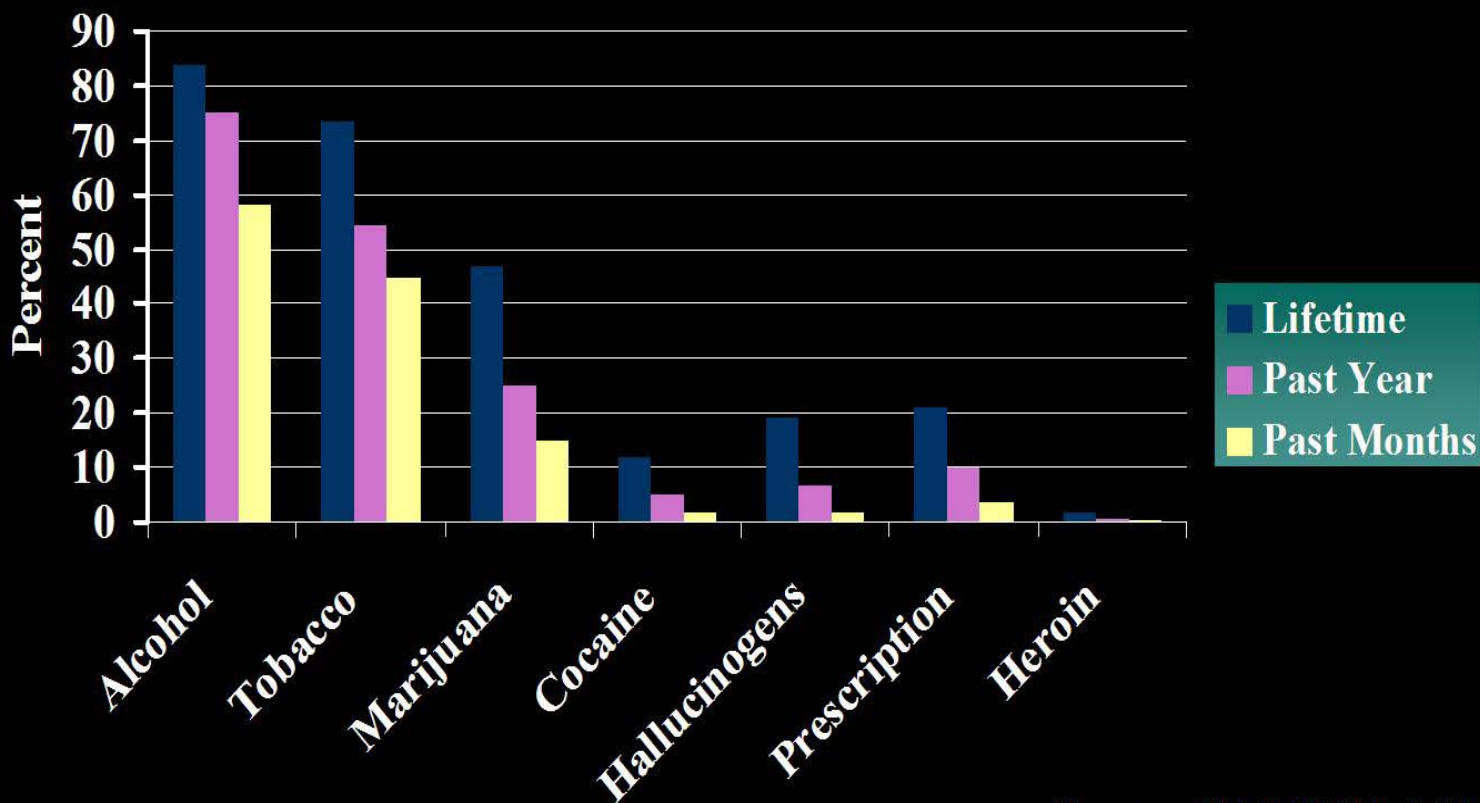


# Past Month Alcohol Use by Ethnicity: Age 26 or Older



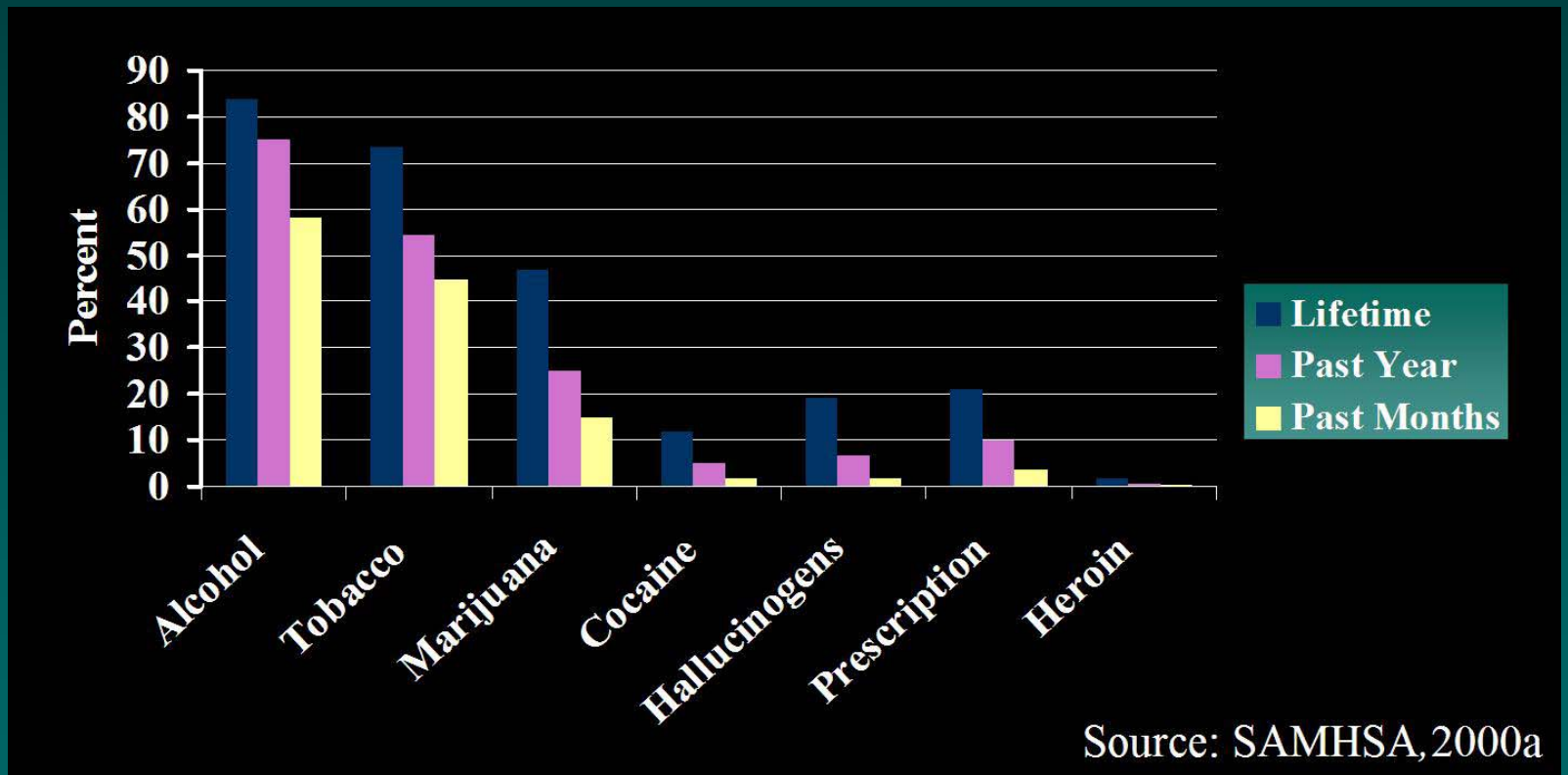
Source: SAMHSA, 2000a

# Use of Alcohol and Other Drugs: 1999 Ages 18-25



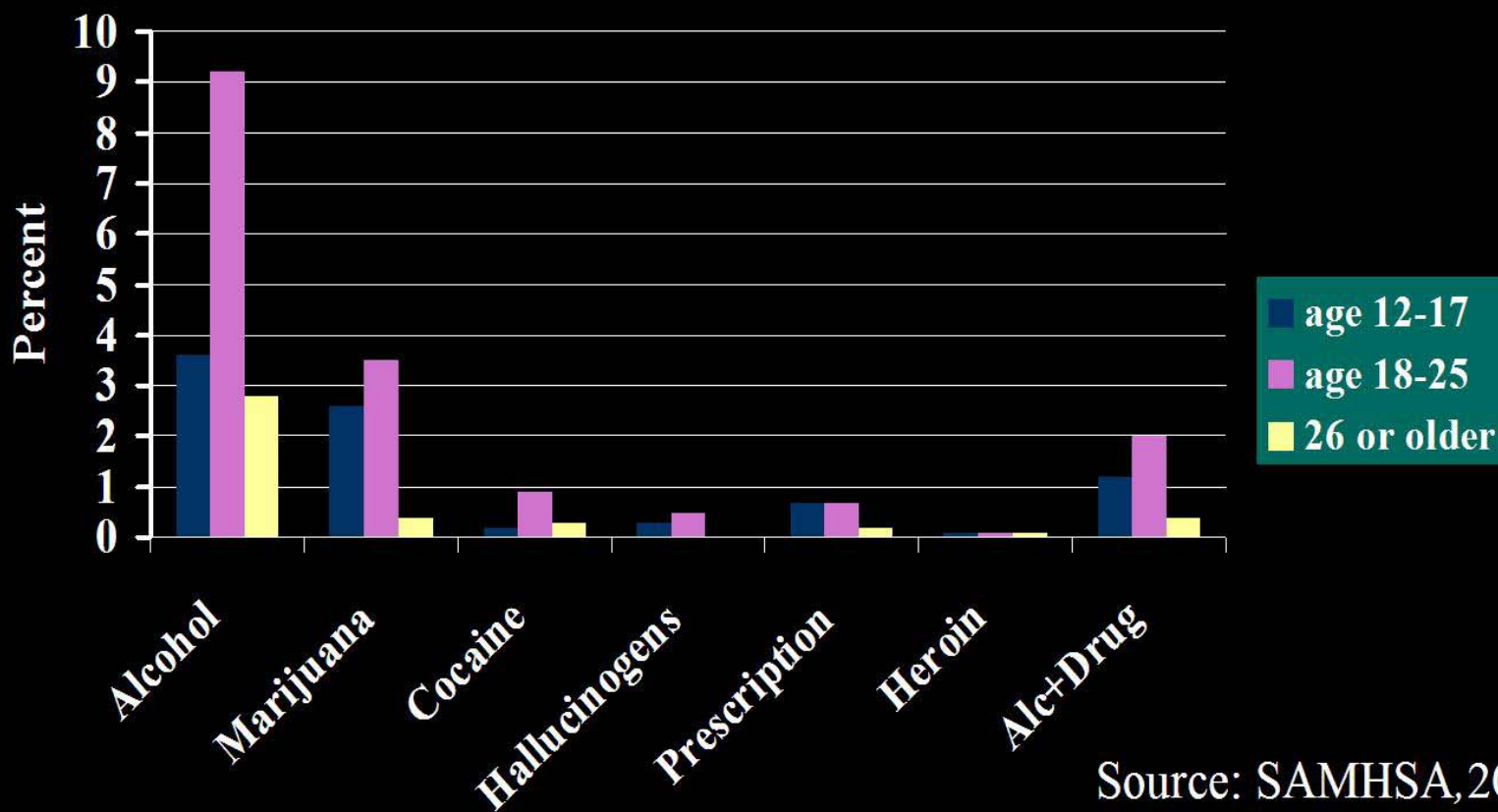
Source: SAMHSA, 2000a

# Use of Alcohol and Other Drugs: 1999 Ages 26 and Older





# Reported Past Year Substance Dependence by Age, 1999



Source: SAMHSA, 2000a



# Adolescent Risk Factors

Risk Factors	Increased Odds Ratio
• Negative interaction with mother	• 1.6 – 4.6
• Negative interaction with father	• 1.7 – 4.0
• Parental alcohol dependence	• 2.52
• Parents dislike friends	• 3.71
• Heavy drinking friends	• 15.5
• Daily cigarette smoking	• 15.8

Source: Kuperman et al., 2001

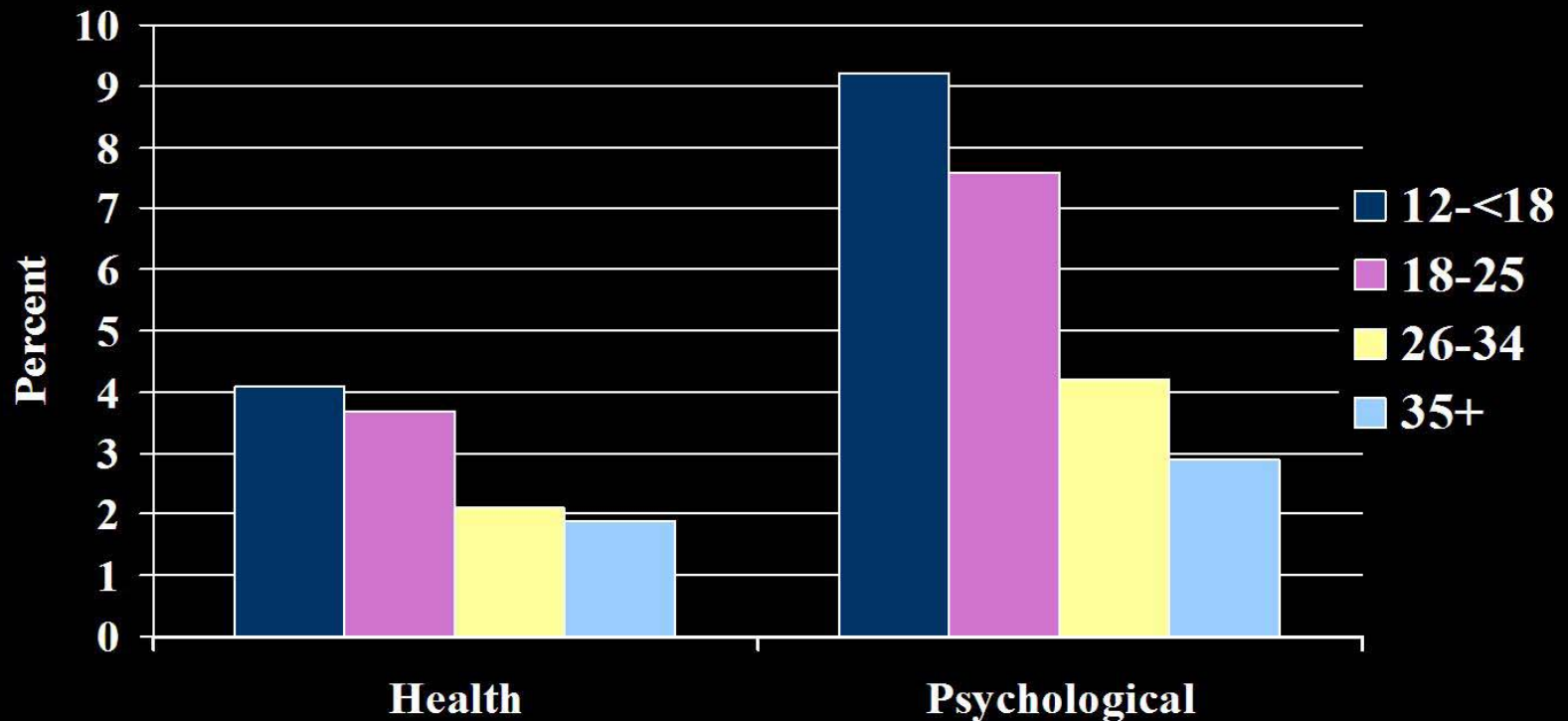


# *Adolescent Risk Factors (continued)*

Risk Factors	Increased Odds Ratio
<ul style="list-style-type: none"><li>• Marijuana abuse</li><li>• Other drug abuse</li><li>• Dropping out of school</li><li>• ADHE</li><li>• Conduct disorder</li></ul>	<ul style="list-style-type: none"><li>• 27.1</li><li>• 19.8</li><li>• 6.5</li><li>• 5.0</li><li>• 13.5</li></ul>

