

# Gender Differences in Substance Use Disorders: Implications for Women's Addiction Treatment

***University of Washington***  
***Psychiatry and Addiction Case Conference***  
***April 7, 2022***

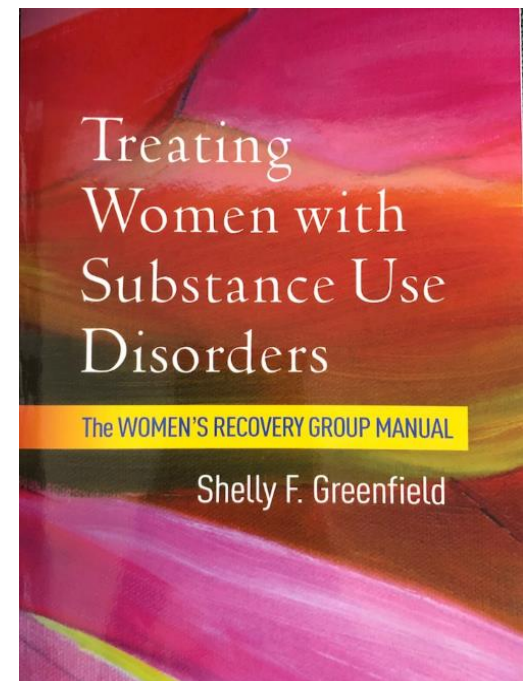
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  - *Treating Women with Substance Use Disorders: The Women's Recovery Group Manual* (Guilford Press, 2016)
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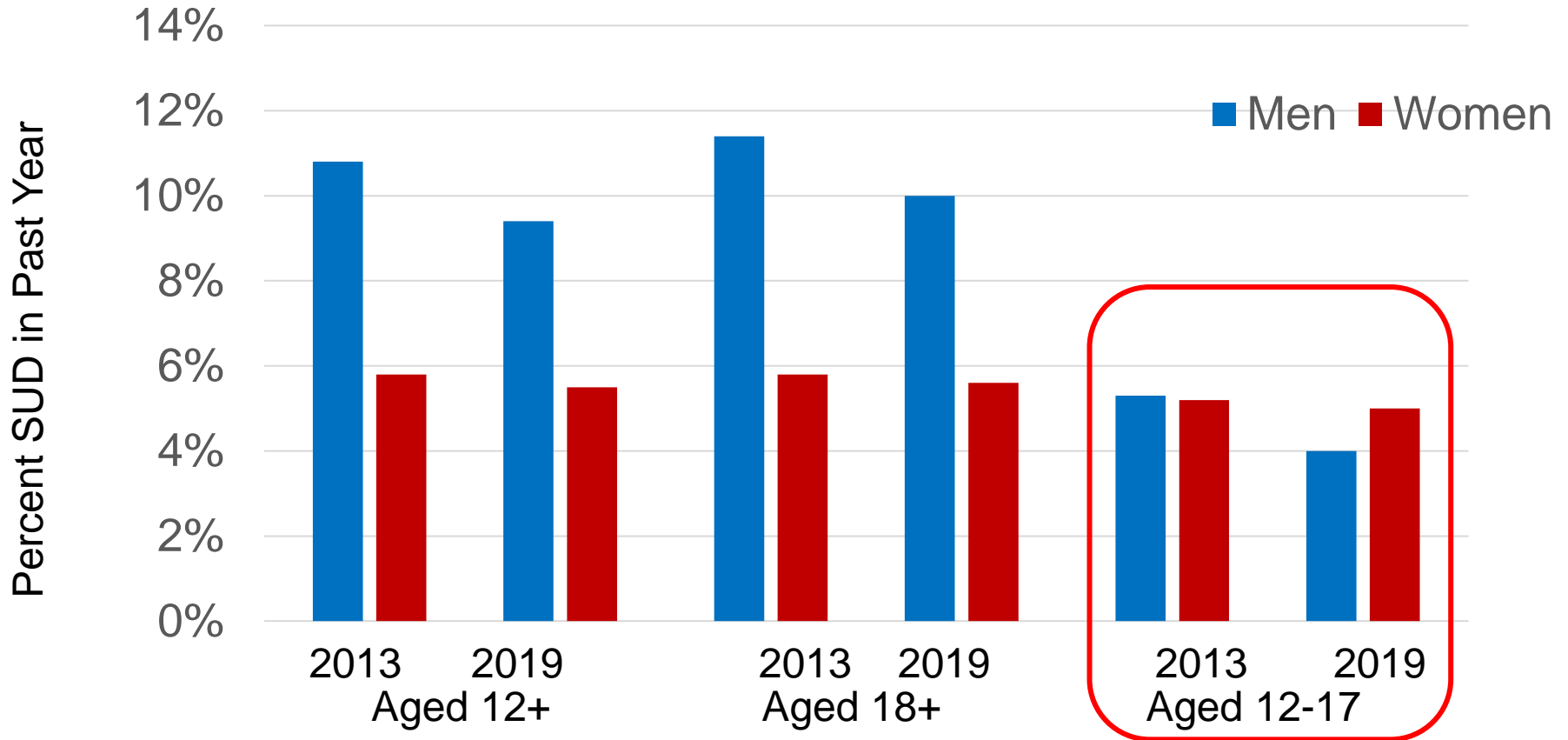
# Women and Addiction: before COVID-19 pandemic

Prevalence of substance use disorders is greater in men than women, **but gender gap has been narrowing in both U.S. and internationally:**

- 2012: In the U.S., women were approximately
- 42% of the users of illicit drugs (17.4 million women)
  - 40% of the users of tobacco products (33 million women)
  - 50% of alcohol users (85.5 million women)
  - 7.6 million women >12 years of age had a substance use disorder

(SAMHSA: Results from NSDUH: Detailed Tables, 2012; Keyes et al, DAD 2008;93:21-9)

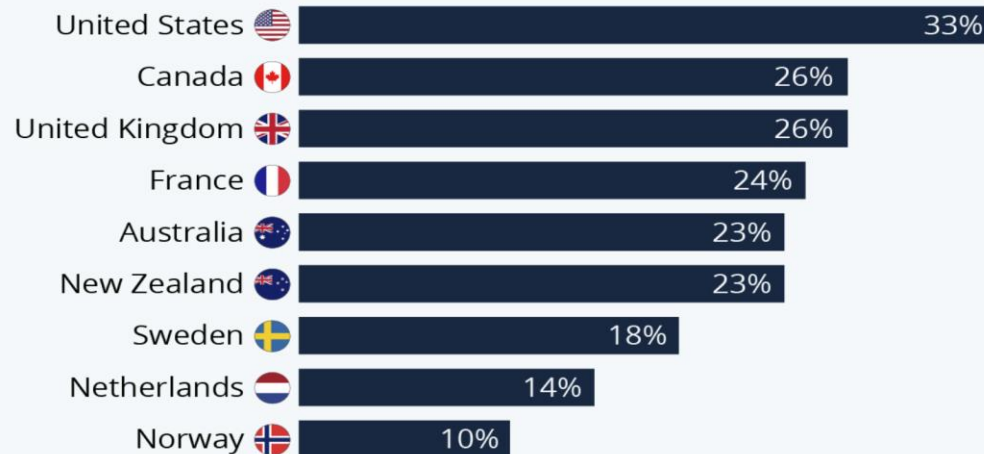
# Substance Use Disorders



*Data from the 2013 and 2019 National Survey on Drug Use and Health*

## Covid-19's Widespread Impact On Mental Health

Share of adults who experienced stress, anxiety or sadness that was difficult to cope with alone during the pandemic



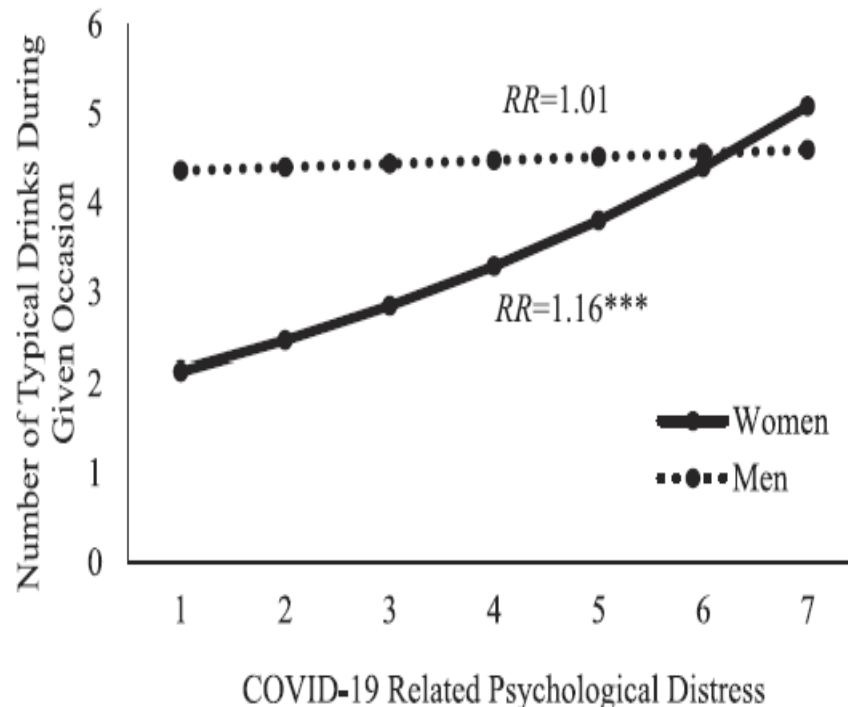
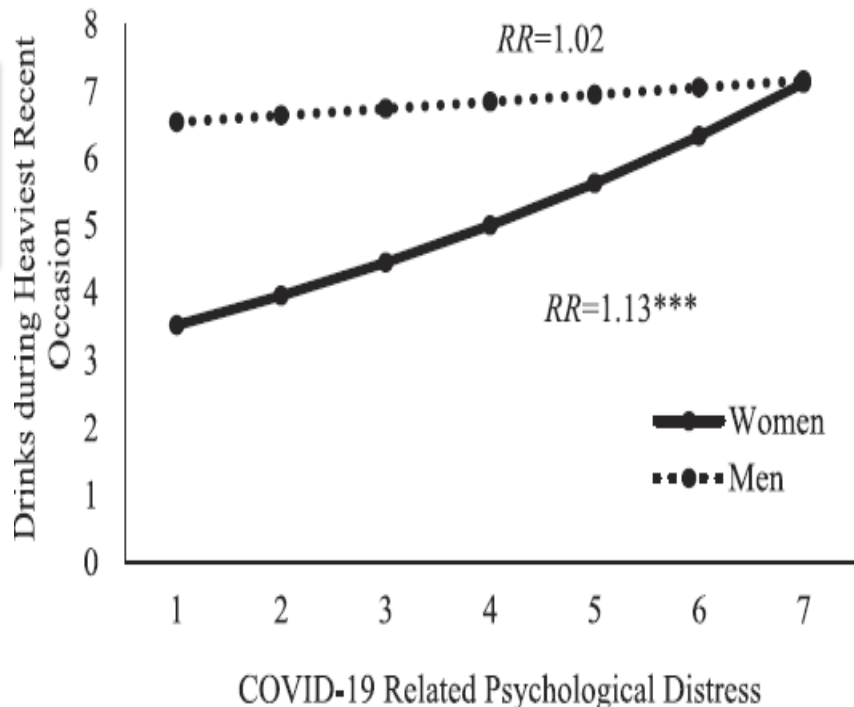
n=8,259 (February to June 2020)  
Source: The Commonwealth Fund



# Covid-19 and Alcohol Use: Gender differences in the U.S.

- April- June 2020 compared with same period in 2019 in the U.S. - Frequency of alcohol use increased:
  - 14% overall; **17% in women**
  - Women had a **41% increase in heavy drinking days**
  - Women had a **39% increase in the Short Inventory of Problems Scale** (SIPS) – (Pollard et al, *JAMA Network Open*, 2020).
- Gender differences in alcohol consumption during the pandemic with self-reported of stress (Rodriguez et al, 2020)