Source: Califano and Booth, 1998

# Problems Reported by Alcohol Users (past year)



Source: SAMHSA, 1999a



# *Alcohol and Violence*

1. Alcohol is related to both aspects of violence --  
perpetration and victimization

2. Offenders were drinking in:

- 86% of homicides
- 60% of sexual offences
- 37% of assaults
- 27% of females and 57% of males involved in marital violence
- 13% of child abuse cases

Source: Roizen, 1997)



## *Alcohol and Violence (continued)*

Roizen, 1993

Alcohol is associated with:

- 13%-50% of offenders in rape cases
- 6%-36% of victims in rape cases

Miczek et al., 1993

Identified alcohol in:

- 35%-65% of rape cases (6 studies)
- ~50% of incest cases (2 studies)
- 20%-83% of family violence cases (3 studies)
- 10%-83% of homicides (6 studies)
- 33%-57% of felonies (2 studies)



# *Alcohol and Violence (continue)*

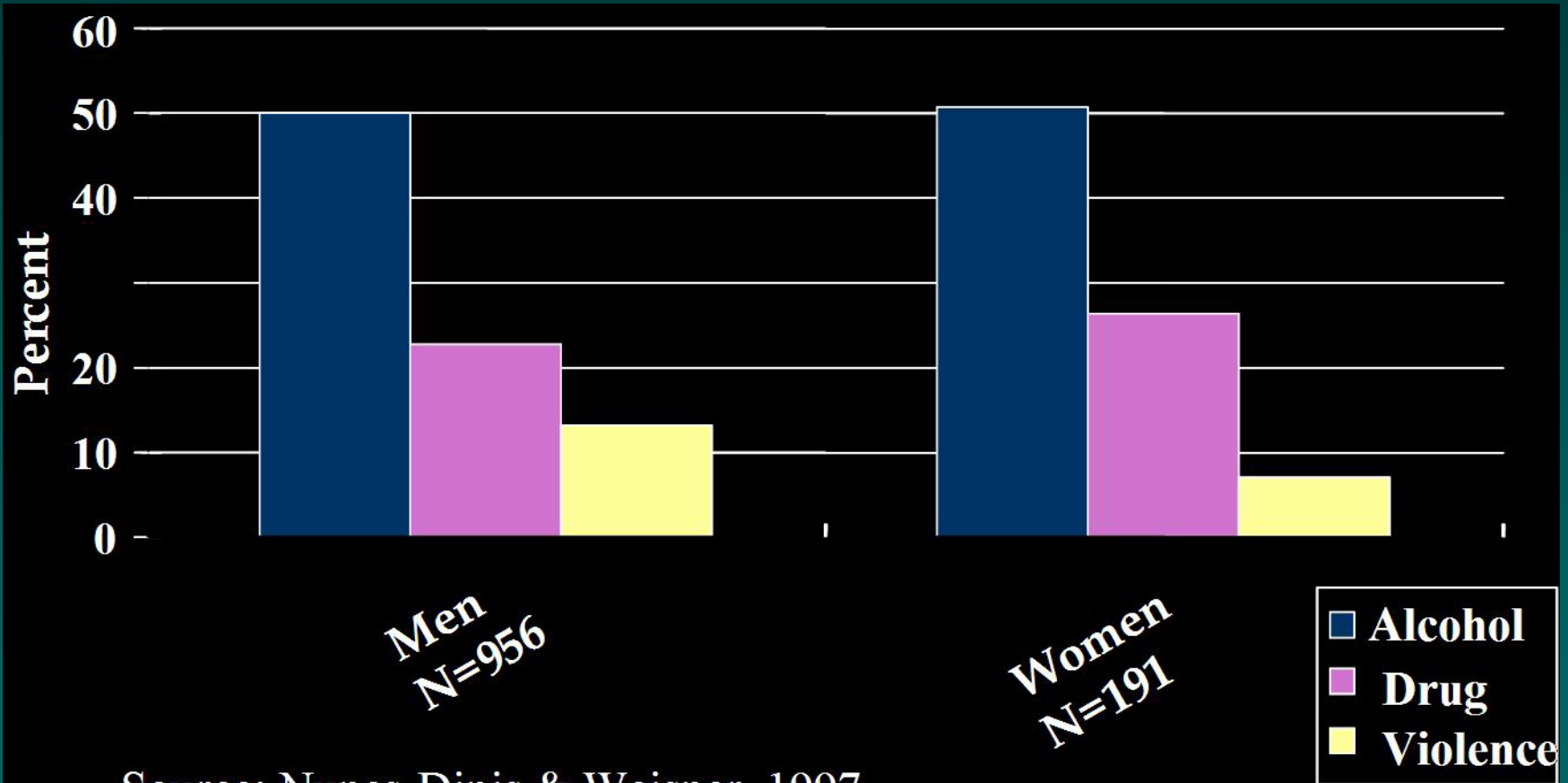
1. Risk factors for becoming violent:

- History of violence
- Multiple drug use
- Co-morbid psychiatric disorder

2. Rates for alcohol-related violence hard to find:

- Rates of alcohol involvement vary across studies making comparison difficult
- Hard to establish a causal relationship due to other factors (e.g., interaction between personality factors and alcohol)

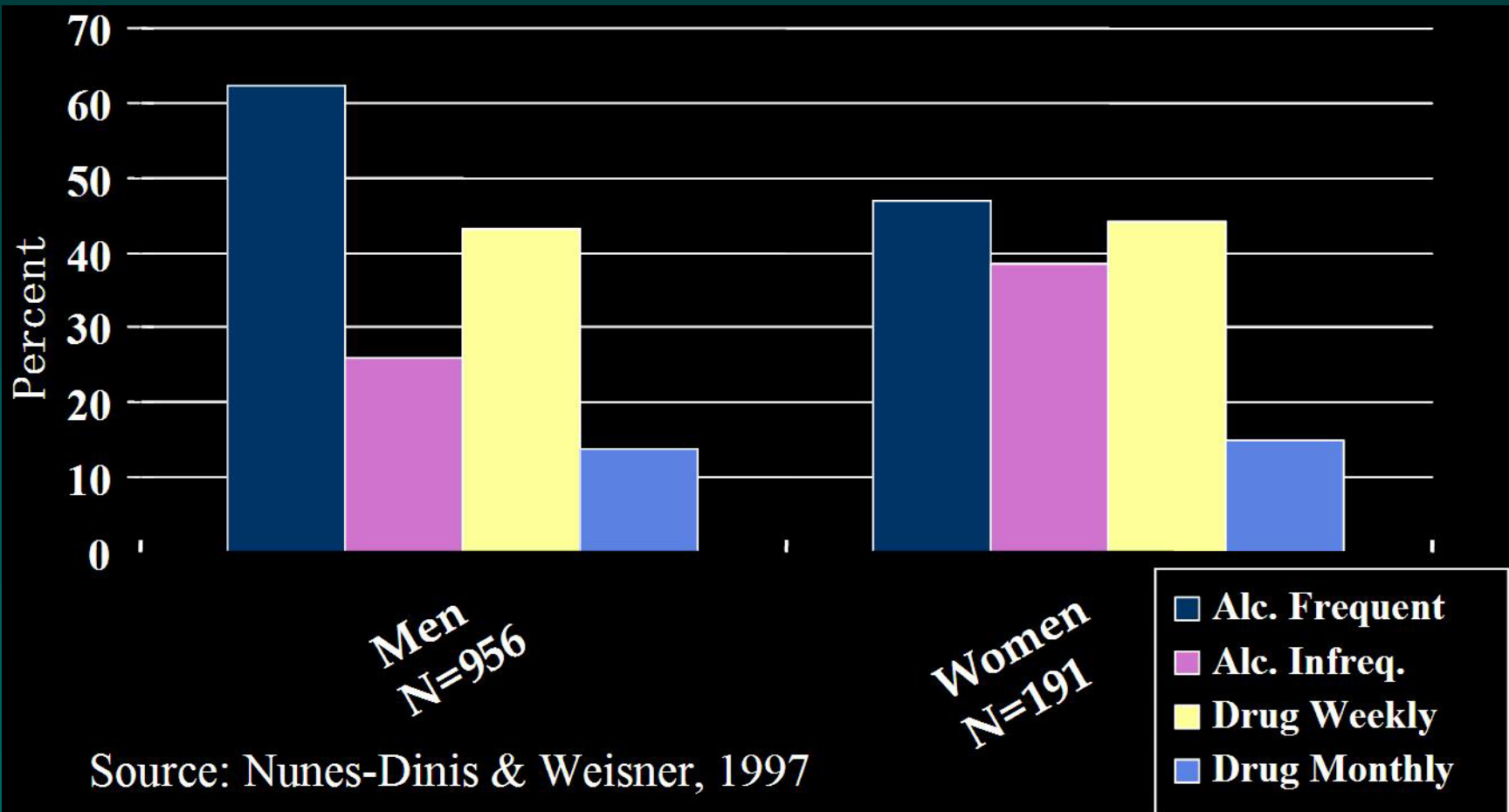
# Alcohol, Drug, and Violent Events Related to Arrest



Source: Nunes-Dinis & Weisner, 1997



# Alcohol and Drug Use: 12 Months of Arrests in Northern California





# *Alcohol-Related Hospitalizations*

## 1. Hospital discharges (1997):

- Alcohol-related diagnosis was first-listed (primary) diagnosis for 20.2 per 10,000 population aged 15 and older
- All listed alcohol-related diagnosis was 64.5 per 10,000 population

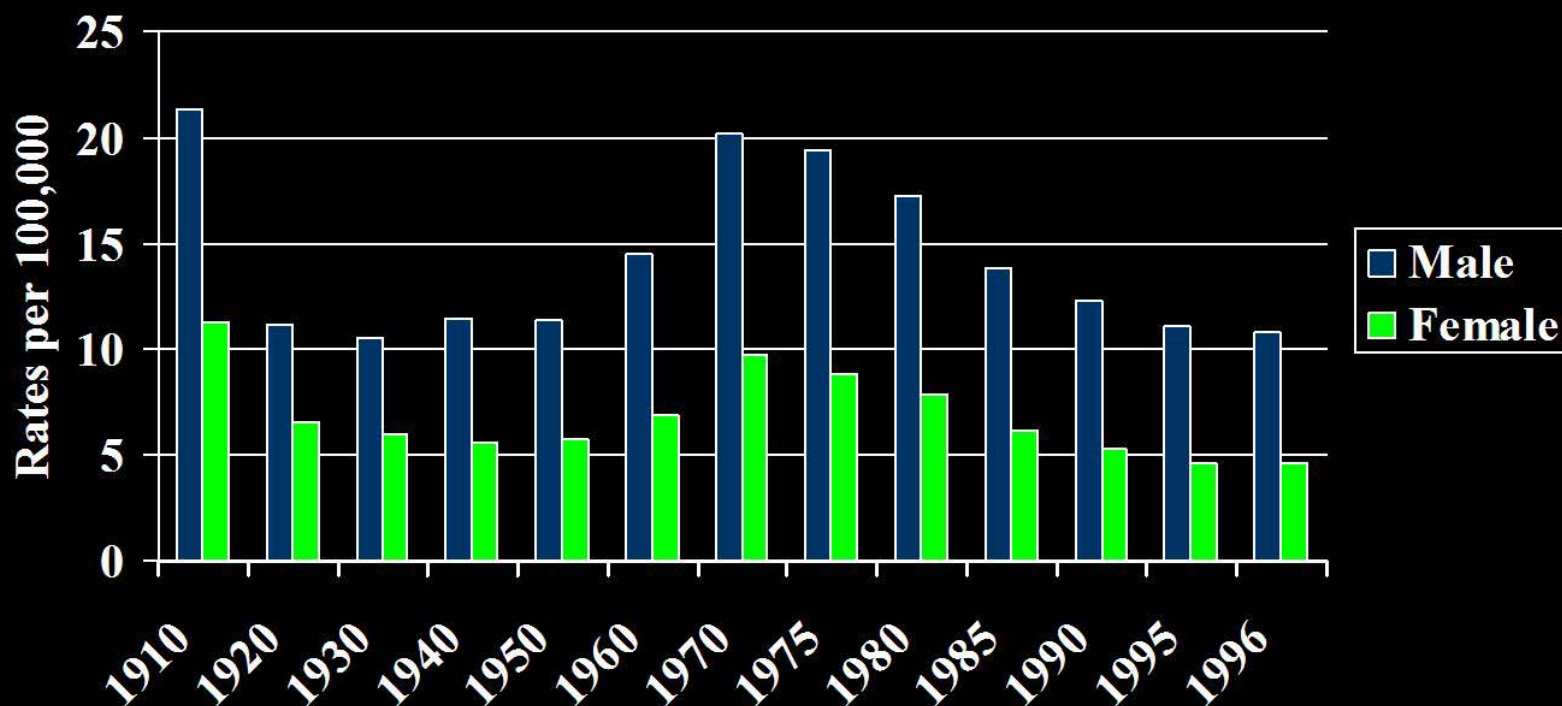
## 2. Alcohol-related morbidity episodes not appearing as a first-listed (primary) diagnosis = 69%



# *Alcohol-Related Hospitalizations (continued)*

<b>Disorder</b>	<b>Percent</b>
• Alcohol dependence syndrome	49 %
• Alcohol psychosis	22%
• Cirrhosis of the liver	20%
• Alcohol abuse, nondependent	9%