# Gender differences, stress, and drinking during the pandemic

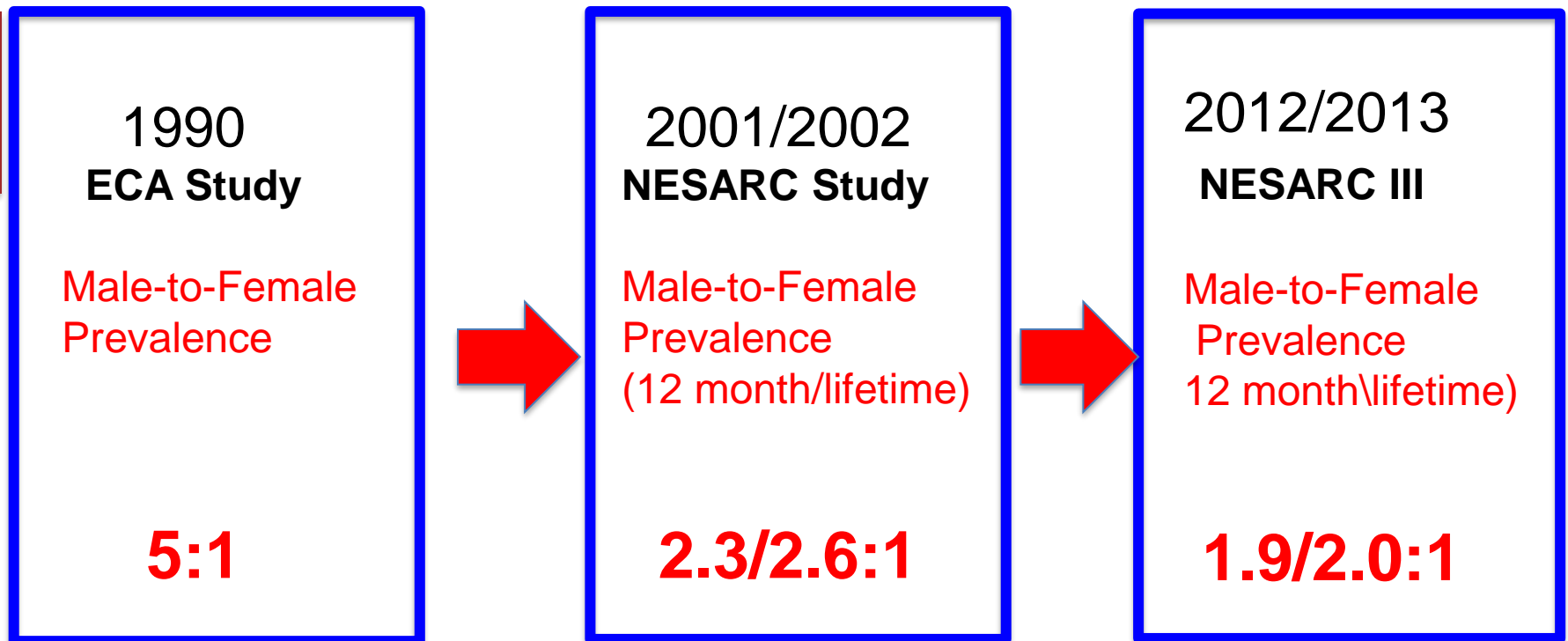


Exposure to Covid-19 related psychological distress shows that with greater distress, there is gender convergence of heavy drinking (i.e., # of drinks during the heaviest recent occasion) with women surpassing men in the number of typical drinks during the occasion related to psychological distress

- Narrowing gender gap in substance use & substance use disorders
  - Alcohol, tobacco, cannabis, opioids
- Telescoping course and health effects
- Risk Factors
- Barriers to Care
- Gender-specific treatment
  - The Women's Recovery Group



# Alcohol Use Disorders in the U.S.



Women born after World War II have lower levels of abstaining from alcohol, and higher levels of alcohol use disorders compared with earlier birth cohorts born prior to World War II; whereas prevalence in men remained relatively constant (Gruzca et al, 2008)

# Prevalence of Alcohol Use Disorders in Men and Women in U.S.

In the decade between 2001/02 and 2012/13:

- **16%** increase in the proportion of women who drink alcohol
- **58%** increase in women's high-risk drinking\* (compared with 16% in men)

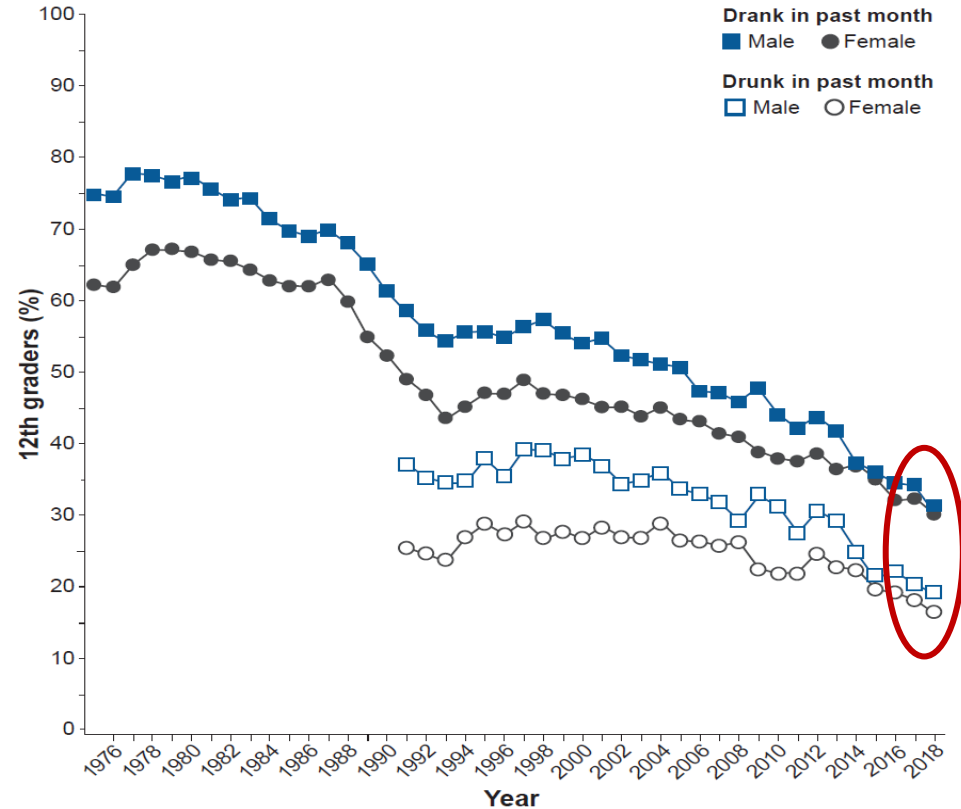
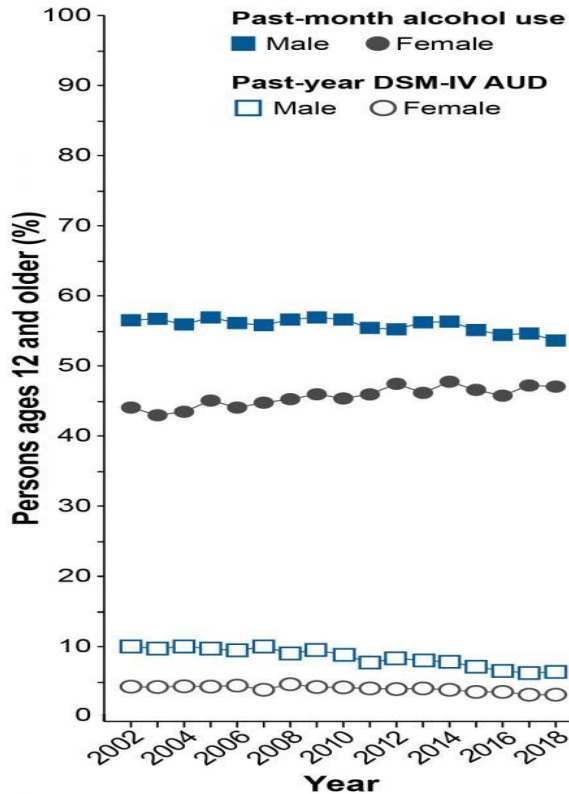
(\***High Risk Drinking** (5+ drinks in men & 4+ drinks in females on one occasion once/week)

- **84%** increase in women's one-year prevalence of an alcohol use disorder (vs 35% in men)

(Grant BF...Hasin DS. JAMA Psychiatry 2017;74:911-923)



# ALCOHOL Use AND ALCOHOL USE DISORDER



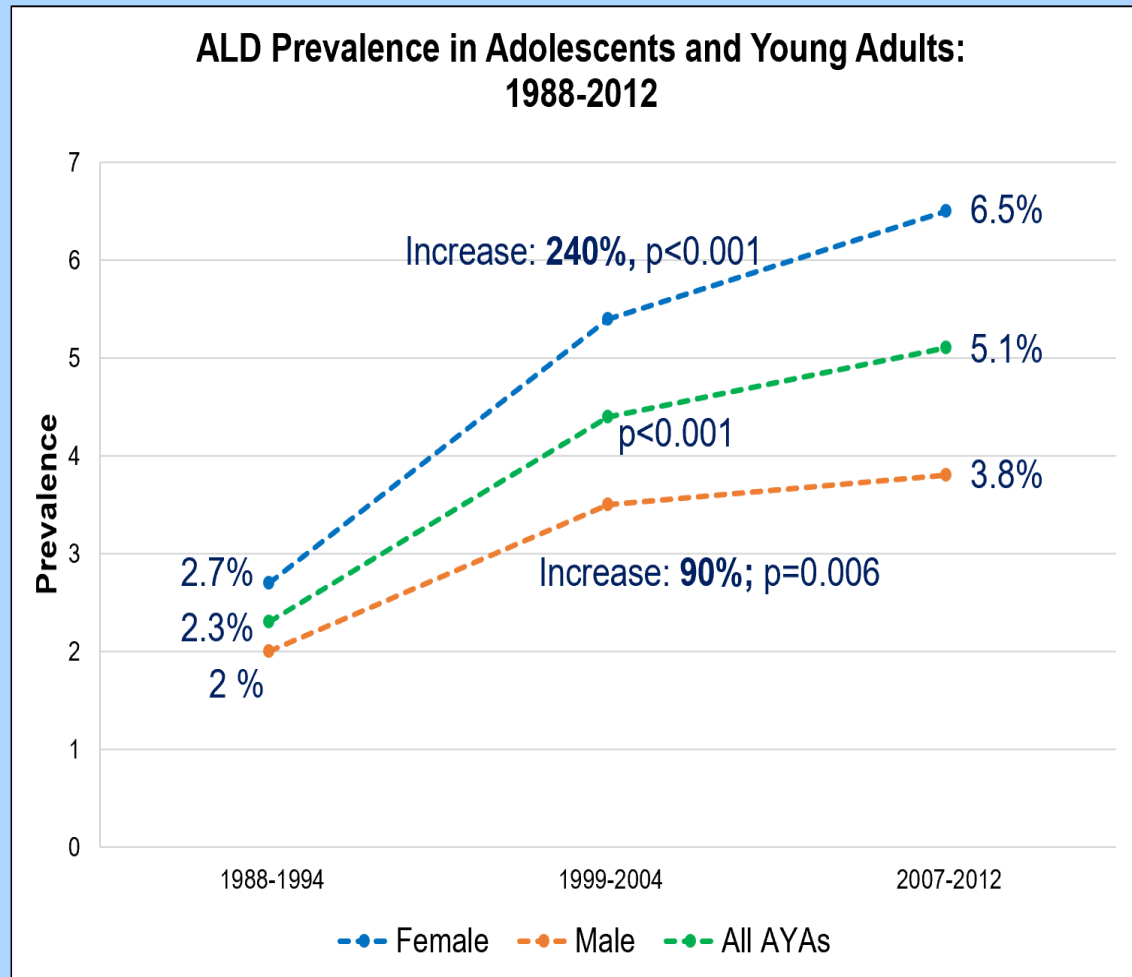
**Source:** White, AM (2020). Gender Differences in the Epidemiology of Alcohol Use and Related Harms in the United States. *Alcohol Research: Current Reviews*, 40(2), 01.

## Alcohol-related Health Risks through the lifespan:

- Liver disease
- Brain health/memory
- Cancer – including breast cancer
- Cardiovascular disease
- Mental health consequences
- Binge drinking/heavy drinking:  
Violence/assault,  
Unintended pregnancy,  
Sexually Transmitted Infections



# Alcoholic liver disease (ALD), ages 15-39 National Health and Nutrition Examination Survey



Doycheva et al, Digestive Diseases and Sciences, 2017

Hasin DS, CPDD 2018

# Alcohol and Cardiovascular Risk

- 599,912 drinkers across 83 studies in 19 countries
- Lowest risk of premature death was in people consuming < 100 grams of alcohol per week (<7 drinks week)
  - 14 grams alcohol is one standard drink (12 oz beer; 5 oz wine; 1.5 oz spirits)
- As consumption increased, risk of death from stroke, coronary artery disease, heart failure, aortic aneurysm increased
- Current recommendation is no more than 7 standard drinks for women and 14 for men within one week (98-196 gr/week)
- New threshold may be <7 standard drinks for both women and men



# Alcohol and Cancer Risk

- Alcohol is implicated in cancers of mouth, throat, larynx, esophagus, breast, liver and bowel
- American Institute for Cancer Research (AICR) and World Cancer Research Fund evaluated 119 studies of 12 million women around the world (2017):
  - Vigorous exercise reduces breast cancer risk pre- and post-menopausally by 17% and 10% respectively
  - Limiting alcohol to <1 standard drink/day pre- and post-menopausally
  - No clear threshold for alcohol intake but likely less than current limits (<http://www.aicr.org/continuous-update-project/reports/breast-cancer-report-2017.pdf>)

# Women and Addiction

## Compared with men, women:

- Now initiate their use of substances at an earlier age than in previous generations, and at approximately the same age as their male counterparts
- Have lower levels of abstaining and higher rates of use, misuse, and substance use disorders in recent birth cohorts
- Advance more rapidly from first use to regular use to first treatment episode
- Can use smaller quantities of substances for fewer years
- Average more medical, psychiatric, and social consequences



## This phenomenon is called “telescoping”:

- Women who drink progress more rapidly to serious alcohol related physical and social consequences than their male counterparts
- Shorter time between landmarks of illness progression
- This happens at lower doses of alcohol consumed less frequently

(Randall et al, 1999; Piazza et al, 1989; Lewis & Nixon, 2014)



# Physiological Basis of Telescoping in Alcohol Use Disorders



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Compared with men, women have:

- Less alcohol dehydrogenase (ADH) in gastric mucosa
- Decreased first-pass metabolism; Greater absorption ETOH
- More adipose tissue & lower total body water
- For each ounce alcohol of consumed, ↑ blood alcohol concentration
- Heightened vulnerability to adverse physical consequences (e.g., brain, heart, skeletal muscle, pancreas, liver, breast)
- Similar findings for other substances including opioids, nicotine, stimulants