# Age-Adjusted Liver Cirrhosis Mortality U.S. 1910-1996



Source: Saadatmand et al., 1999

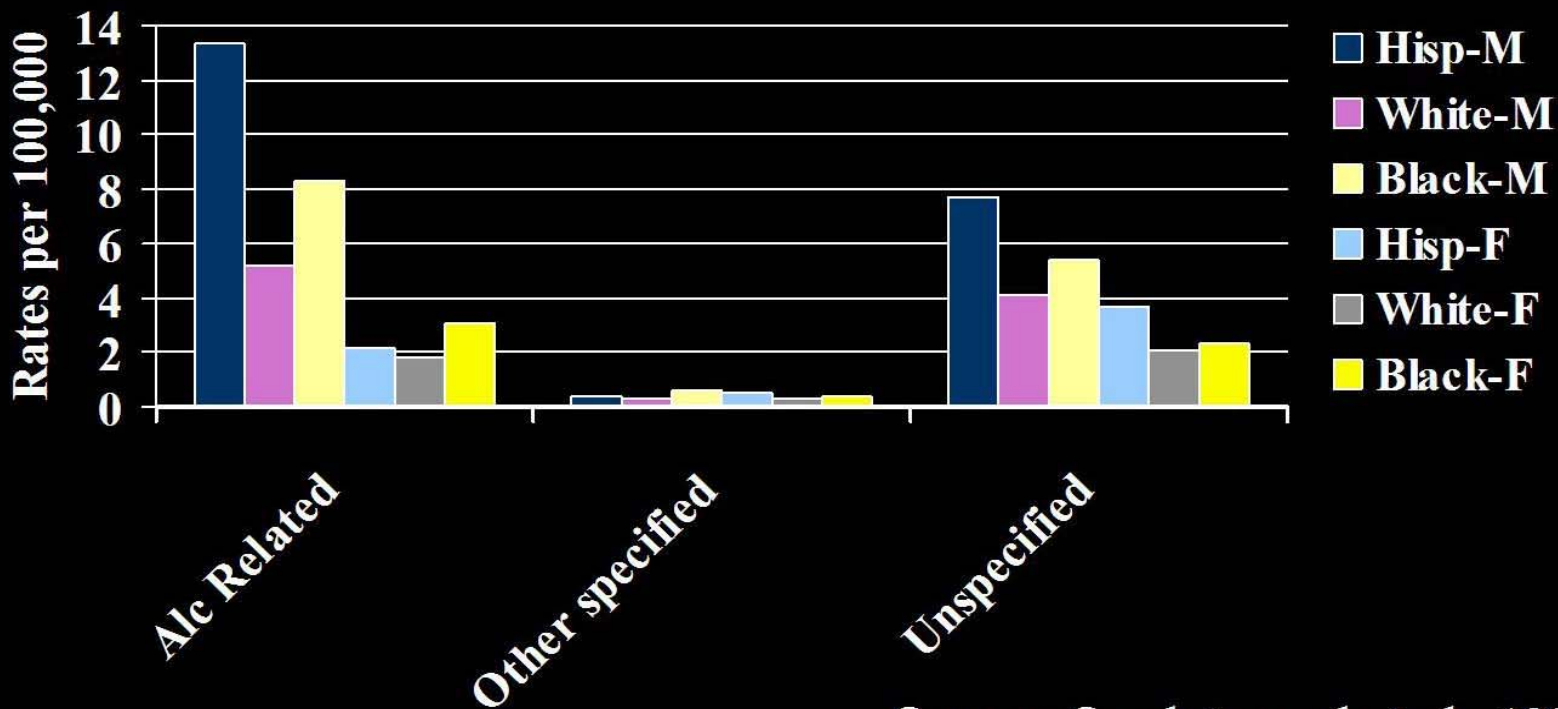


# *Vulnerability to Alcohol-Related Liver Disease*

- Genetic Factors
- Dietary Factors
- Gender
- Hepatitis C
- Level of Alcohol Intake

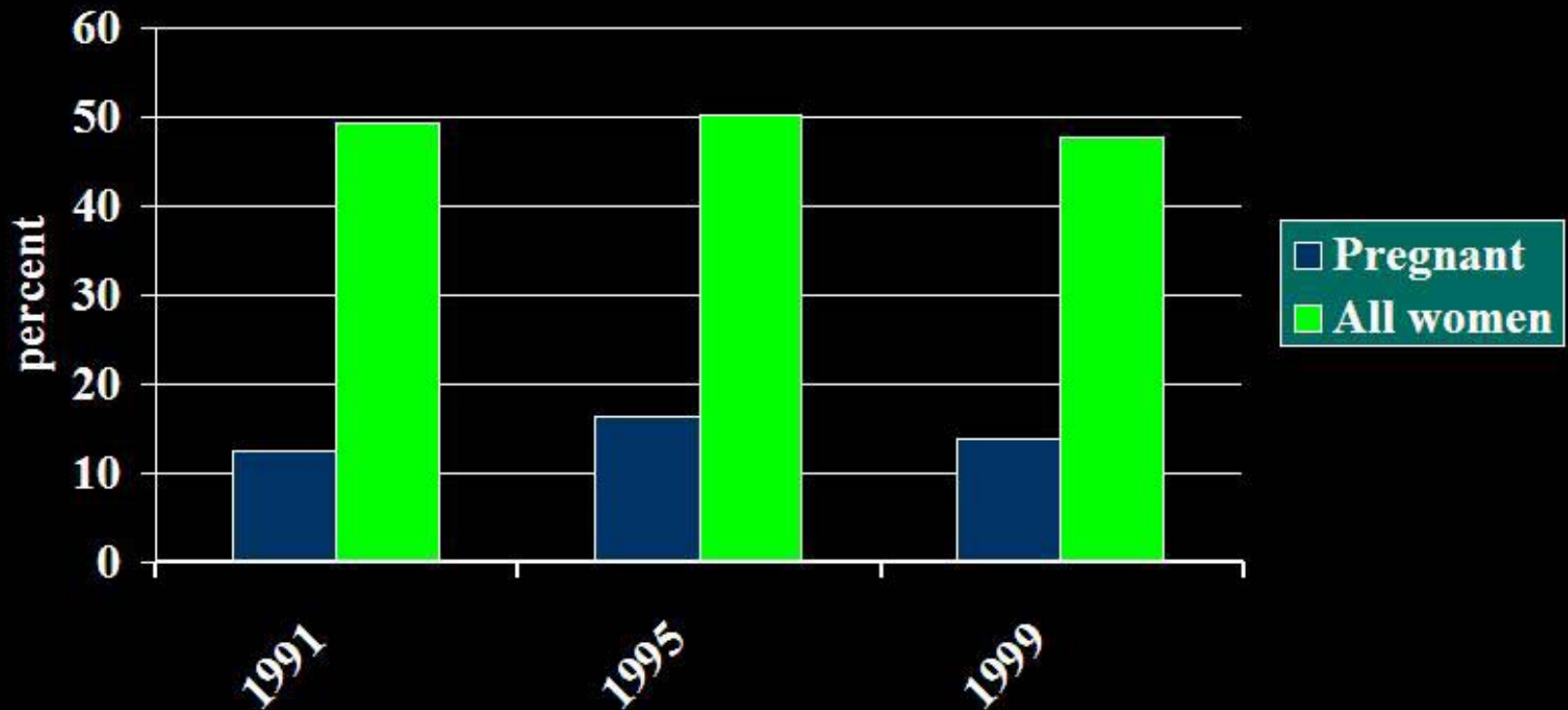
Source: NIAAA, 2001 b

# Alcohol-Related Cirrhosis by Race and Gender (Age-Adjusted, 1996)

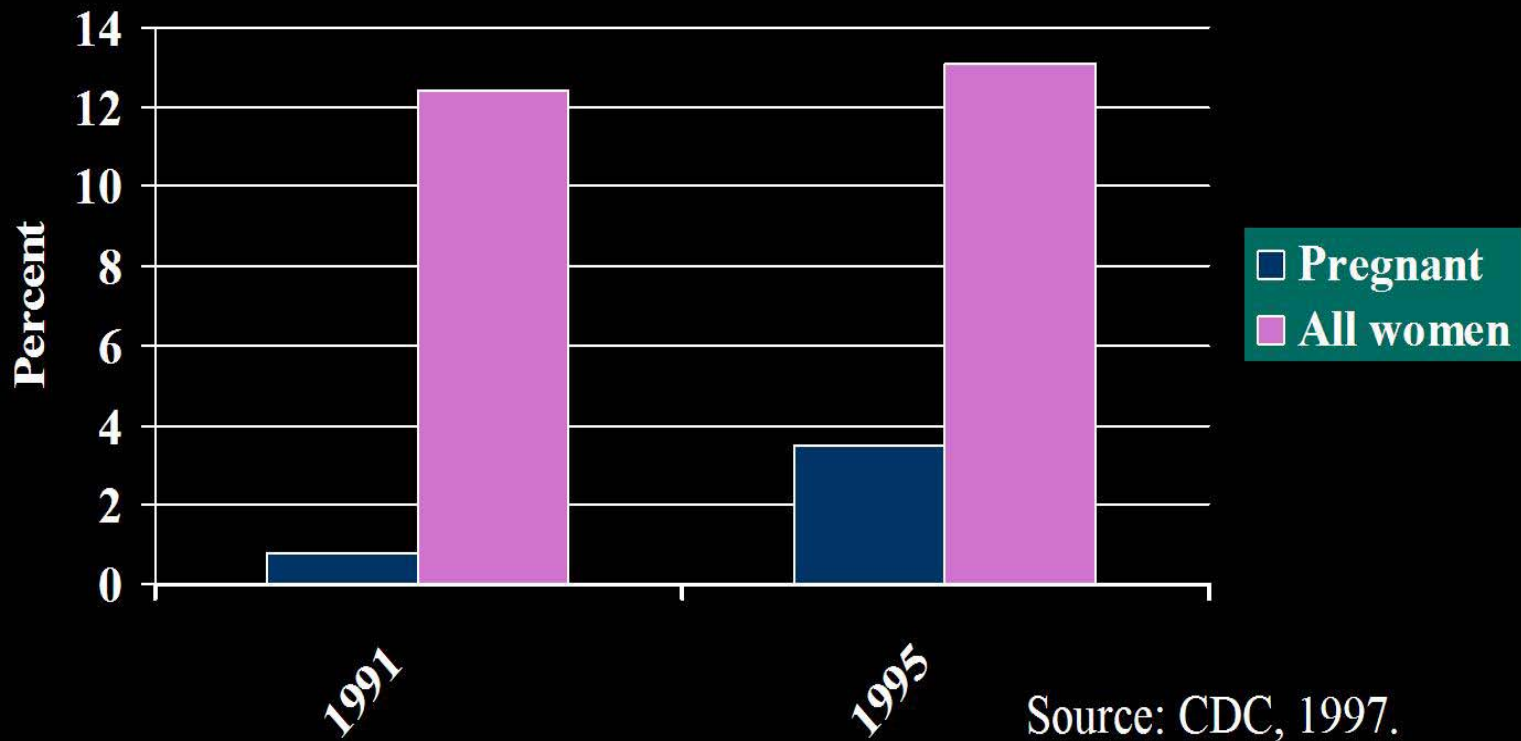


Source: Saadatmand et al., 1999.

# *Alcohol Consumption Among U.S. Pregnant & Child-bearing Aged Women*



# Frequent Drinking Among U.S. Pregnant & Child-bearing Aged Women



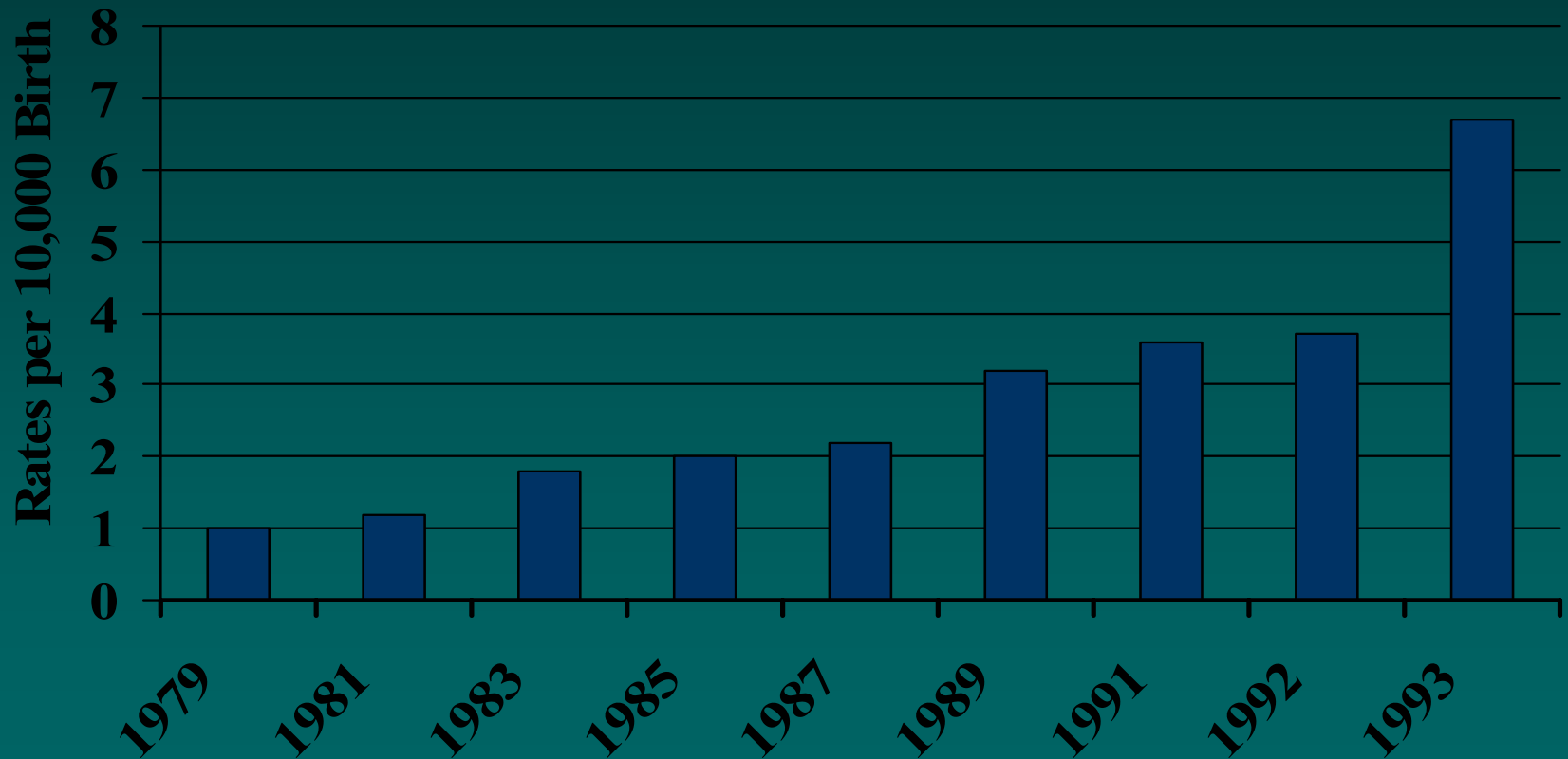


# Binge Drinking Among U.S. Pregnant & Child-bearing Aged Women



Sources: SAMHSA, 1999a; CDC, 1997

# Reported Rates of Fetal Alcohol Syndrome, U.S. 1979-1993



Source: CDC, 1995a

# *Prenatal Alcohol Exposure*

- How many drinks can a pregnant women consume without harm to the fetus?
- An estimated 550,000 to 750,000 U.S. children are born exposed to drugs/alcohol each year
- Increased risk of child maltreatment (abuse, neglect) and out of home placement



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# *Risks of Fetal Alcohol Exposure*

- Low birth weight
- Prematurity
- Small for gestational age (SGA)
- Failure to thrive (FTT)
- Neurobehavioral symptoms
- Infectious disease
- Sudden Infant Death Syndrome (SIDS)
- Fetal Alcohol Syndrome (FAS)
- Other Fetal Exposure Effects
- Compromised developmental outcomes



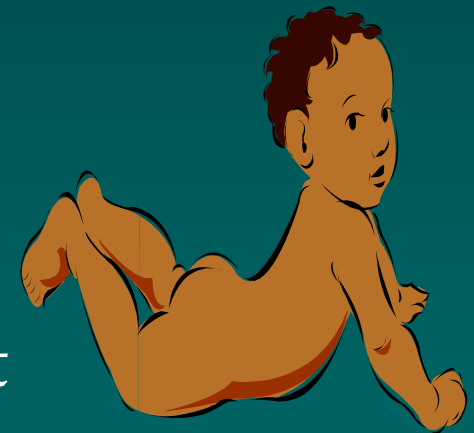
# *Compromised Developmental Outcomes*

- Many unknowns to predict specific outcome
- Certain physical problems may persist
- Some problems not immediately apparent
- Secondary problems may emerge
- Structured and nurturing environment may compensate and promote development
- Regular developmental evaluation needed
- Need early identification of social, language, cognitive, and motor developmental problems

# Children Prenatally Exposed

Developmental patterns birth to 15 months characterized by:

- Unpredictable sleep patterns
- Feeding difficulties
- Irritability
- Atypical social interaction
- Delayed language development
- Poor fine motor development



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# Children Prenatally Exposed (continued)

## Toddlers (16-36 months):

- Atypical social interaction
- Minimal play strategies

## Preschoolers (3-5 years):

- Easy loss of control
- Mood swings
- Hyperactivity/short attention span
- Difficulty transitioning between activities
- Difficulty processing auditory/visual info



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# Children Prenatally Exposed (continued)

## School aged to adolescence:

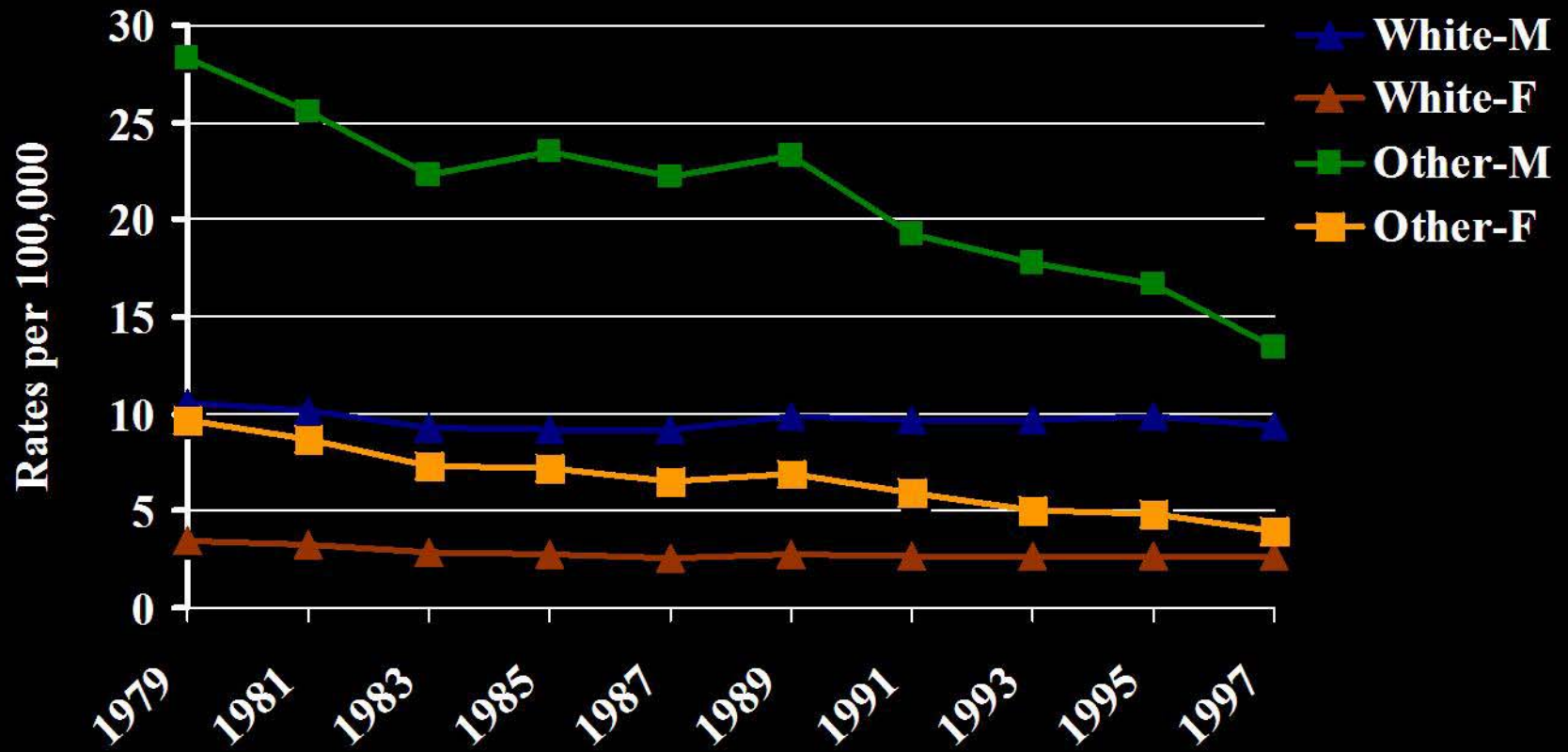
- No conclusive research on long-term biological or constitutional effects of drug/alcohol exposure
- Greater risk of maltreatment, learning disabilities, behavior problems



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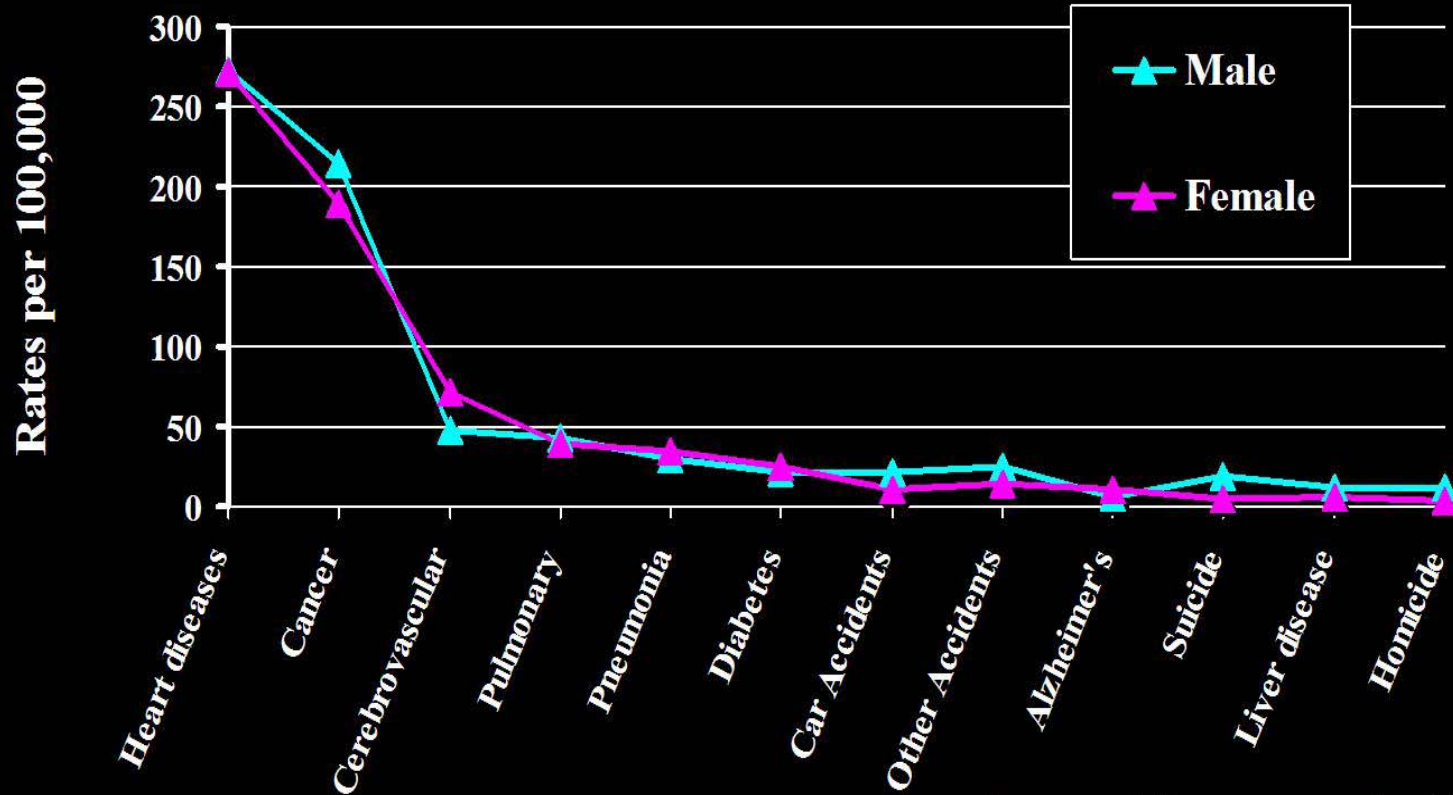