## Which women and girls are most likely to binge drink?



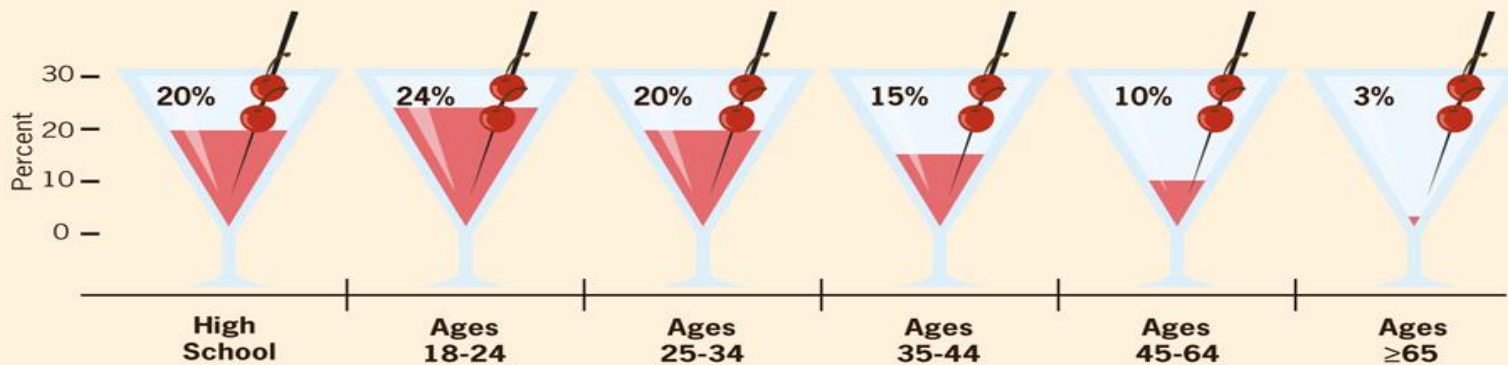
Women aged 18-34 and high school girls

Whites & Hispanics

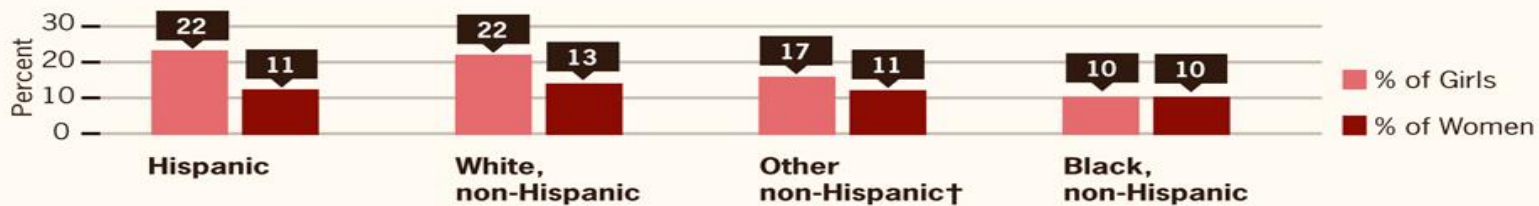


Women with household incomes above \$75,000

### Binge drinking\* among women and high school girls by age group



### Binge drinking\* by race/ethnicity among women and high school girls

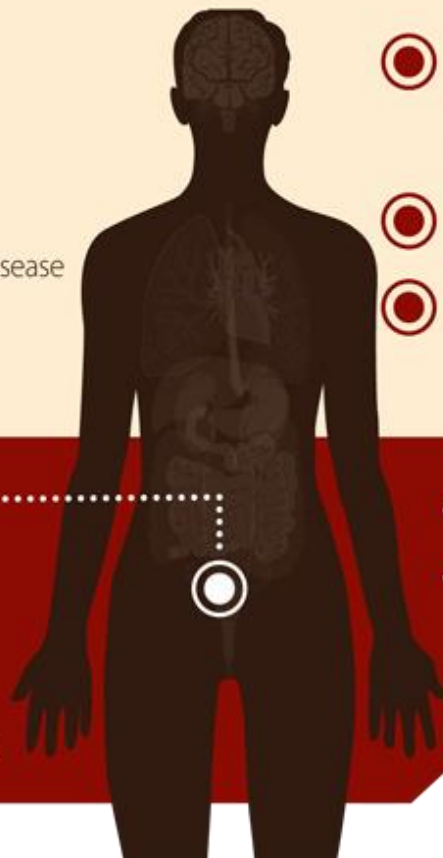


†Other non-Hispanic includes Asian, Native Hawaiian/other Pacific Islander, American Indian/Alaskan Native, and multiracial.

Binge Drinking: A serious, under recognized problem among women and girls CDC, *Vital Signs*, January 2013  
 1/8 US women (14 million) binge drink 3x/month; Drink an average of 6 drinks per binge; 1/5 high school girls binge drink  
 33% 18-25 year olds binge drink

# Risks for women and girls

- **Injuries**  
Motor vehicle crashes, falls, drowning
- **Violence**  
Homicide, suicide, intimate partner violence, sexual assault
- **Chronic diseases**  
High blood pressure, heart disease, stroke, liver disease
- **Cancer**  
Of the breast, liver, mouth and throat
- **Reproductive health**  
Unintended pregnancy, sexually transmitted diseases such as HIV
- **Alcohol dependence/alcoholism**
- **Learning and memory problems**



- **If pregnant** .....
  - Miscarriage, stillbirth, premature birth, and low birth weight
  - Fetal alcohol spectrum disorders (FASDs) which include physical, behavioral, and learning disabilities
  - Sudden Infant Death Syndrome (SIDS)
  - Attention-Deficit/Hyperactivity Disorder (ADHD)

## Among 15-44 year old women:

- **Drug use:** 5% pregnant women (10.8% non-pregnant) (same rates as 2009-2010)
- Varied with age: pregnant women 15-17yo (20.9%), 18-25 yo (8.2%), 26-44 yo (2.2%)
- **Current Alcohol Use** (18-44 year) (1 drink in past 30 days) increased in pregnant women from 9.2% in 2011 to 11.3% in 2018 (1/9 women)
- **Binge Drinking** (4 or more on one occasion) increased in pregnant women from 2.5% (2011) to 4.0% (2018)
- **No safe drinking levels in pregnancy: risks FAS/FASD**

(<https://www.cdc.gov/ncbddd/fasd/data.html#:~:text=Using%20medical%20and%20other%20records,areas%20of%20the%20United%20S>  
tates.&text=The%20most%20recent%20CDC%20study,to%209%20years%20of%20age.)

According to the U.S Surgeon General's Report 2014:

- 42 million Americans smoked cigarettes in 2012
- 20 million women and girls > age 12
- **Women's risk of dying from smoking has more than tripled in 50 years and is now equal to that of men**

[US Department of Health and Human Services. *The health consequences of smoking - 50 years of progress: a report of the surgeon general, 2014.*

<http://www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf> Accessed August 8, 2015.]

- Ratio of Adult Men-to-Women users of tobacco was **1.2:1** (34 million total smokers in 2019)
  - Adult men (15.3%) and Adult women (12.7%) (Center for Disease Control:2019; [https://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/adult\\_data/cig\\_smoking/index.htm#:~:text=In%202019%2C%20nearly%2014%20of,with%20a%20smoking%2Drelated%20disease](https://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm#:~:text=In%202019%2C%20nearly%2014%20of,with%20a%20smoking%2Drelated%20disease))
- Tobacco use in 2012 equal in adolescents (6.3%M & 6.8%F)
- Women: weight and mood related issues risk factors for smoking; fear of post-cessation weight gain may be barrier to quitting
- Timing of quit attempts with menstrual cycle phase may be important for some women with greater success rates in follicular than luteal phase of menstrual cycle (Allen et al, Addict Behav, 2010;Perkins et al, JCCP, 2000)
- <http://women.smokefree.gov/> is a helpful site
- Vaping in the U.S.

# Nicotine Treatment Effectiveness: Sex/Gender

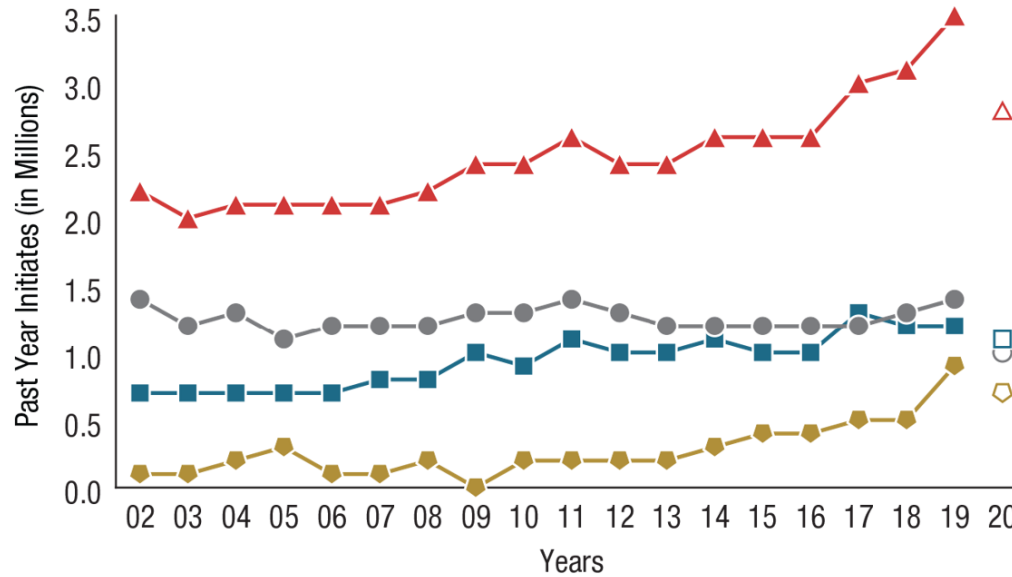
## Nicotine Treatment Effectiveness May Vary by Sex/Gender

- FDA approved pharmacotherapies:
  - NRT(transdermal nicotine, gum, lozenge, nasal spray, oral inhaler)
  - Varenicline
  - Bupropion SR
- Nicotine Replacement Therapy: transdermal patch 40% more effective Men>Women (Perkins & Scott, 2008)
- Decreasing nicotine in cigarettes effect on abstinence:  
Women>Men (Vogel et al 2014)
  - Reducing nicotine tends to help women achieve abstinence more than men (who are helped more by the patch)
- Varenicline: 46% more efficacious women>men at end of treatment and 34% 6-months post (McKee et al, 2015)





# Past Year Marijuana Initiates: Among People Aged 12 or Older; 2002-2020



Age Category: -△- 12 or Older -○- 12 to 17 -□- 18 to 25 -◇- 26 or Older

Age	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
12 or Older	2.2	2.0	2.1	2.1	2.1	2.1	2.2	2.4	2.4	2.6	2.4	2.4	2.6	2.6	2.6	3.0	3.1	3.5	2.8
12 to 17	1.4	1.2	1.3	1.1	1.2	1.2	1.2	1.3	1.3	1.4	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.4	1.0
18 to 25	0.7	0.7	0.7	0.7	0.7	0.8	0.8	1.0	0.9	1.1	1.0	1.0	1.1	1.0	1.0	1.3	1.2	1.2	1.1
26 or Older	0.1	0.1	0.2	0.3	0.1	0.1	0.2	0.0	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.9	0.7

Note: Estimates of less than 0.05 million round to 0.0 million when shown to the nearest tenth of a million.

Note: There is no connecting line between 2019 and 2020 to indicate caution should be used when comparing estimates between 2020 and prior years because of methodological changes for 2020. Due to these changes, significance testing between 2020 and prior years was not performed.

Note: The estimate in 2020 is italicized to indicate caution should be used when comparing estimates between 2020 and prior years because of methodological changes for 2020. Due to these changes, significance testing between 2020 and prior years was not performed.

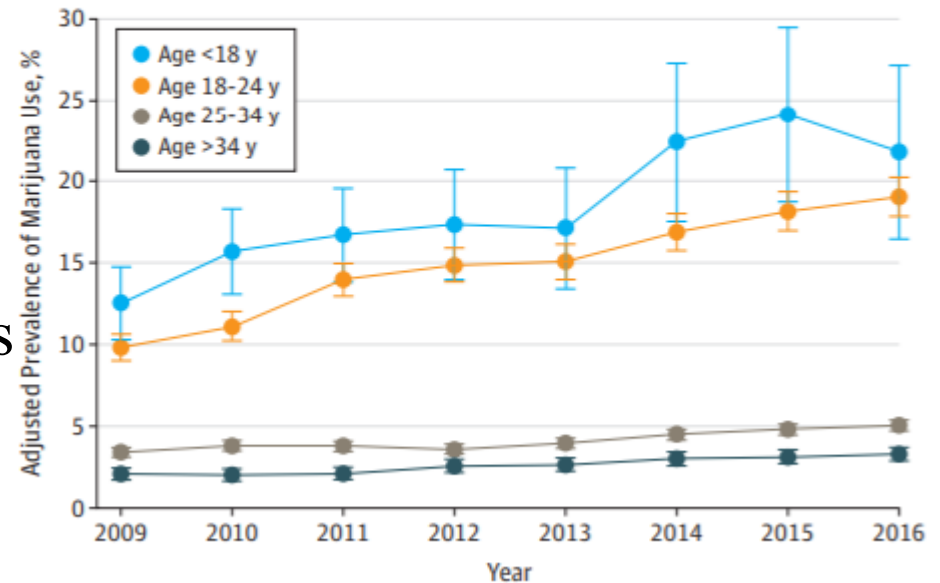
# Sex Differences in Cannabis Use Disorders (CUD) - Withdrawal

- NESARC subsample n=1603 reporting last 12 months of use
  - Women more likely than men to experience N/V/stomach ache (3.2 vs 1.7%) (Agrawal, 2008)
  - Men more likely to experience goose bumps/pupil dilation
- Convenience sample of non-treatment seekers (n= 104 self report of serious quit attempt) (Copersino, 2010)
  - Women were more likely to report upset stomach
  - Men more likely to report craving for cannabis
- Cannabis withdrawal among treatment seekers (45 women/91 men) used 14 item withdrawal scale (Herman, Weerts & Vandrey, 2015)
  - Women had more severe scores especially mood symptoms and GI symptoms such as nausea and stomach pain

# Cannabis use in Pregnancy Increasing in U.S.

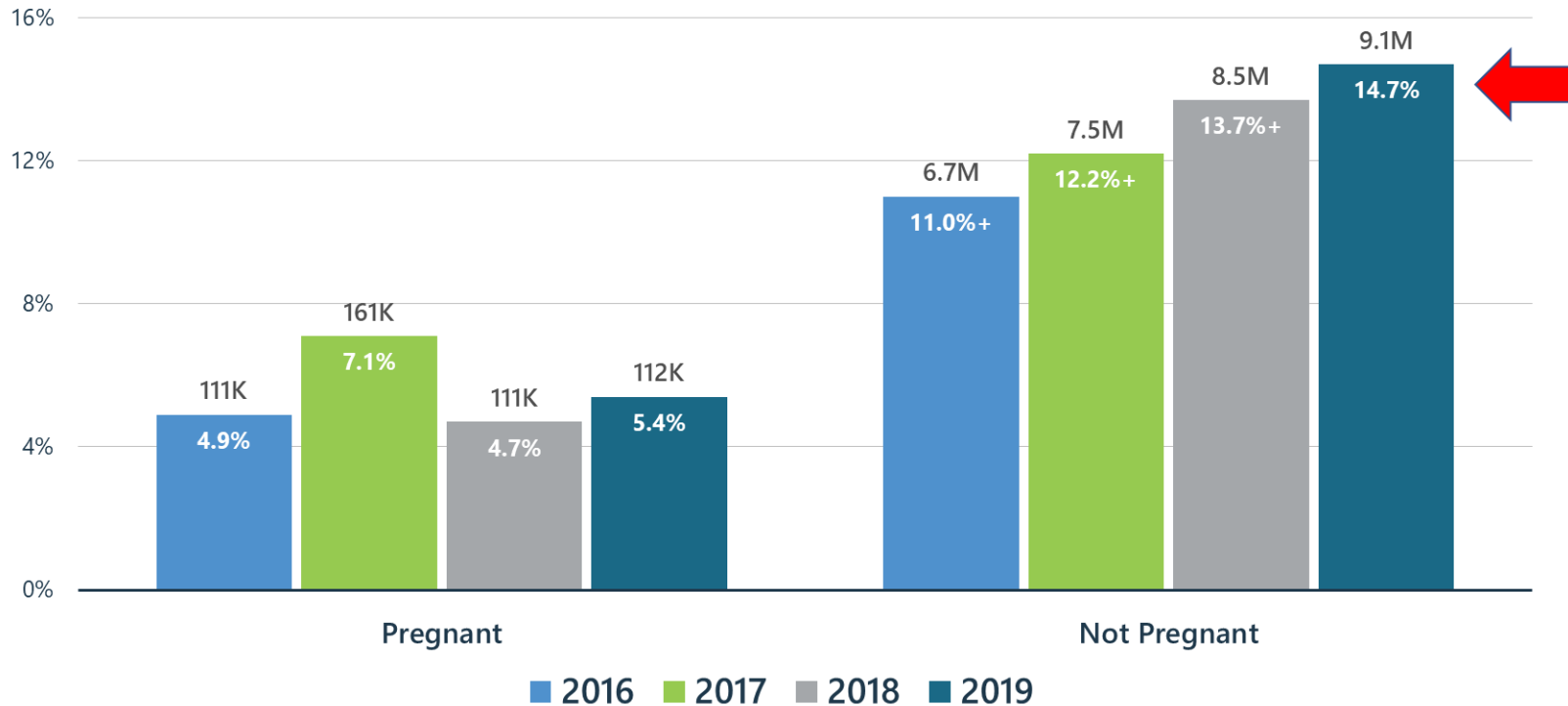
- Increase in self-reported cannabis use in U.S. adult pregnant women 2.4% (2002) to 3.9% (2014) (Brown et al JAMA 2017)
- California 2009-2016 used self-report & toxicology -8 weeks
- **Increased pre-natal** use from 4.2% in 2009 to 7.1% in 2016 (Young-Wolff et al, JAMA 2017)
- **Preliminary data indicates some impairment to fetal growth and development but 79% of 785 pregnant women perceived little to no harm in prenatal use** (Volkow et al JAMA 2017; Ko et al Am J Obstet Gynecol 2015)

Figure 2. Adjusted Prevalence of Marijuana Use Among 279 457 Pregnant Females in KPNC by Age, 2009-2016



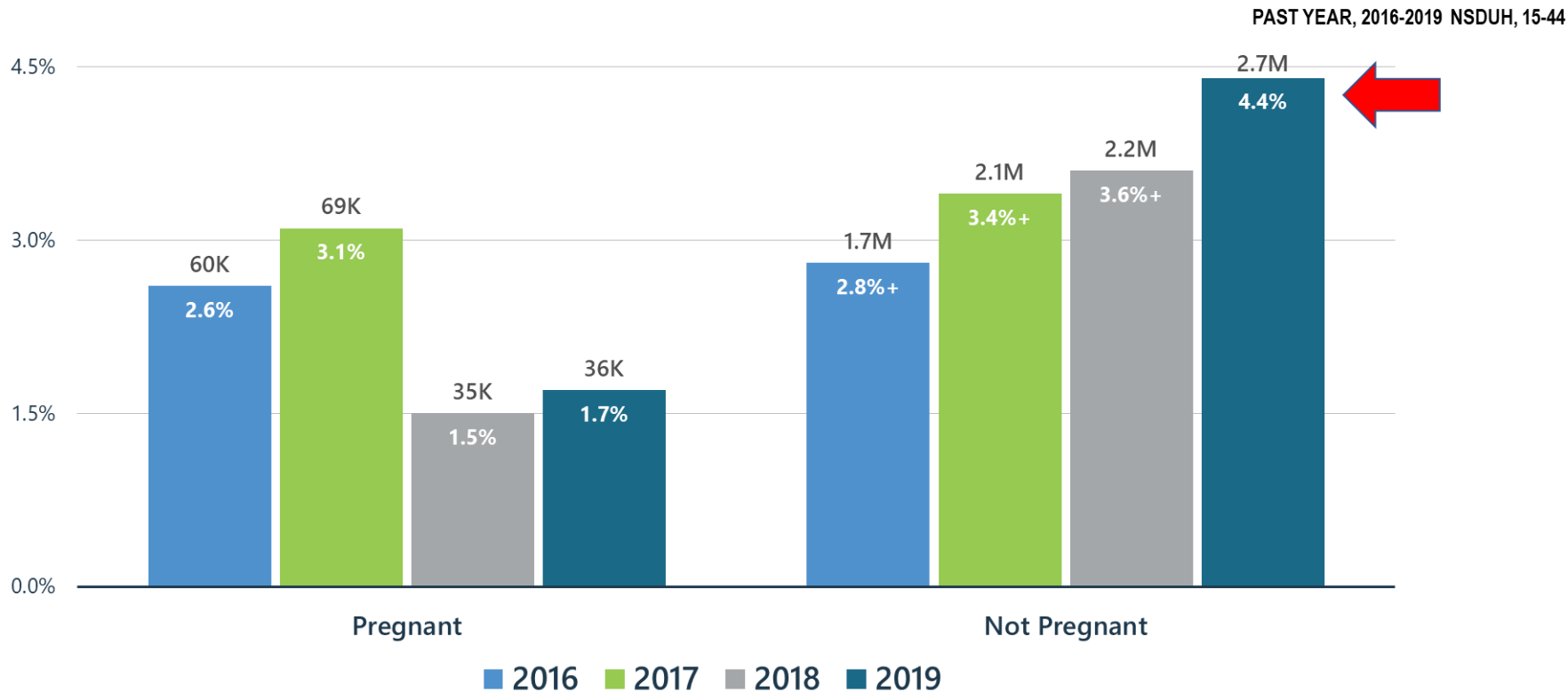
## Marijuana Use among Women by Pregnancy Status

PAST MONTH, 2016-2019 NSDUH, 15-44



+ Difference between this estimate and the 2019 estimate is statistically significant at the .05 level.

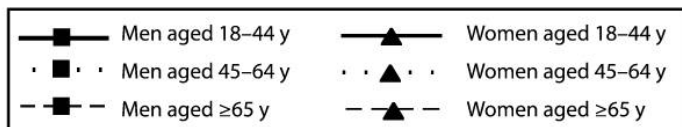
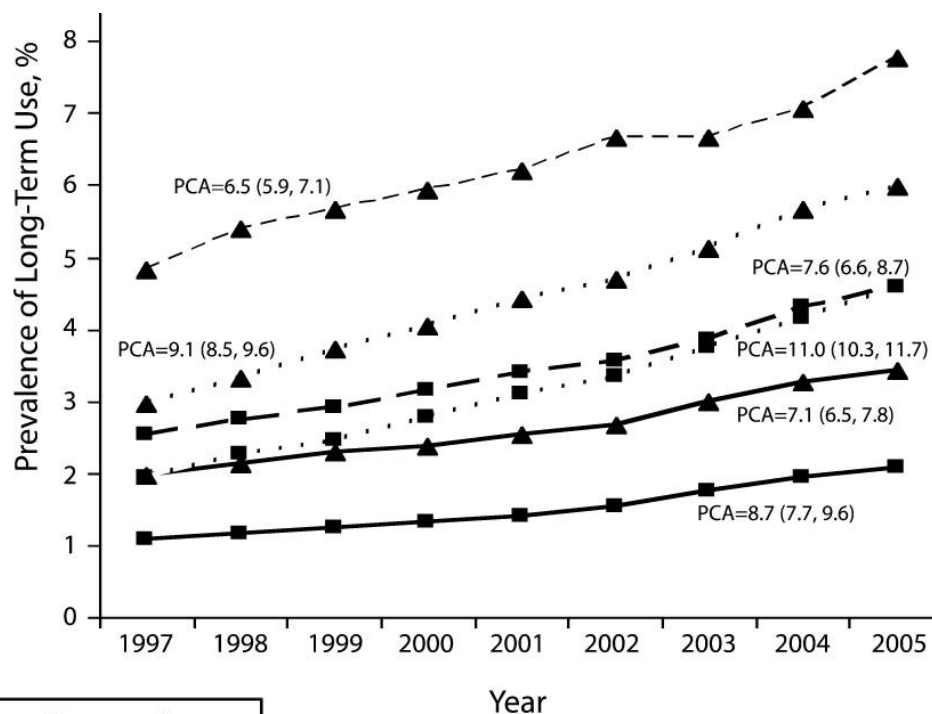
## Daily or Almost Daily Marijuana Use among Women by Pregnancy Status



+ Difference between this estimate and the 2019 estimate is statistically significant at the .05 level.

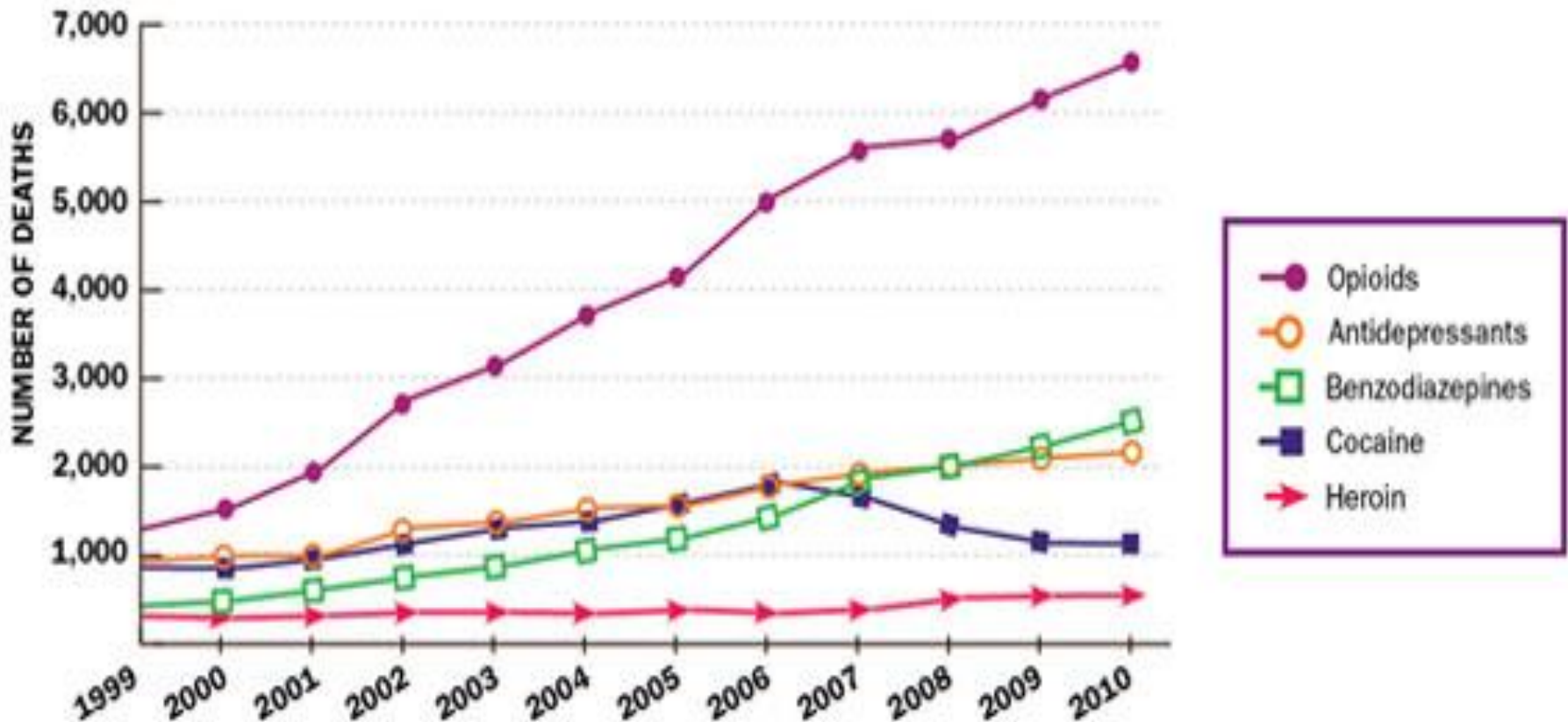
# Epidemiology: Opioid Use among Women

- Women are more likely to be prescribed opioids, more likely to use them for a longer period of time