# Alcohol Death Rates by Ethnicity (Age-Adjusted), 1979-1997



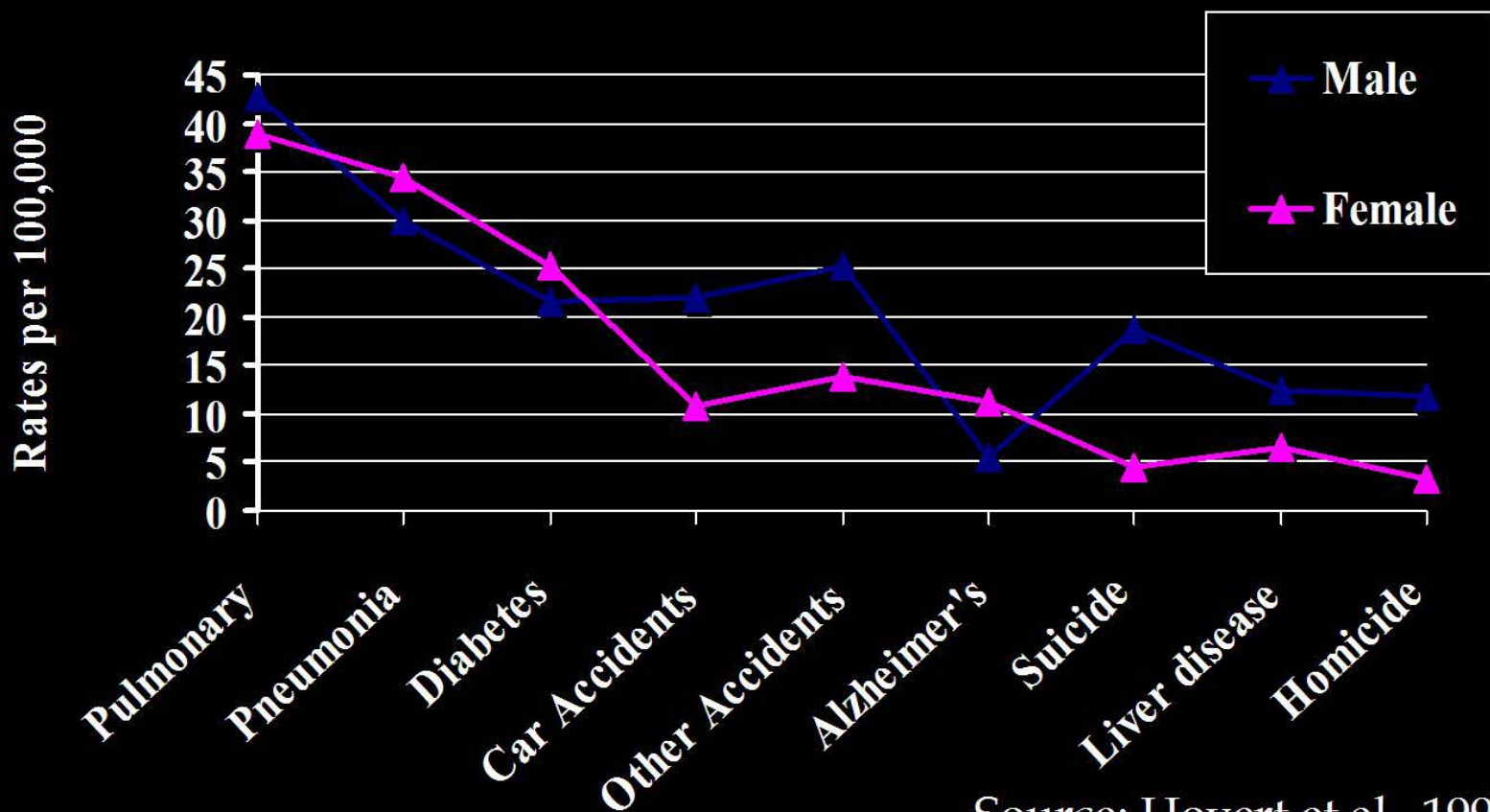
Source: Hoyert et al., 1999

# Age-Adjusted Death Rates for 10 Leading Causes, U.S. (1997)



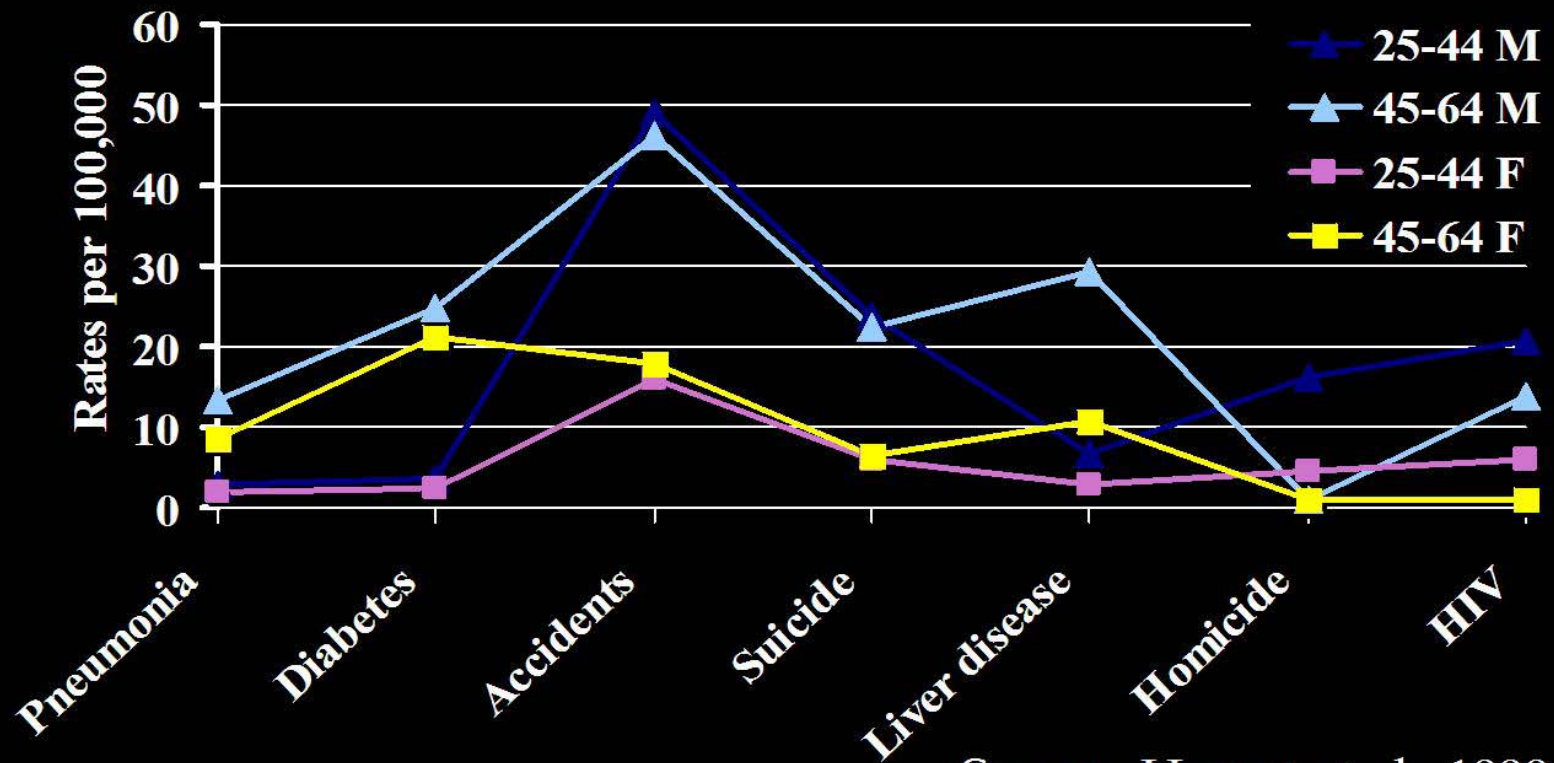
Source: Hoyert et al., 1999

# Age-Adjusted Death Rates for Causes Other Than Cancer, Heart, or Stroke, U.S. (1997)



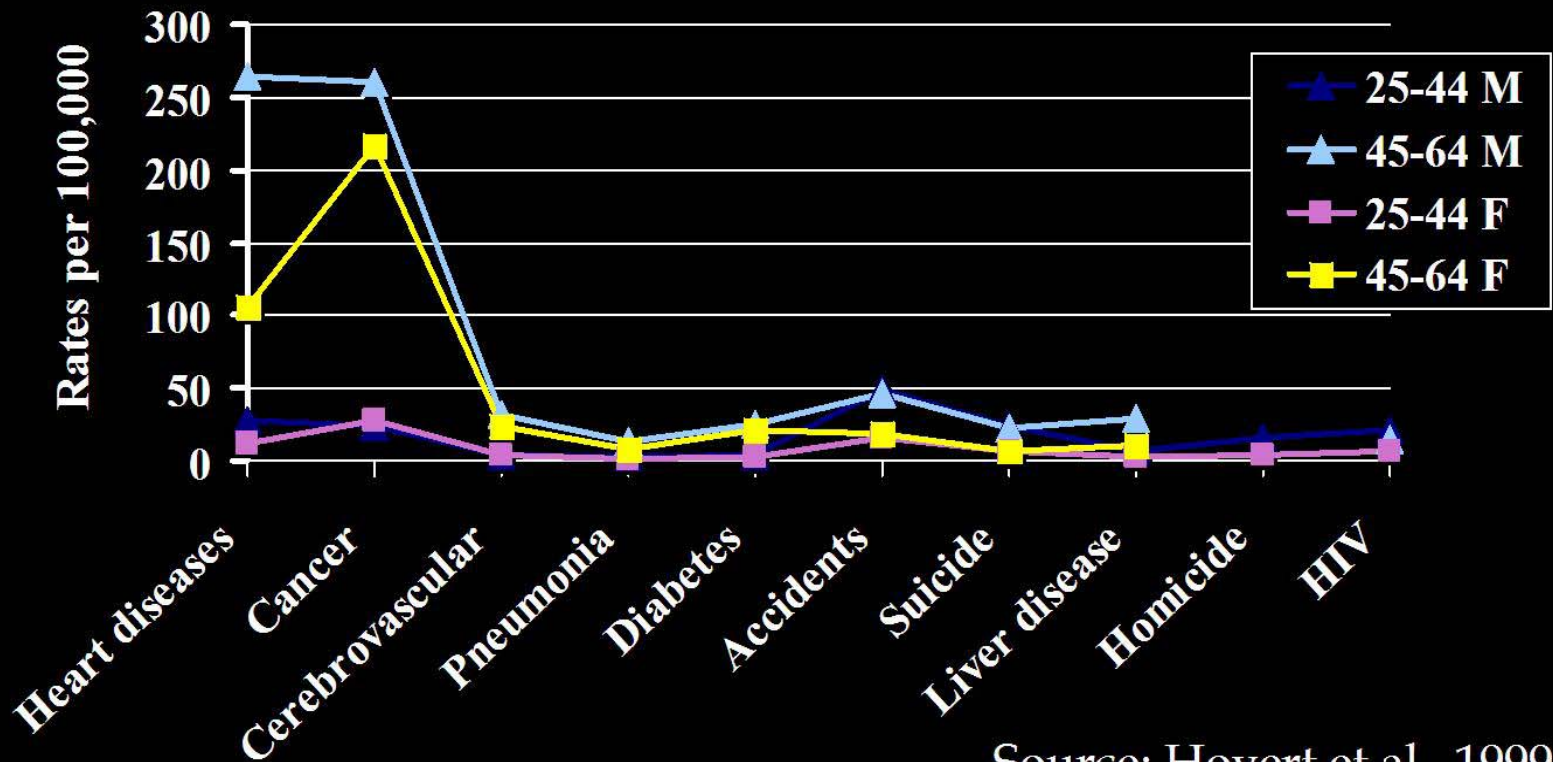
Source: Hoyert et al., 1999

# Age-Adjusted Death Rates by Causes Other than Cancer, Heart, or Stroke, Ages 25-64 (1997)



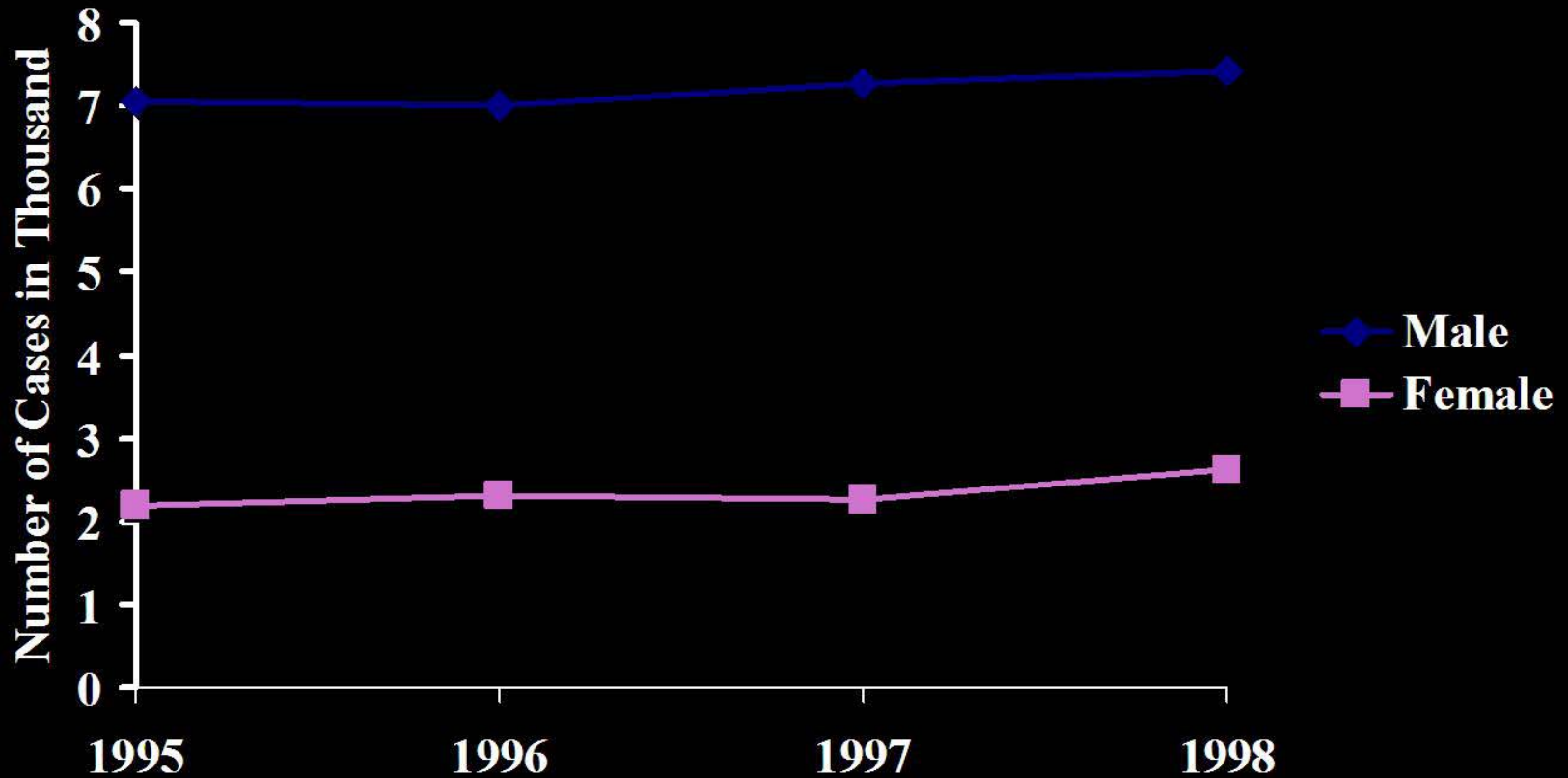
Source: Hoyert et al., 1999

# Age-Adjusted Death Rates by Cause, Ages 24-64 (1997)



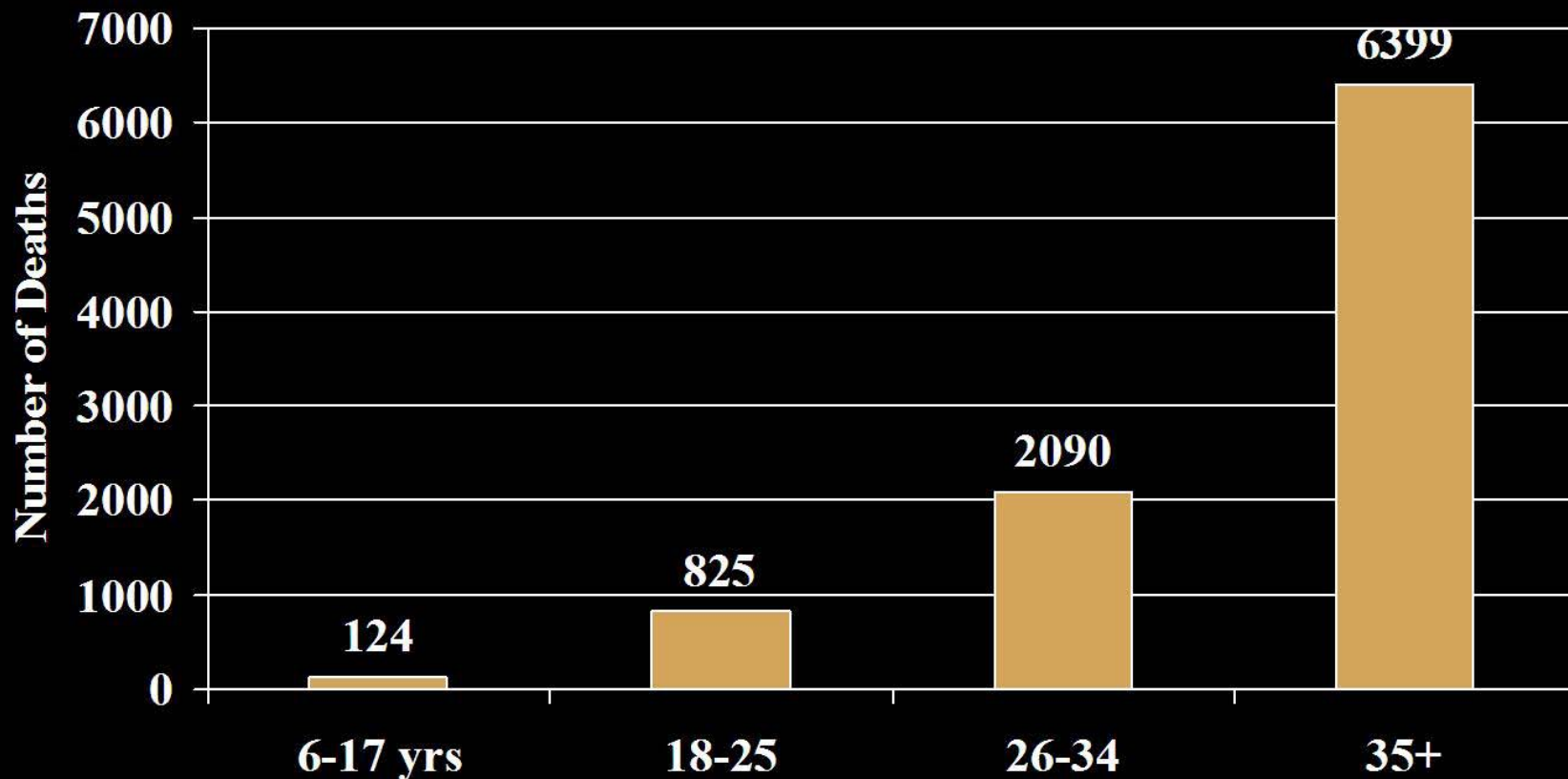
Source: Hoyert et al., 1999

# *Drug Abuse Death 1995-1998*



Source: SAMHSA, 2000

# *Drug-Related Deaths by Age (1996)*



Source: SAMHSA, 1997





# *Alcohol Involvement in Emergency Department Episodes*

1. 35% of drug episodes (1999) involved a mention of alcohol-in-combination events

2. Rate per 100,000:

• Alcohol in combination	81
• Cocaine	69
• Marijuana	36
• Opiates	35

Source: SAMSHA, 1999b



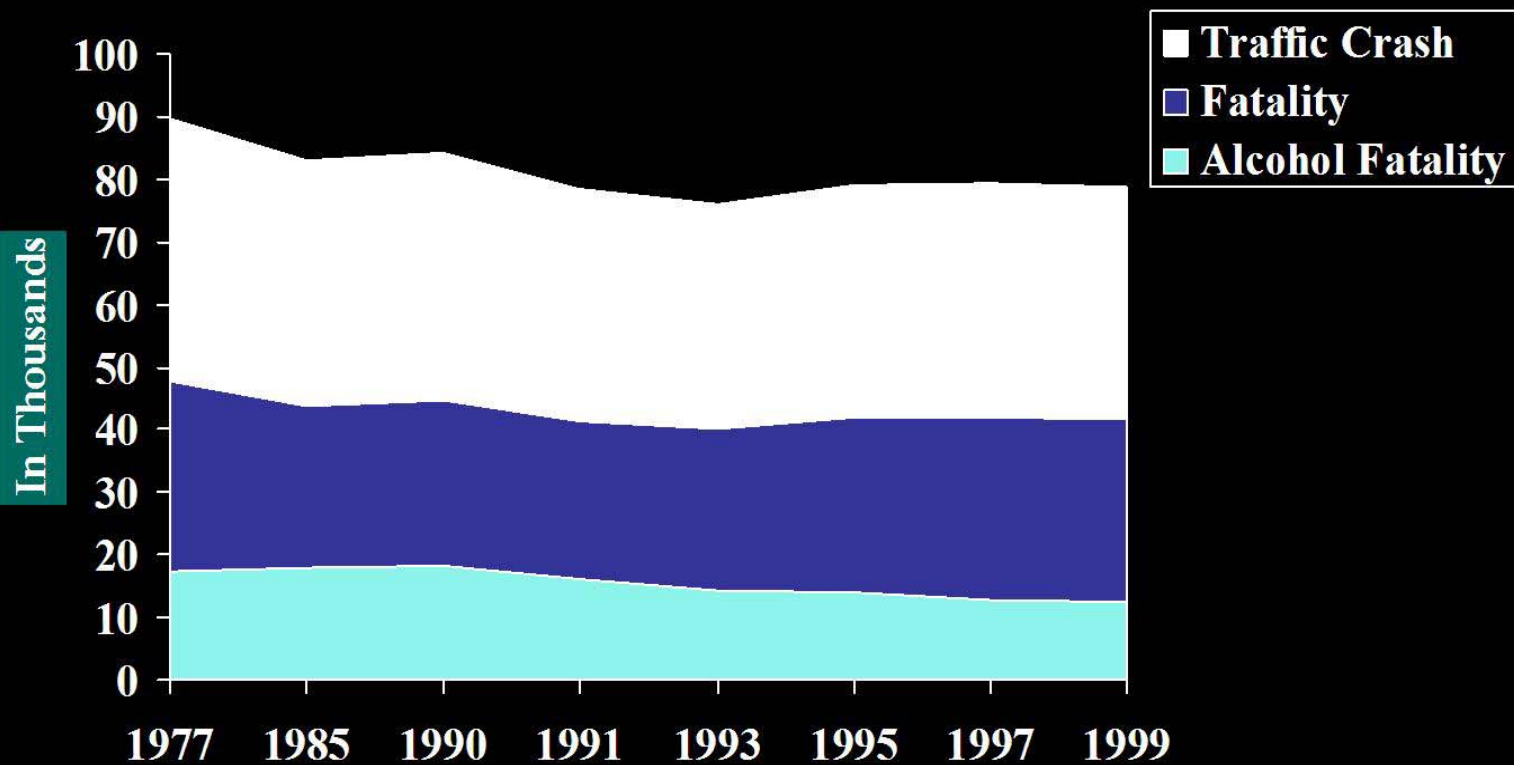


# *Medical Examiner Mention of Drugs, 6-17 Year Old Decedents (n=124)*

Category Mentioned:	#of mentions	% total episodes
• Marijuana/hashish	52	41.9
• Cocaine	26	21.0
• Alcohol in combination	23	18.6
• Opiates	22	17.7
• Diazepam	10	8.1