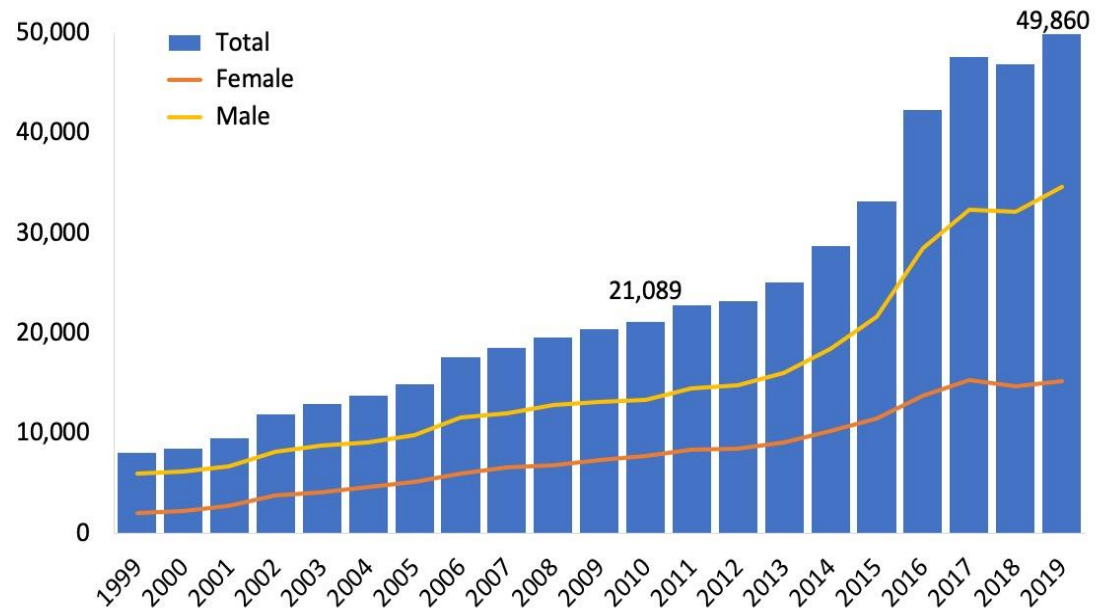
# Opioids: Prescription opioid overdose deaths increasing in women

CDC Vital Signs Report Prescription Painkiller Overdoses: A Growing Epidemic especially among women (July, 2013)



# Opioid Use

**Figure 3. National Drug Overdose Deaths Involving Any Opioid, Number Among All Ages, by Gender, 1999-2019**



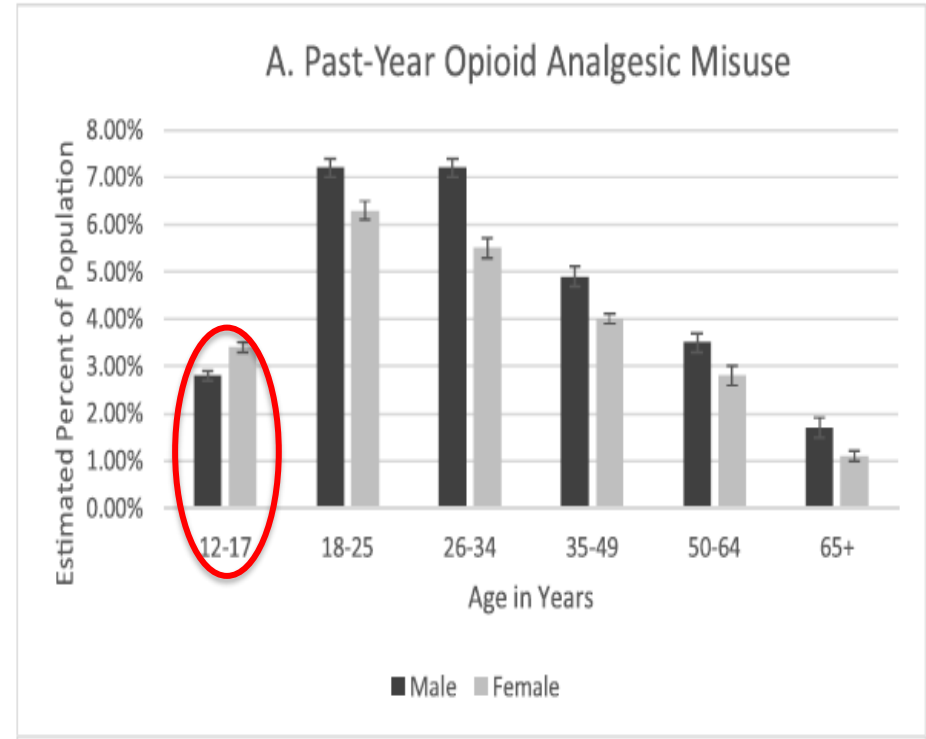
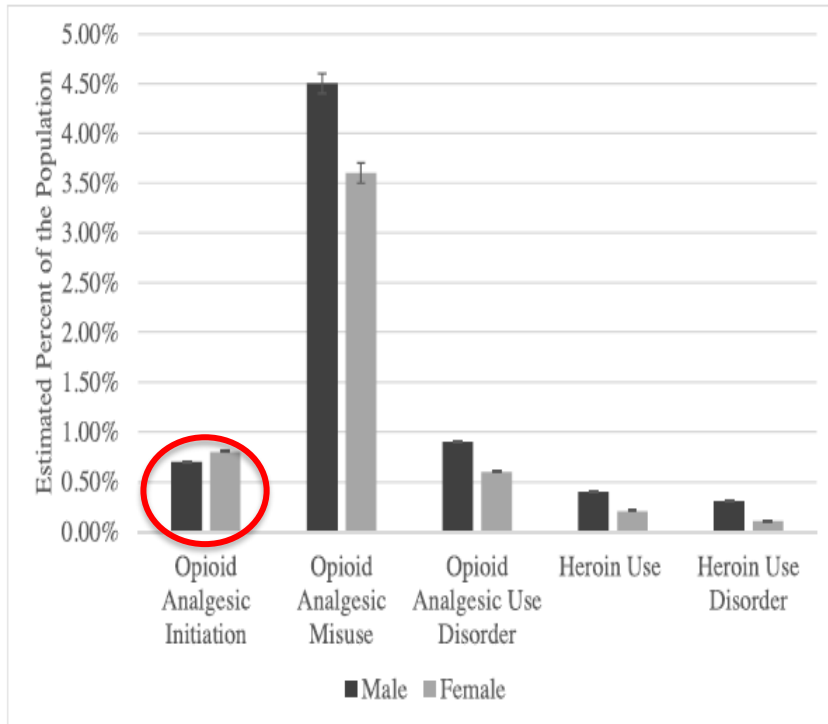
From 1999-2019:  
640% increase in women  
vs. 478% increase in  
men

\*Among deaths with drug overdose as the underlying cause, the any opioid subcategory was determined by the following ICD-10 multiple cause-of-death codes: natural and semi-synthetic opioids (T40.2), methadone (T40.3), other synthetic opioids (other than methadone) (T40.4), or heroin (T40.1). Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2019 on CDC WONDER Online Database, released 12/2020.

Source: CDC WONDER



# Opioid Use and Misuse



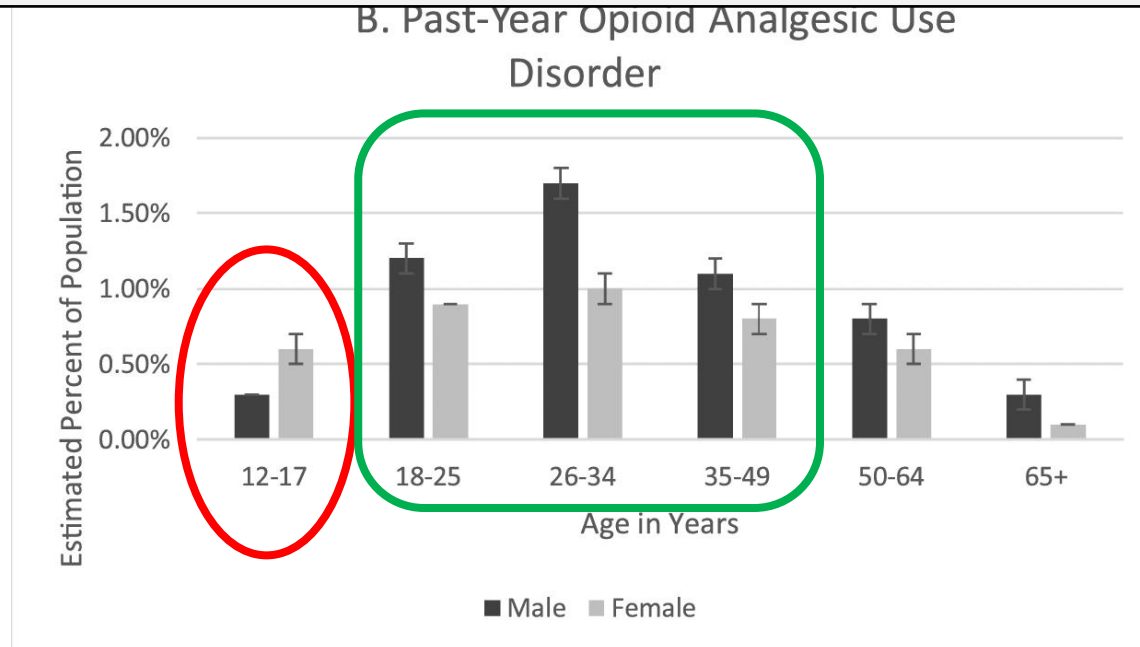
McHugh R.K., Nguyen M.D., Chartoff E.H., Sugarman D.E., Greenfield S.F. (2021). Gender differences in the prevalence of heroin and opioid analgesic misuse in the United States, 2015-2019. *Drug Alc Depend*, 227, 108978

## Gender differences in the prevalence of heroin and opioid analgesic misuse in the United States, 2015–2019

R. Kathryn McHugh<sup>a,b,\*</sup>, Minh D. Nguyen<sup>a</sup>, Elena H. Chartoff<sup>a,b</sup>, Dawn E. Sugarman<sup>a,b</sup>, Shelly F. Greenfield<sup>a,b</sup>

### Analyses from annual survey data from the 2015–2019 National Survey on Drug Use and Health

#### B. Past-Year Opioid Analgesic Use Disorder



# Opioid Overdose Deaths 2021

- 101,260 drug overdose deaths in the U.S. in 12 months ending in 2021 (CDC, 2021)
- Synthetic opioids major contributor to these deaths
- Some evidence of gender gap in opioid overdose deaths closing
- Male:female prevalence of OUD and opioid deaths dynamic

# Gender differences in Prescription Opioid Dependence

Shelly F. Greenfield, M.D., M.P.H.

## Compared with men, women are more likely to:

- Have chronic pain
- Be prescribed opioids, given higher doses, and use for longer time periods
- Become dependent more rapidly
- Obtain prescription opioids from family and friends in one 2010 study; men more likely to purchase them

(Prescription Painkiller Overdoses, CDC Vital Signs 2013; Back et al, Addict Behav 2010; Weiss AJ et al; Patient characteristics of opioid related inpatient stays and ED visits nationally and by state, 2014)

# Gender differences in Prescription Opioid Use Disorders



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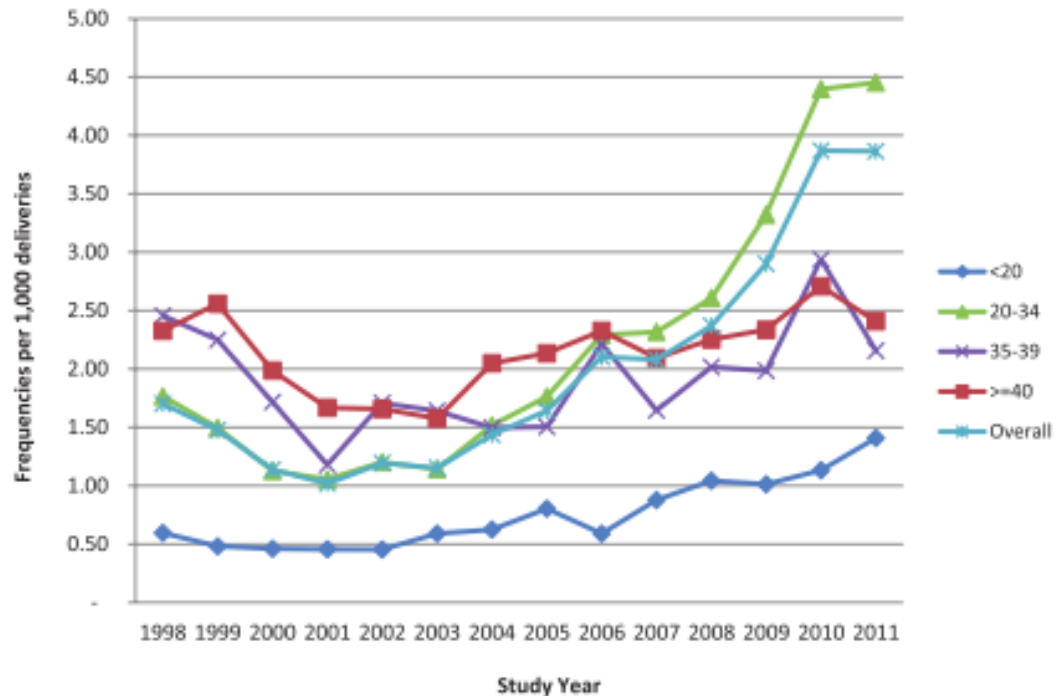
Shelly F. Greenfield, M.D., M.P.H.

## Prescription Opioid Addiction Treatment Study (POATS) NIDA-funded clinical trial (N=653; 40% women) :

- No gender difference in opioid use disorder severity or treatment outcome
- Women had greater functional impairment, psychiatric severity, & more likely to use prescription opioids to cope with negative affect and pain
- Men had more opioid craving and significant alcohol misuse than women (Weiss et al 2011; McHugh et al, 2013)

# Epidemiology: Perinatal Opioid Use

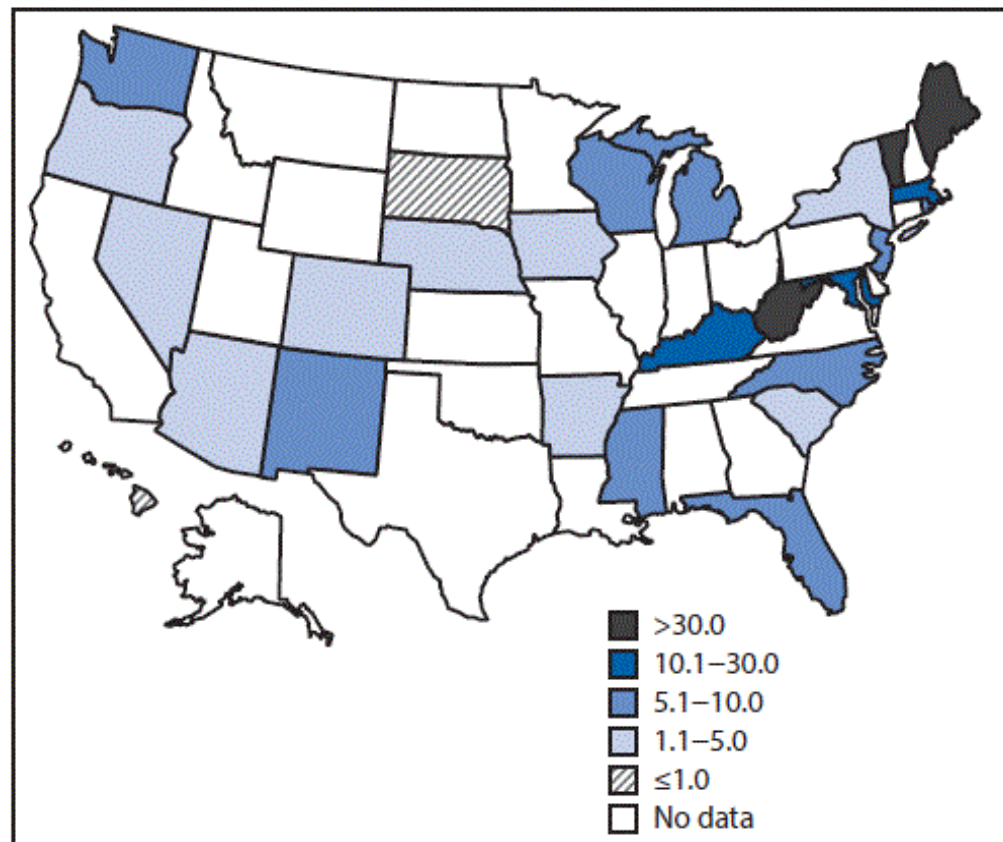
- **2.3% of women** of reproductive age reported non-medical opioid use in last 30 days (NSDUH 2017)
- **0.8% of pregnant women** report non-medical opioid use in last 30 days (NSDUH 2017)
- **0.4% of pregnant women** at time of delivery had opioid use disorder or misuse (National Inpatient Sample)



# Geographic distribution of neonatal opioid withdrawal syndrome

Shelly F Greenfield MD MPH

- Increase in neonatal opioid withdrawal syndrome affecting 5-6 per 1,000 live births in 2015 compared with 1 per 1,000 births in 2000 (Patrick, 2012, Ko, 2016)
- Appalachia/New England with highest rates, in some states >30 per 1,000 births
- West Virginia: 2017 prevalence of intrauterine substance exposure 13.99%; incidence of NOWS = 5.12% (10x national)



# MOTHER Study (Maternal Opioid Treatment: Human Experimental Research)

Shelly F. Greenfield, M.D., M.P.H

- **Methadone or buprenorphine in treatment of pregnant women with opioid use disorders** (ACOG, August 2017)
  - MOTHER study (2010): 175 pregnant opioid dependent women randomized to buprenorphine versus methadone
  - 131 neonates (58 buprenorphine & 73 to methadone)
  - Bup exposed infants required 89% less morphine, 43% fewer hospital days, & 58% shorter duration of treatment for the neonatal abstinence syndrome (i.e., neonatal opioid withdrawal syndrome)
  - More maternal drop-out in bup versus methadone group (33% vs 18%)
  - Drop-out likely due to induction protocol at least in part
- (Jones et al, N Engl J Med 2010;363:2320-31; and also ACOG, August 2017)



## Medication Treatment for Opioid-dependent Expecting Mothers (MOMS) Trial (CTN:0080): A pragmatic

randomized trial comparing two buprenorphine BUP formulations (@12 sites – across the U.S.) [Winhusen T, LI]

- Two formulations of Bup – shorter acting sublingual (SL) versus longer acting extended release (XR)
- The primary objective of CTN-0080 is to evaluate the impact of treating opioid use disorder in pregnant women with BUP-XR, compared to BUP-SL, on maternal-infant outcomes.
- 12-month follow-up of mothers and infants

<https://www.drugabuse.gov/about-nida/organization/cctn/ctn/research-studies/medication-treatment-opioid-dependent-expecting-mothers-moms-pragmatic-randomized-trial-comparing>

## Among the most reproducible research findings:

- **Increased Prevalence in Women** in past 3-4 decades of alcohol and drug use with lower levels of abstaining and higher levels of dependence (Grucza et al, 2008; Compton et al, 2007)
- **Heightened vulnerability** of women to adverse medical and social consequences (Chatham et al., 1999; Gentilello et al., 2000; Henskens et al., 2005)
- **Telescoping:** Women **advance more rapidly** than men from regular use to first treatment episode (Randall et al., 1999; Piazza et al., 1989)
- At treatment entry, with fewer years of use, women have **more medical, psychiatric, and adverse social consequences** than males (Randall et al., 1999; Hernandez-Avila et al., 2004)

# Particular Risk Factors for Women

## For men and women:

- Genetic factors/biological basis significant for men and women
- Early age of onset/initiation

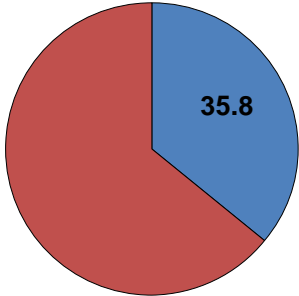
## Particularly significant for women:

- Heavy drinking/drug use by significant other/partner
- History of sexual or physical abuse and/or family violence
- Co-occurring psychiatric disorders (e.g., depression, anxiety)
- Possible sex differences in stress response

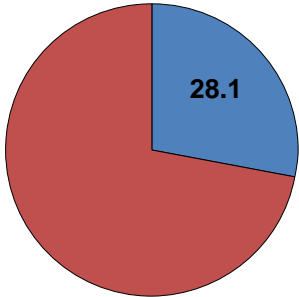
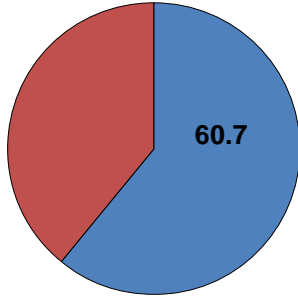
(Blum et al, 1998, J of Women's Health, vol 7, 861)

# Lifetime Alcohol Use Disorders

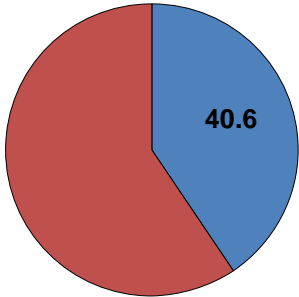
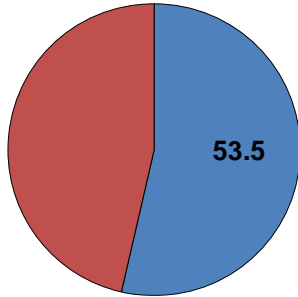
## Men Women



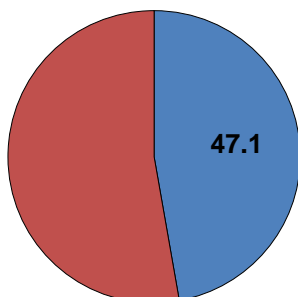
Anxiety Disorder



Mood Disorder



Drug Dependence



# Trauma/Abuse and Risk of Substance Use Disorders



- Violence/trauma common in substance use disorders
- Women more likely to experience childhood sexual/physical abuse
- Strong relationship between abuse history and substance use disorders in women

# What about treatment?

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- Given these emerging trends and risk factors for developing SUDs
- Are there gender differences in:
    - Barriers to substance use disorder treatment and outcomes?
  - What about gender-specific treatment for women?

# Specific Barriers to Treatment Entry For Women

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- Less likely to be screened in primary and mental health care
- Lack of treatment services for pregnant women
- Lack of childcare services for parenting women
- Economic barriers (e.g., lack of insurance; other resources)
- Trauma histories
- Social stigma and discrimination
- **Higher risk for certain co-occurring psychiatric disorders such as mood, eating, anxiety, and post-traumatic stress disorder**

(Brady and Ashley, 2005; Pelissier and Jones, 2005; Grella, 1997;

Brady and Randall, 1998; Gordon et al, 2008; Killeen et al, 2011) (ADVISE Study Kaiser)

# Gender Differences in SUD Treatment Outcomes

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- Gender in itself ***is not*** a specific predictor of substance use disorder treatment outcomes  
(Greenfield et al, Drug and Alcohol Dependence, 2007)
- **Known predictors** of treatment outcomes can **vary** in prevalence, severity, or significance **by gender** (e.g., co-occurring disorders, trauma histories, employment, educational attainment, social support)
- These predictors may have a **different level of significance** for men's and women's recovery
- Especially true for **co-occurring psychiatric disorders** and **histories of trauma** as predictors of outcome



# What is Women-Focused/Gender-Responsive Treatment?



Shelly F. Greenfield, M.D., M.P.H

- Addresses **gender differences in antecedents and consequences of addiction** and the treatment process
- High prevalence and significance of **co-occurring other psychiatric disorders**
- **Trauma exposure** and associated physical and mental health needs;
- Central role **relationships** with children, intimate partners, and others play in women's addiction and recovery
- More likely to **provide adjunctive services** (childcare, job training, prenatal care) especially relevant to women's outcomes

# Women-Focused Treatment and Relationship to Special Needs of Women



- Evidence of improved treatment outcome in women-focused programs that provide adjunctive services and address psychosocial needs (potential barriers) that are more common to some subpopulations of women with SUDs:
  - Childcare needs
  - Financial concerns
  - Support for pregnant women
  - Job training
  - Life skills training
  - Transportation
  - Peer support
  - Special programming to minority women (e.g., Latinas, Native American women)
  - Mental Health care
  - Programming for women with trauma

(Grella et al., 1999; Volpicelli et al., 2000; Hien et al., 2004)

# The Women's Recovery Group (WRG)



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Shelly F. Greenfield, MD, MPH

- Most women receive treatment in mixed-gender substance use treatment programs
- Recognized the need for treatment that would be gender-responsive for women with substance use disorders
- Research to develop an evidence-based group treatment designed for women with substance use disorders who are heterogeneous with respect to their substance disorder, co-occurring other psychiatric disorders, trauma histories, and life stage