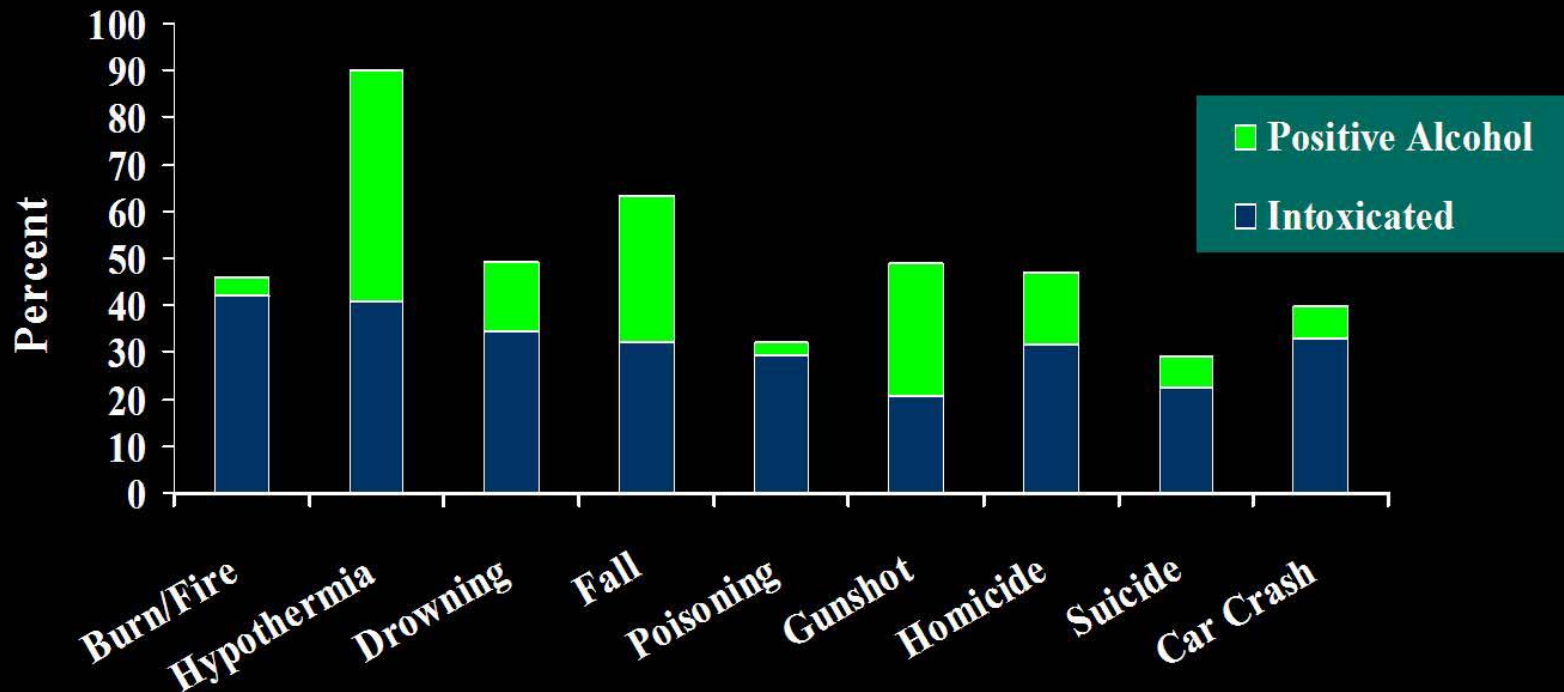
Source: SAMSHA, 1997

# Traffic Alcohol-Related Fatalities, 1977-1999



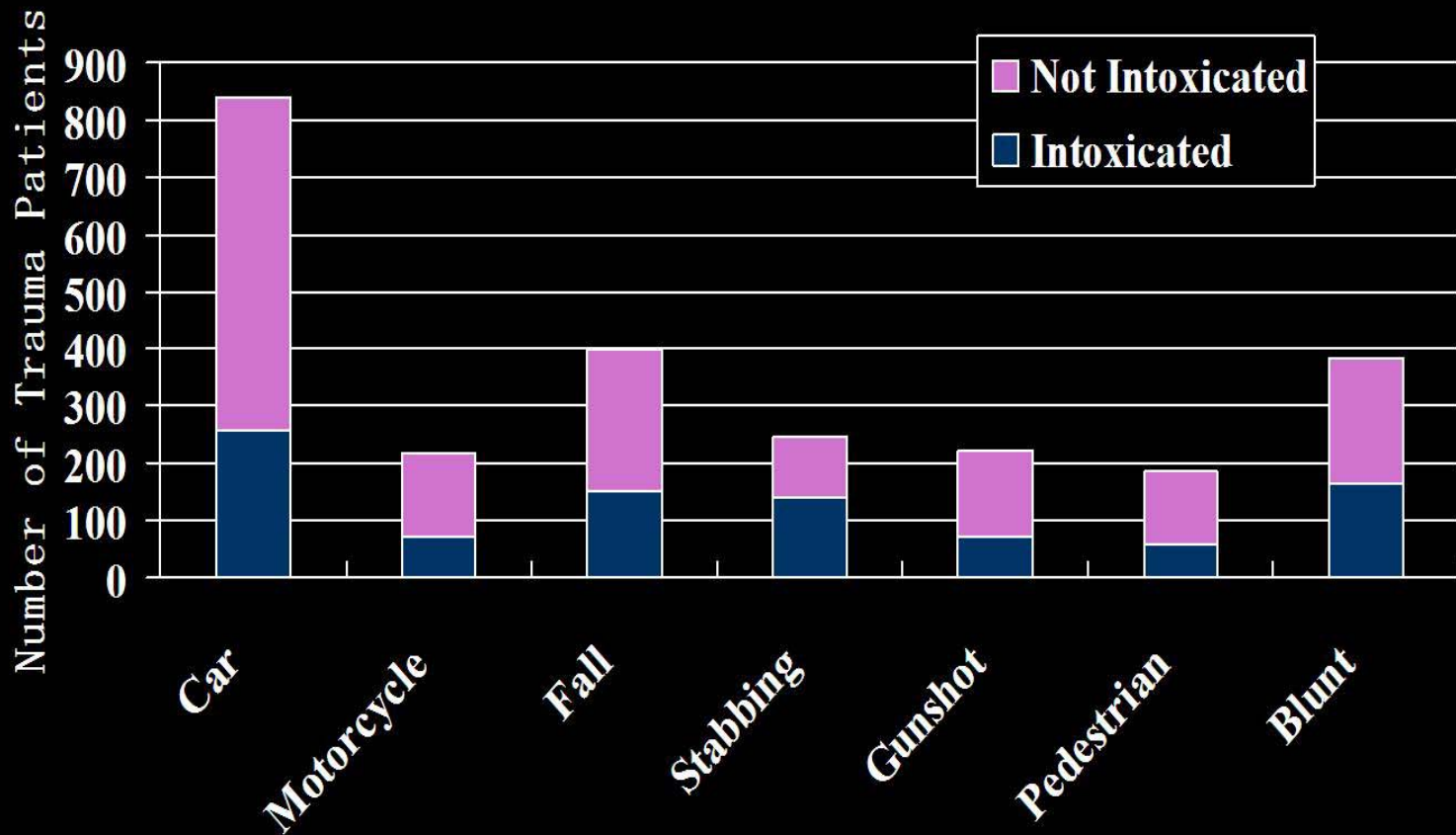
Source: Yi et al., 2001

# Alcohol Involvement in Accidental Death, Homicide, and Suicide



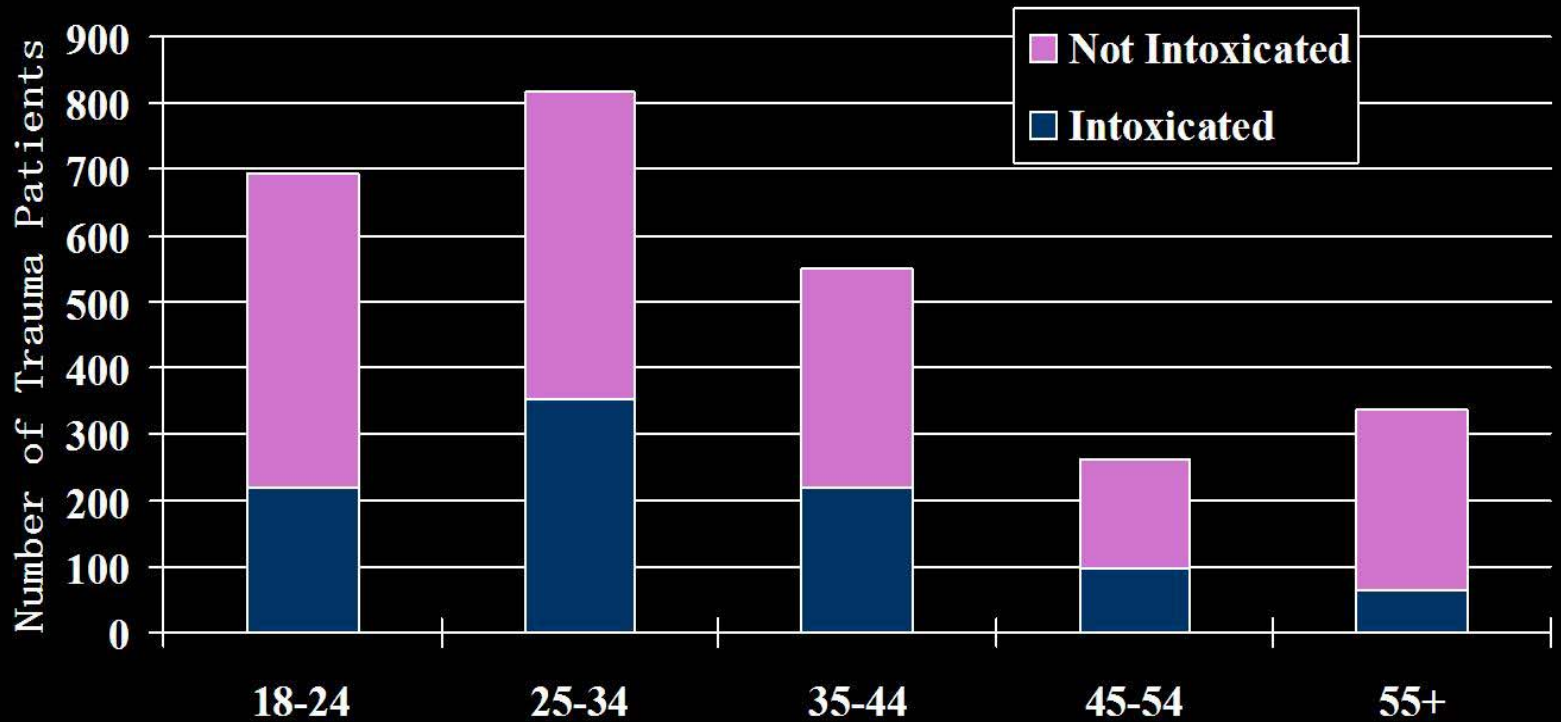
Source: Smith et al., 1999

# Alcohol and Trauma by Injury Type



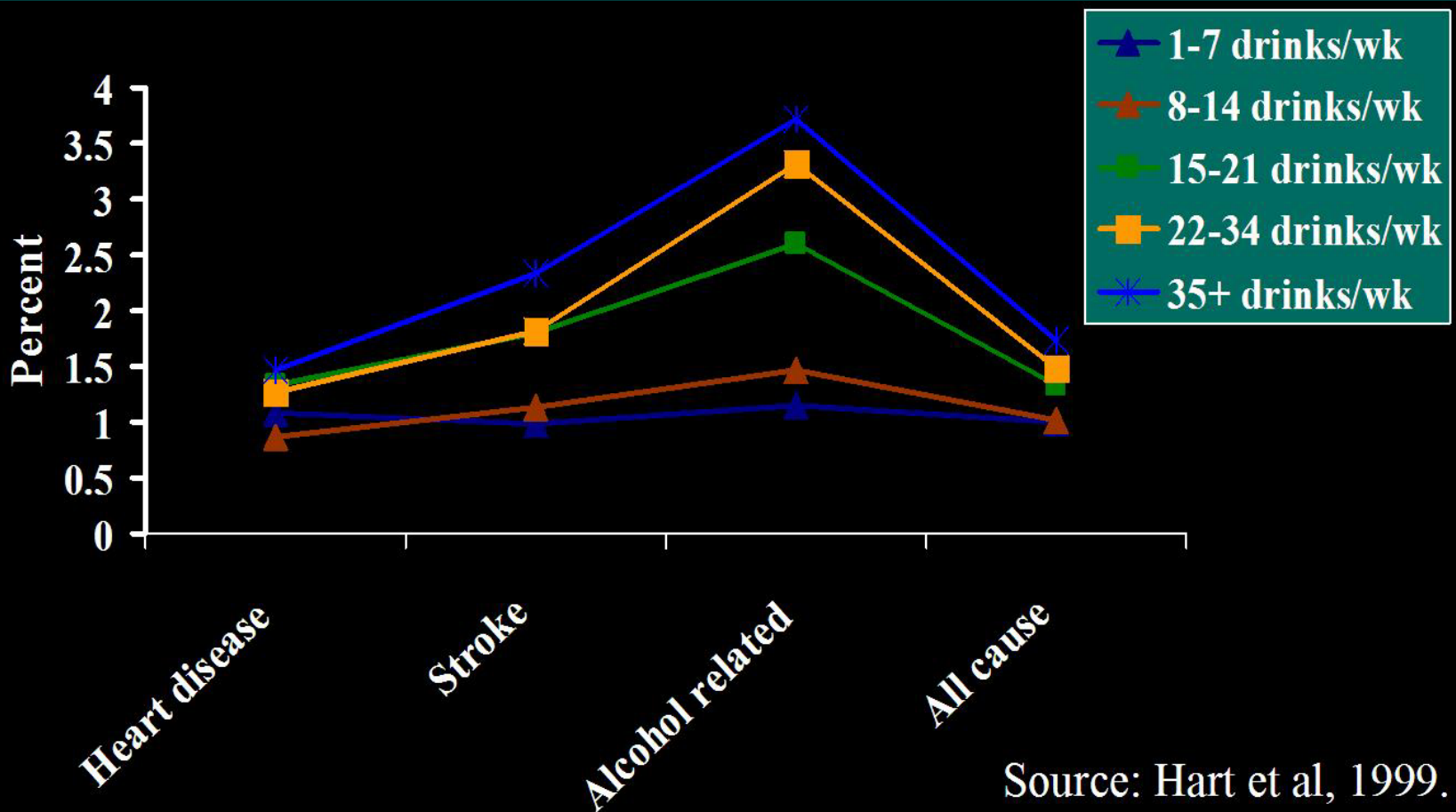
Source: NIAAA, 1997

# Alcohol and Trauma, by Age



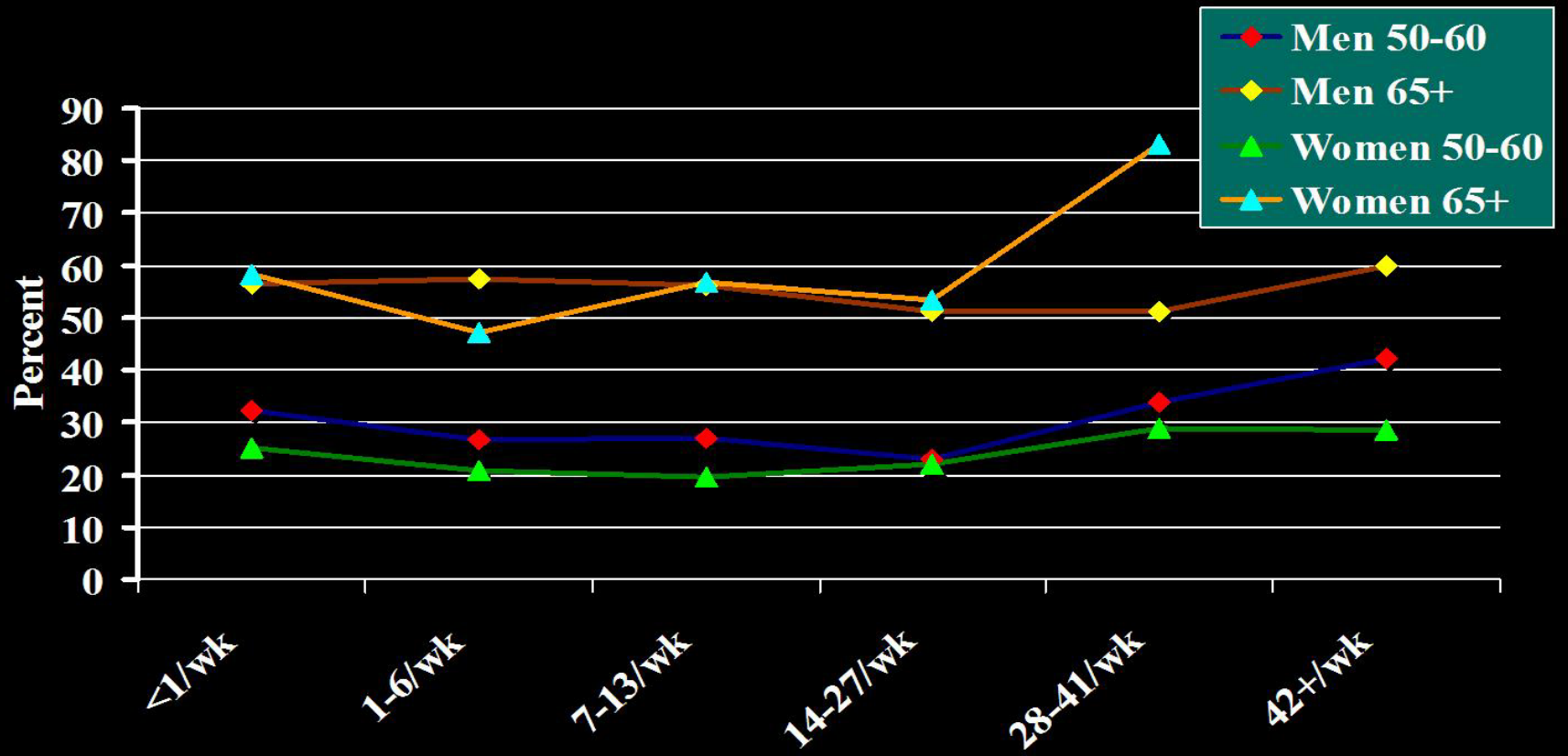
Source: NIAAA, 1997

# Relative Risk Over 21 Years, Alcohol Consumption & Mortality (Scottish Men)



Source: Hart et al, 1999.

# Alcohol and Mortality: 11-Year Follow-up, Adults Age 50+ (16,304 Danish Men & Women)



Source: Gronbaek et al., 1998



# *DHHS & USDA Dietary Guidelines for Alcohol Consumption*

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Women- Moderate drinking, no more than 1 drink/day

Men- Moderate drinking, no more than 2 drinks/day

- Children \_\_\_\_\_

Adolescents \_\_\_\_\_ Should not drink at all

Pregnant women \_\_\_\_\_

- Adults Children \_\_\_\_\_

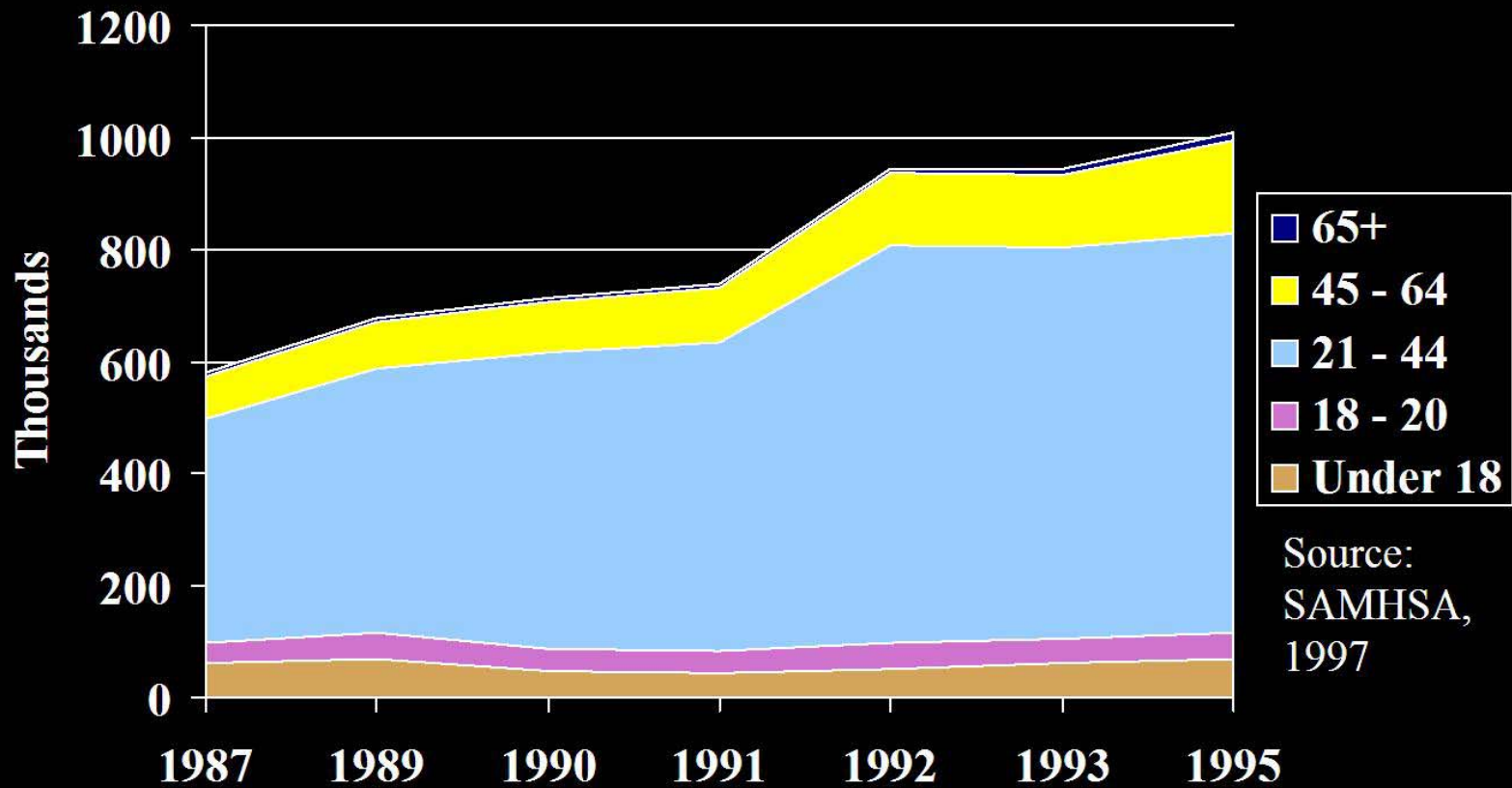
Adolescents \_\_\_\_\_ Should not drink

Pregnant women \_\_\_\_\_ at all

Family history of alcoholism



# One Day Census of Clients in Substance Treatment by Age



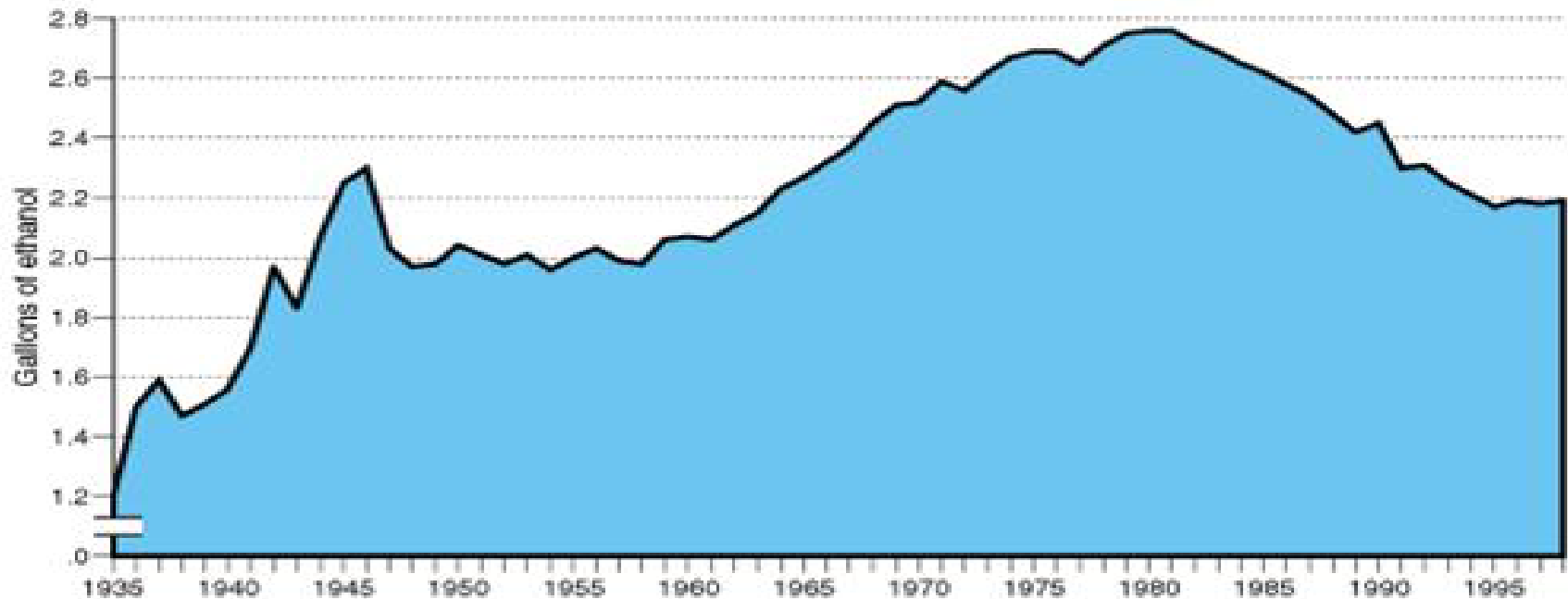


# Appendices

Additional Materials Available for  
Incorporating into Classroom  
Presentations

# Per Capita Consumption, 1935-98

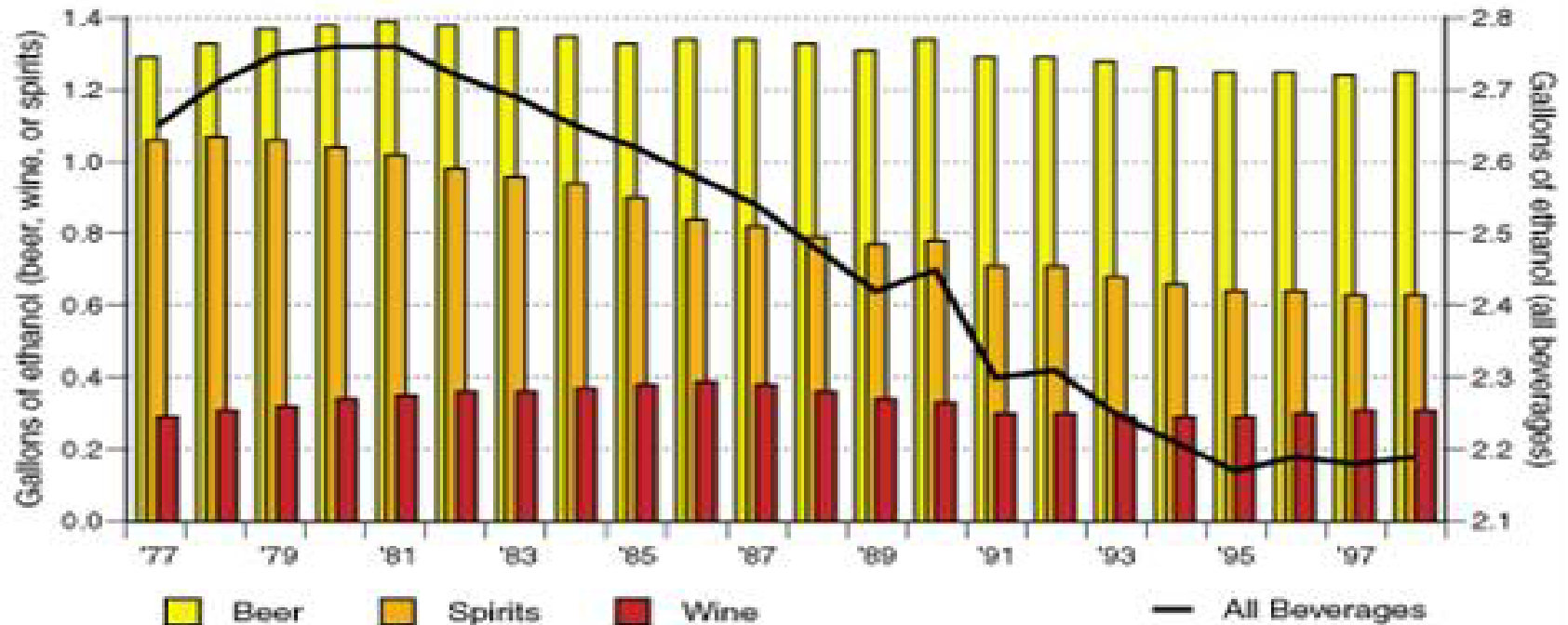
Total per capita ethanol consumption, United States, 1935-98.