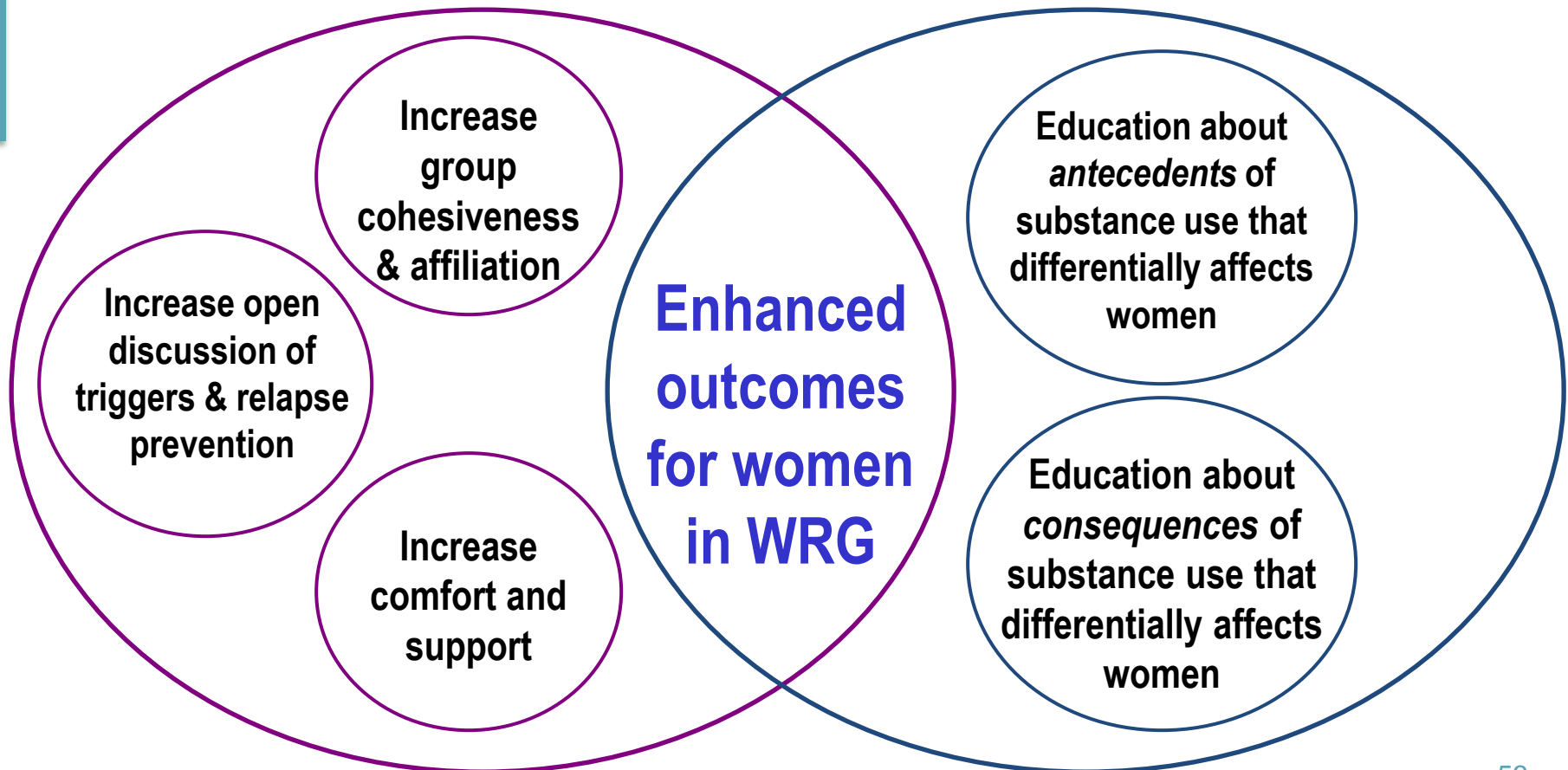
- WRG was developed and tested in NIH/NIDA funded Stage I and Stage II trials using mixed methods (2002-2014)
- 90 minute 12-session relapse prevention, cognitive-behaviorally focused group therapy
- Designed for women heterogeneous with respect to their substance use, co-occurring psychiatric disorders, trauma histories, and life stage
- Women-focused content & all-women group composition
- Structured sessions with check-in, topic presentation, open discussion, take home messages, assignment of a skill practice and check-out
- 14 topics that can be flexibly chosen for 12 sessions

# Hypothesis Regarding Mechanism of Action

(R01DA 015434 from NIDA ; Greenfield SF, et al, DAD 2007)

## All women group composition

## Women-focused group content



# WRG Therapy Development: Structure of Sessions



## 90-minute structured relapse prevention group therapy session:

- Brief check-in
- Review of skill practice and last week's topic
- Presentation of session topic
- Discussion by participants
- Review session's "take home message" and upcoming week's skill practice
- Check-out

## **Four Levels of Participation** (Patient to Titrate to Comfort):

- Attendance
- Reflective Listening
- Speaking
- Doing Skills Practice Between Session

**WRG Theme:** Recovery Means Taking Care of Yourself

**Central Recovery Rule:** Recovery = Relapse Prevention + Repair Work



# 14 Session Topics

1. The Effect of Drugs and Alcohol on Women's Health
2. What are the Obstacles to Seeking Treatment and Getting into Recovery
3. Managing Mood, Anxiety, and Eating Problems Without Using Substances
4. Violence and Abuse: Getting Help
5. Women and their Partners: The Effect on the Recovery Process
6. Women as Caretakers: Can you take care of yourself while taking care of others?
7. Women's Use of Substances Through the Life Cycle
8. Substance Use and Women's Reproductive Health
9. The Issue of Disclosure: To Tell or Not to Tell
10. How to Manage Triggers and High Risk Situations
11. Using Self-Help Groups to Help Yourself
12. Can I Have Fun and Not Use Drugs or Alcohol?
13. Coping with Stress
14. Achieving Balance in Your Life



# Stage II Trial: WRG

Drug and Alcohol Dependence 142 (2014) 245–253

Contents lists available at [ScienceDirect](#)

## Drug and Alcohol Dependence

journal homepage: [www.elsevier.com/locate/drugalcddep](http://www.elsevier.com/locate/drugalcddep)



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Full length article

## Group therapy for women with substance use disorders: Results from the Women's Recovery Group Study



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# Stage II Trial: Substance Use Disorder Diagnoses



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	<b>All women (n=100)</b>	<b>WRG women (n=52)</b>	<b>GDC Women (n=48)</b>
Alcohol	88%	82.7%	93.8%
Opioid	17%	13.5%	20.8%
Cocaine	15%	15.4%	14.6%
Sedatives	9%	9.6%	8.3%
Cannabis	9%	5.8%	12.5%

Columns do not total 100% as individuals met criteria for more than one substance dependence diagnosis; There were no significant differences between WRG and GDC (Greenfield et al, [Drug Alcohol Depend.](#) 2014 Sep 1;142:245-53)

Shelly F. Greenfield, M.D., M.P.H., Women's Recovery Group Study, NIDA R01DA015434

# Stage II Trial: Co-occurring Axis I and Axis II Disorders

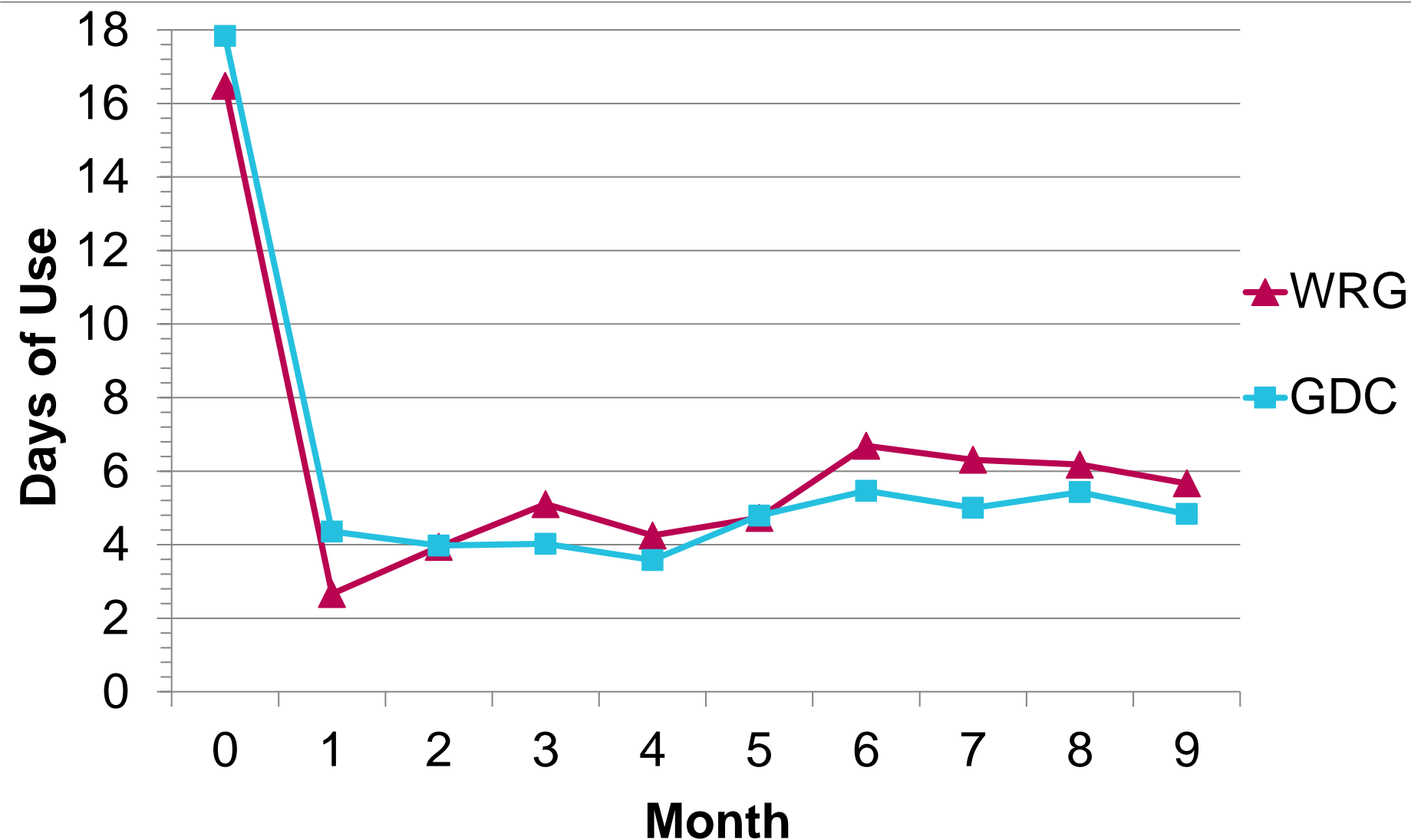
Shelly F. Greenfield, M.D., M.P.H., Women's Recovery Group Study, NIDA R01DA015434

	All women (n=100)	WRG women (n=52)	GDC women (n=48)
Major Depressive Disorder	61%	57.7%	64.6%
Generalized Anxiety Disorder	22%	21.2%	22.9%
Post-traumatic Stress	20%	17.3%	22.9%
Any Axis I	75%	71.2%	79.2%
Any Axis II*	17%	17.3%	16.7%

\* 76.5% of the Axis II disorder diagnoses were for Avoidant Personality Disorder (Greenfield et al, [Drug Alcohol Depend.](#) 2014 Sep 1;142:245-53)

# Time Plot of Mean Days of Any Substance Use (Greenfield et al, DAD 2014)

• Shelly F. Greenfield, M.D., M.P.H., Women's Recovery Group Study, NIDA R01DA015434



# WRG Therapy Development Stage II trial

## Conclusions



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- Effective group therapy for women heterogeneous with respect to their substance dependence, co-occurring psychiatric disorders, trauma history, & life stage
- 90 minute, 12-session, manual-based relapse prevention group therapy with structured sessions and women-focused content
- Can be delivered in community treatment in a “rolling” group format as a gender-responsive component of mixed-gender treatment

(Greenfield et al, 2007;2013;2014; Shelly F. Greenfield, M.D., M.P.H., Women’s Recovery Group Study, NIDA R01DA015434)

# Women's Experiences in WRG versus GDC: A Qualitative Analysis



- Examined women's experiences in both the Women's Recovery Group (WRG) and a mixed-gender Group Drug Counseling (GDC)
- Semi-structured interviews with the PI were completed by twenty-eight women enrolled in the Stage I trial were transcribed, coded, and analyzed for themes
- Women in WRG focused on gender-relevant topics supporting their recovery
- Compared to GDC, women in WRG more frequently endorsed feeling safe, embracing all aspects of one's self, having their needs met, feeling intimacy, empathy, and honesty

# WRG Therapy Development Stage II trial

## Qualitative Data Analysis



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- Measured group affiliation in WRG vs GDC as potential mechanism of action of the WRG
- Taped and coded all group therapy sessions for specific verbal affiliative statements; analyzed these affiliative statements
- There were **60% more affiliative statements** made in the WRG compared with GDC (Sugarman et al, 2016)
- **There was greater group affiliation among members in the WRG compared to the mixed-gender control group and more exposure to greater affiliation in the WRG, predicted better outcomes at 6 months** (Valeri et al 2018)

*“A lot of the information that was presented to me I was very unaware of. In particular, women's health and what alcohol does to a woman's body...The education end of it was huge for me. Really huge, to the point that I was sharing it with my family and...friends.”*



# Single-Gender Composition – Qualitative Feedback



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“I think that the fact that it's all female and the fact that it's run by a female are essential because nobody ever talks about the issues being related to being female and being a caretaker or being a single mother or being a career person in a man's world.”