Source: Nephew, T.M.; Williams, G.D.; Stinson, F.S.; Nguyen, K.; and Dufour, M.C. *Surveillance Report #55: Apparent Per Capita Alcohol Consumption: National, State, and Regional Trends, 1977-98*. Rockville, MD: NIAAA, Division of Biometry and Epidemiology, Alcohol Epidemiologic Data System, December 2000.

# Per Capita Consumption, 1977-98

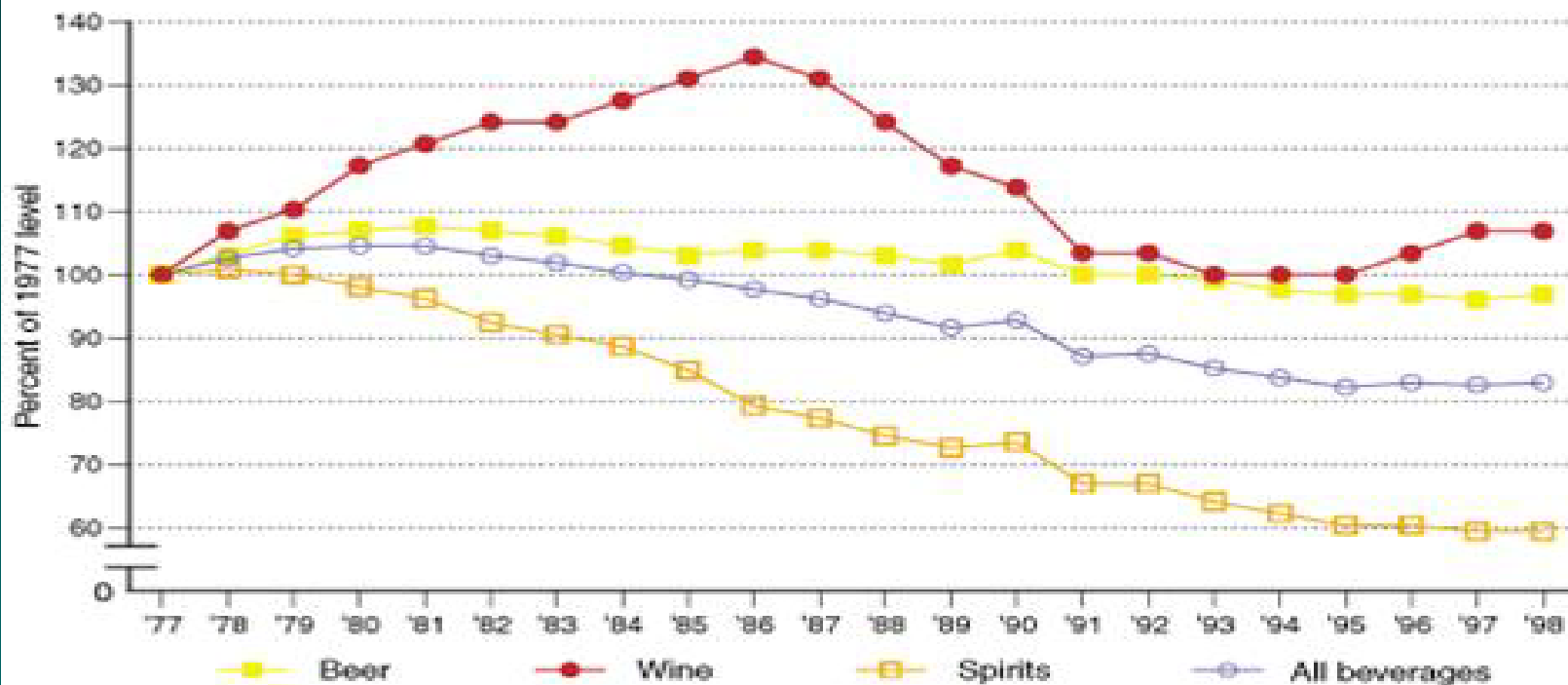
Per capita ethanol consumption by beverage type, United States, 1977-98.



Source: Nephew, T.M.; Williams, G.D.; Stinson, F.S.; Nguyen, K.; and Dufour, M.C. *Surveillance Report #55: Apparent Per Capita Alcohol Consumption: National, State, and Regional Trends, 1977-98*. Rockville, MD: NIAAA, Division of Biometry and Epidemiology, Alcohol Epidemiologic Data System, December 2000.

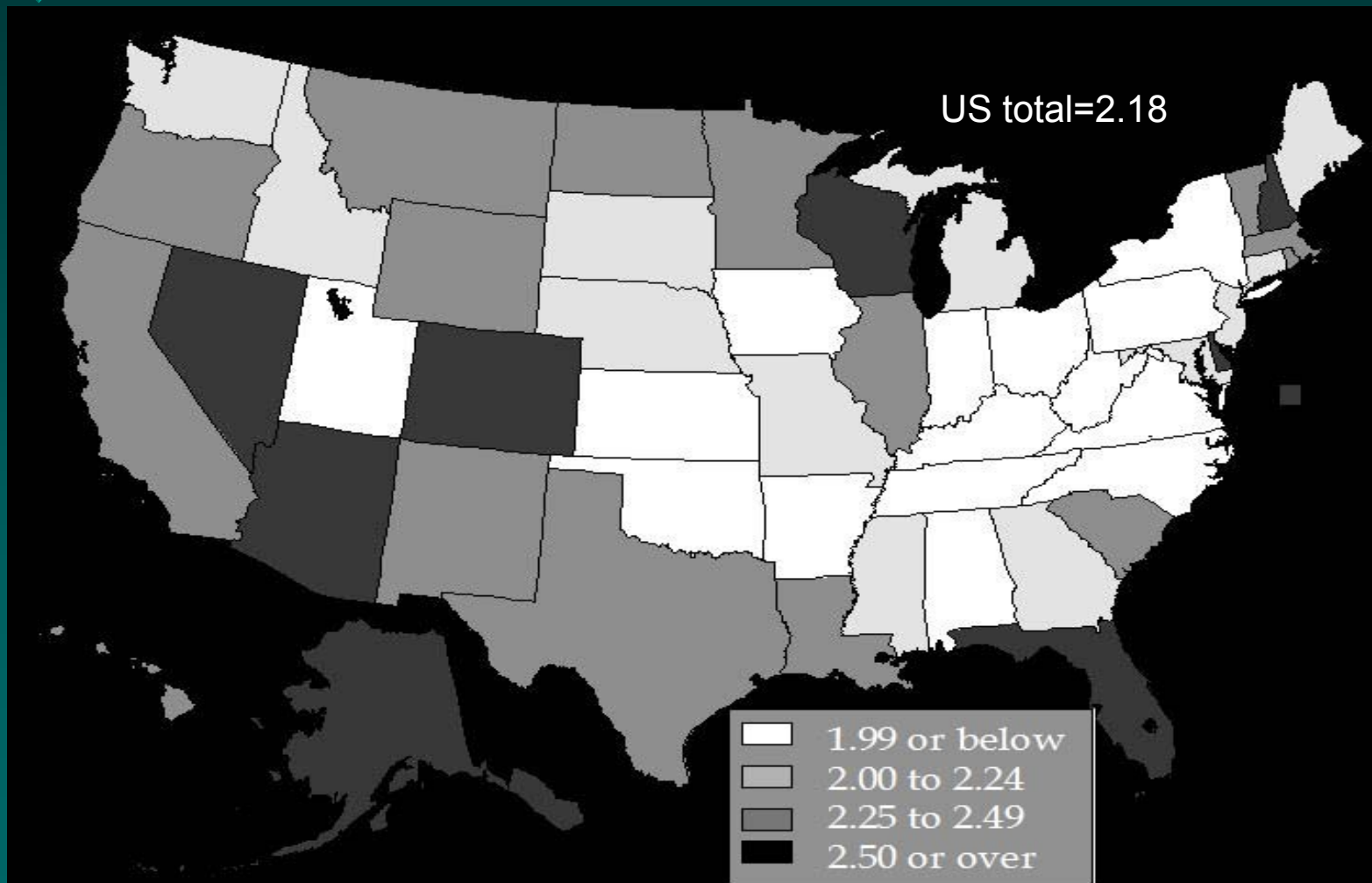
# Percent Changes in Per Capita Consumption, 1977-1998

Percent change in per capita ethanol consumption, United States, 1977-98.

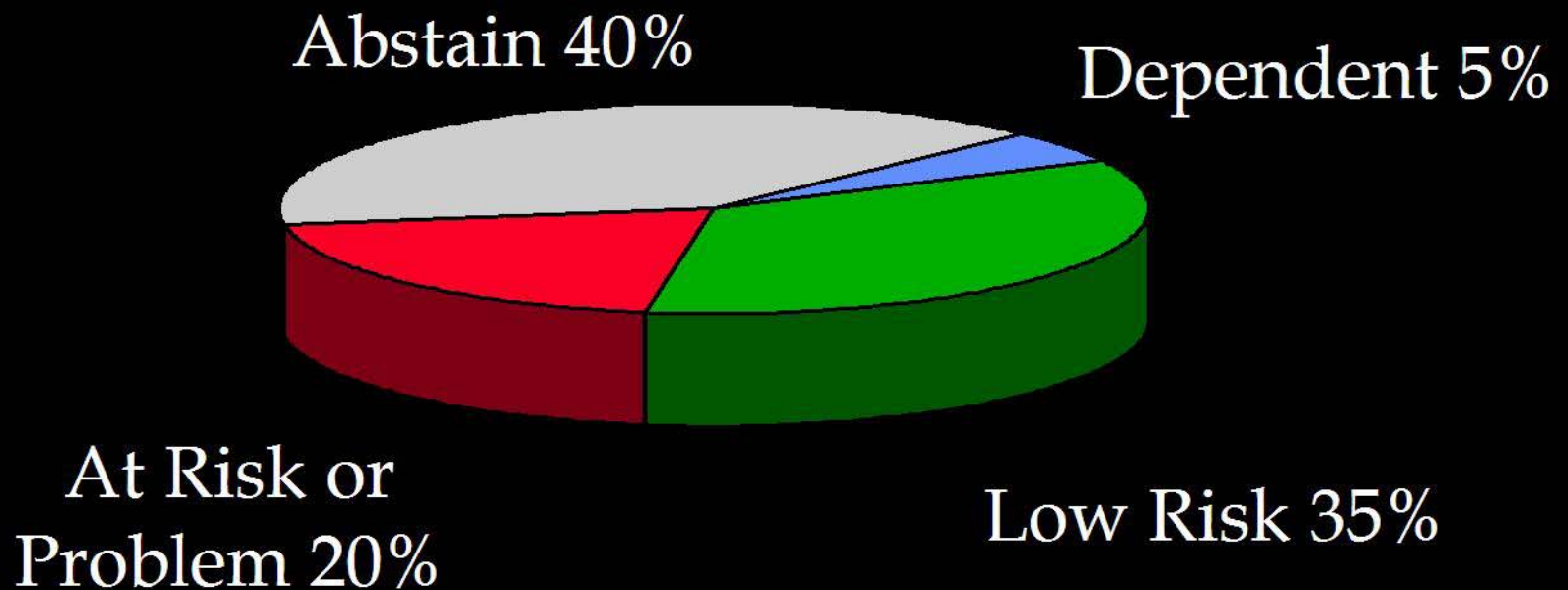


Source: Nephew, T.M.; Williams, G.D.; Stinson, F.S.; Nguyen, K.; and Dufour, M.C. *Surveillance Report #55: Apparent Per Capita Alcohol Consumption: National, State, and Regional Trends, 1977-98*. Rockville, MD: NIAAA, Division of Biometry and Epidemiology, Alcohol Epidemiologic Data System, December 2000.

# Total Per Capita Consumption: Ethanol by State, 1997

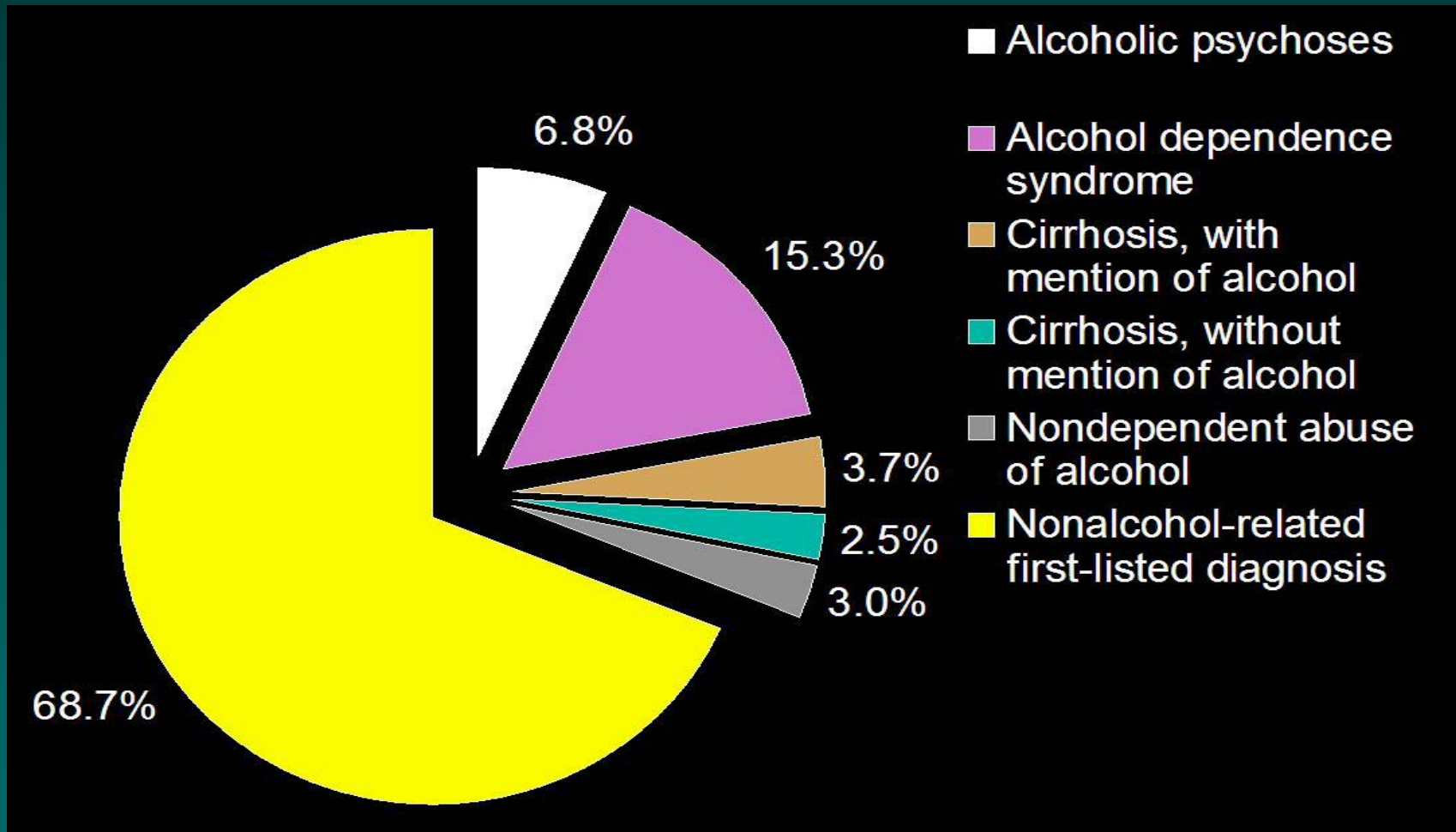


# U.S. Drinking Patterns



Source: *National Longitudinal Alcohol Epidemiologic Survey, 1992.*

# Principal diagnosis of discharges with alcohol mentioned (1997)





# *Average deaths with explicit mention of alcohol: 1986-1990*