(Greenfield, Cummings et al., 2013)

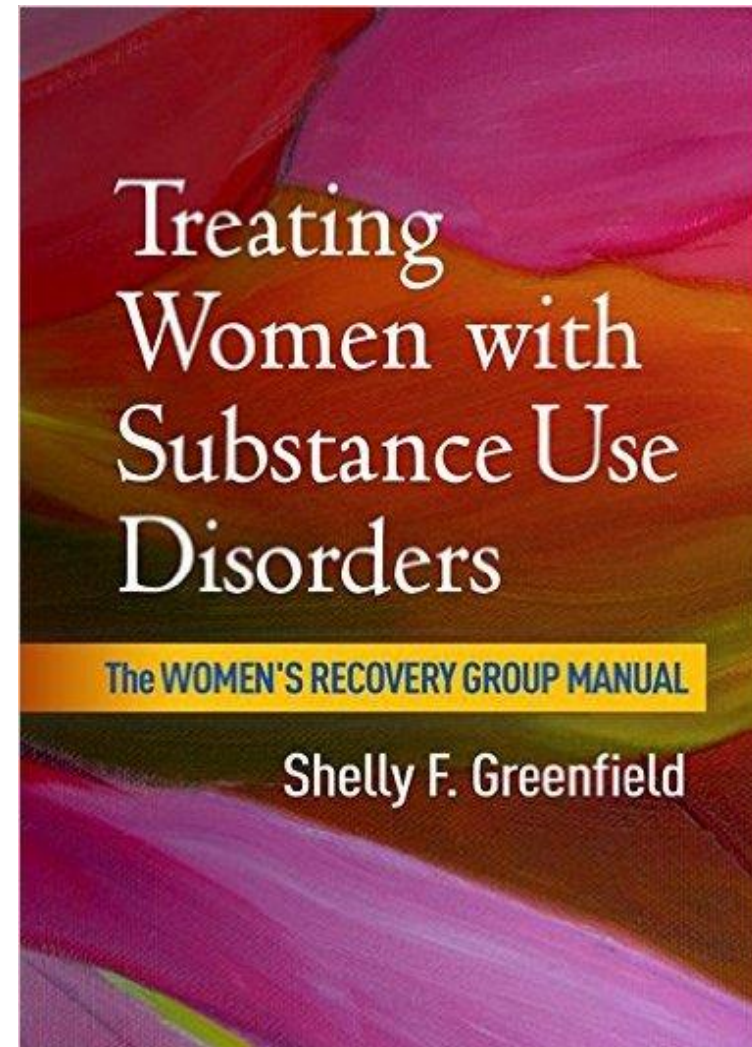
# The Women's Recovery Group



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(Greenfield, 2016)

- Developed in Stage I and Stage II behavioral therapy development trials funded by NIH/NIDA
- New single gender group treatment for women with SUDs
- Manual-based relapse prevention group therapy with structured sessions and women-focused content
- The WRG is an empirically supported, effective gender-responsive component of care that can be disseminated into routine clinical practice
- Disseminated into practice in the U.S.
- New Adaptations: Veterans; Young Adults



# Using Technology to Deliver Gender-Responsive Care for Women With Substance Use Disorders



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(Dawn Sugarman, PhD)



- **Aim:** To develop sustainable strategies for integrating gender-responsive components of care for women with SUDs
- Created a gender-specific, web-based intervention for women with SUDs – 30-minute psychoeducational intervention
  - demonstrated that delivery of this intervention in mixed-gender SUD treatment was feasible with high satisfaction (Sugarman DE et al *Journal of Women's Health* 2020)
- Adapting this intervention for young adult women with substance use problems receiving care for a co-occurring psychiatric disorder (trial in process)

# Treatment of Women with SUDs

## Guiding Principles for Evaluation of Women with SUDs:

- Always ask about alcohol, drug, and tobacco use
- Complete (or refer for) a full medical evaluation including reproductive health assessment
- Assess for:
  - the full range of co-occurring psychiatric disorders (e.g., mood, anxiety, eating, and post-traumatic stress disorders)
  - potential motivators and rewards for substance use disorder treatment and recovery
  - potential obstacles for recovery including partner alcohol and drug use, co-occurring psychiatric disorders, shame and stigma, family, legal, and employment obstacles
  - safety risk including intimate partner and domestic violence
  - past history of trauma
  - risky behaviors for HIV and other sexually transmitted disease

## Guiding Principles for Evaluation of Women with SUDs:

- **Use women-focused and gender-responsive approaches:**
- **Integrate conceptual and empirical evidence** about gender differences in antecedents and consequences of addiction and the treatment process
- Include treatment for **co-occurring other psychiatric disorders; trauma exposure** and associated physical and mental health needs;
- Address the central role **relationships** with children, intimate partners, and others play in women's addiction and recovery
- **Provide appropriate and necessary adjunctive services**



# Evaluation of Women with SUDs

## Guiding Principles for Evaluation of Women with SUDs:

- Assess for the following (Consider research questions – frequency/prevalence of these practices?):
  - Substance history: alcohol, drug, and tobacco use
  - Complete (or refer for) a full medical evaluation including reproductive health assessment
  - the full range of co-occurring psychiatric disorders (e.g., mood, anxiety, eating, and post-traumatic stress disorders)
  - potential motivators and rewards for substance use disorder treatment and recovery
  - potential obstacles for recovery including partner alcohol and drug use, co-occurring psychiatric disorders, shame and stigma, family, legal, and employment obstacles
  - safety risk including intimate partner and domestic violence
  - past history of trauma
  - risky behaviors for HIV and other sexually transmitted disease

- Narrowing gender gap in prevalence of substance use disorders
- Women born in the last 5 decades have lower rates of abstinence and higher rates of substance use
- Women have a telescoping course of addiction
- Treatment outcomes can be enhanced by programs that provide services and other programming specific to women's needs (e.g., co-occurring disorders, trauma, childcare)
- A number of gender-responsive, evidence-based therapies exist
- The WRG is a manual-based single-gender women's recovery group with women-focused content may enhance treatment outcomes that can be integrated into community-based SUD treatment programs

Shelly F. Greenfield, M.D., M.P.H.

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- **Research Staff:** Michele Crisafulli, MA, Amanda Cummings, BA, Cathryn Freid, PhD, Julia Kaufman, BA, Laura Kuper, BA, Melissa Lincoln, BA, Kate McHugh, MA, Rebecca Popuch, BA, Michelle Rapoza, CAC, Katie Schlebecker, BA, BS, Dawn Sugarman, PhD, Elisa Trucco, MA; Sara Wigderson, BA
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# Recovery Group Study Staff



***THANK YOU!***



**McLean Hospital**

# References



- Greenfield SF, Trucco EM, McHugh RK, Lincoln M, Gallop RJ. The women's recovery group study: A stage I trial of women-focused group therapy for substance use disorders versus mixed-gender group drug counseling. *Drug Alcohol Depend.* 2007 Sep 6;90(1):39-47. Epub 2007 Apr 18. PMID 17446014.
- Greenfield SF, Sugarman DE, Freid CM, Bailey GL, Crisafulli MA, Kaufman JS, Wigderson S, Connery HS, Rodolico J, Morgan-Lopez AA, Fitzmaurice G. Group Therapy for Women with Substance Use Disorders: Results from the Women's Recovery Group Study. [Drug Alcohol Depend.](#) 2014 Sep 1;142:245-53
- Greenfield SF. *Treating Women with Substance Use Disorders: The Women's Recovery Group Manual.* New York: Guilford Press, May, 2016.
- Greenfield SF, Brooks AJ, Gordon SM, Green CA, Kropp F, McHugh RK, Lincoln M, Hien D, Miele GM. Substance abuse treatment entry, retention, and outcome in women: A review of the literature. *Drug Alcohol Depend.* 2007 Jan 5;86(1):1-21. Epub 2006 Jun 8. PMID: 16759822.
- Greenfield SF, Cummings AM, Kuper LA, Wigderson S, Koro-Ljungberg M. [A Qualitative Analysis of Women's Experiences in Single-Gender Versus Mixed-Gender Substance Abuse Group Therapy.](#) *Subst Use Misuse.* 2013 Jun;48(9):772-82.
- Cummings AM, Gallop RJ, Greenfield SF. Self-efficacy and substance use outcomes for women in single gender versus mixed-gender group treatment. *J Groups Addict Recover.* 2010;5(1):4-16. PMID: 21753920; PMCID: PMC3132800.
- Sugarman DE, Wigderson SB, Iles BR, Kaufman JS, Fitzmaurice GM, Hilario EY, Robbins MS, Greenfield SF. Measuring affiliation in group therapy for substance use disorders in the Women's Recovery Group Study: Does it matter whether the group is all-women or mixed-gender? *Am J Addict* 2016;25:573-80; doi: 10.1111/ajad.12443. PMID: 27647710. NIHMSID: 817238

# References

- Valeri L, Sugarman DE, Reilly ME, McHugh RK, Fitzmaurice G, Greenfield SF. Group therapy for women with substance use disorders: In-session affiliation predicts women's substance use treatment outcomes. [J Subst Abuse Treat](#). 2018 Nov;94:60-68. doi: 10.1016/j.jsat.2018.08.008. Epub 2018 Aug 23
- Gordon SM, Johnson JA, Greenfield SF, Cohen L, Killeen T, Roman PM. Assessment and treatment of co-occurring eating disorders in publicly funded addiction treatment programs. *Psychiatr Serv*. 2008 Sep;59(9):1056-9. PMID: 18757602.
- Greenfield SF, Rosa C, Putnins SI, Green CA, Brooks AJ, Calsyn DA, Cohen LR, Erickson S, Gordon SM, Haynes L, Killeen T, Miele G, Tross S, Winhusen T. Gender Research in the National Institute on Drug Abuse National Treatment Clinical Trials Network: A Summary of Findings. *Am J Drug Alcohol Abuse*. 2011 Sep;37(5):301-12. PMID: 21854272; PMCID: PMC3160726.
- McHugh RK, Votaw VR, Sugarman DE, Greenfield SF. Sex and gender differences in substance use disorders. *Clin Psychol Rev*. 2017 Nov 10. PMID: 29174306.
- Sugarman DE, Reilly M, Greenfield SF. Treatment Outcomes for Women with Substance Use Disorders: A Critical Review of the Literature (2010-2016). *Current Addiction Reports*. 2017;4:482-502.
- Cohen LR, Greenfield SF, Gordon S, Killeen T, Jiang H, Zhang Y, Hien D. Survey of eating disorder symptoms among women in treatment for substance abuse. *Am J Addict*. 2010 May-Jun;19(3):245-51. PMID: 20525031; PMCID: PMC2882625.

# References

- Binge Drinking: A Serious Under-recognized problem among women and girls. Centers for Disease Control and Prevention. CDC Vital Signs. January, 2013. <http://www.cdc.gov/vitalsigns/BingeDrinkingfemale/>
- Results from the 2011 National Survey on Drug Use and Health-Summary of National Findings. SAMHSA, 2012, <http://www.samhsa.gov/data/nsduh/2k11results/NSDUHresultsAlts2011>
- Covington S, Bloom BE. Gender-Responsive Treatment and Services in Correctional Settings. In Women and Therapy, Elaine Leeder, Ed (2006). 29:3/4,p.9-33.
- Messina N, Grella CE, Cartier J, Torres S. A randomized experimental study of gender-responsive substance abuse treatment for women in prison. JSAT 2010;38:97-107.
- Luthar SS, Suchman NE. Relational Psychotherapy Mothers' Group: a developmentally informed intervention for at-risk mothers. Dev Psychopathol. 2000 Spring 12:2:235-53.
- Hien DA, Campbell ANC, Wu E, Ruglass L, Morgan-Lopez AA, Saavedra LM, Cohen L, Nunes EV. Attendance and Substance Use Outcomes for the Seeking Safety Program: Sometimes Less is More. JCCP 2012;80:1,29-42.
- Hien DA, Jiang H, Campbell ANC, Miele GM, Brigham GS, et al. Multisite Randomized Trial of Behavioral Interventions for Women with Co-occurring PTSD and Substance Use Disorders. JCCP 2009, 77(4):607-619.
- Lindblad R, Hu L, et al Mortality Rates Among Substance Use Disorder Participants in Clinical Trials: Pooled Analysis of Twenty-Two Clinical Trials Within the National Drug Abuse Treatment Clinical Trials Network☆☆☆ JSAT 2016;70:73-80. DOI: <http://dx.doi.org/10.1016/j.jsat.2016.08.010>
- The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General, 2014 <http://www.surgeongeneral.gov/library/reports/50-years-of-progress/>



# References

- Linehan MM, Schmidt H, Dimeff LA, Craaft JC, Kanter J, Comtois KA. Dialectical Behavior Therapy for Patients with Borderline Personality Disorder and Drug-Dependence. *Am J Addictions* 1999;8:279-292.
- Jones HE, Kaltenbach KK, Heil SH, Stine SM, et al. Neonatal Abstinence Syndrome after Methadone or Buprenorphine Exposure. *NEJM* 2010;363(24):2320-2331.
- Killeen TK, Greenfield SF, Bride BE, Cohen L, Gordon SM, Roman PM. Assessment and treatment of co-occurring eating disorders in privately funded addiction treatment programs. *Am J Addict.* 2011 May-Jun;20(3):205-11. Epub 2011 Mar 11. PMID: 21477048; PMCID: PMC3076120.
- Helping Yourself Heal [http://www.kap.samhsa.gov/products/brochures/pdfs/helpinghealwomen\\_08r.pdf](http://www.kap.samhsa.gov/products/brochures/pdfs/helpinghealwomen_08r.pdf) This brochure, accompanying the publication *Substance Abuse Treatment for Persons With Child Abuse and Neglect Issues, #36 in the Treatment Improvement Protocol (TIP) series, was produced and updated by JBS International, Inc.*
- NIDA Clinical Trials Network (CTN) dissemination library provides access to journal articles, webinars, and more <http://ctndisseminationlibrary.org/>
- American College of Obstetrics and Gynecology Committee Opinion. Opioid Abuse, Dependence, and Addiction in Pregnancy. <http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Health-Care-for-Underserved-Women/Opioid-Abuse-Dependence-and-Addiction-in-Pregnancy>
- Substance Abuse Treatment: Addressing the Specific Needs of Women – TIP 51 <http://store.samhsa.gov/product/TIP-51-Substance-Abuse-Treatment-Addressing-the-Specific-Needs-of-Women/SMA14-4426>



# References

- Today's Heroin Epidemic, CDC Vital Signs July 2015 <http://www.cdc.gov/vitalsigns/heroin/>
- Prescription Painkiller Overdoses: A Growing Epidemic Especially Among Women. <http://www.cdc.gov/vitalsigns/PrescriptionPainkillerOverdoses/index.html>
- <https://researchnews.kaiser.org/?p=2271> ADVISE Alcohol Drinking as a Vital Sign
- Substance Abuse and Mental Health Services Administration, *Guidance Document for Supporting Women in Co-ed Settings*. HHS Publication No. (SMA) 16-4979. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2016 <http://store.samhsa.gov/shin/content//SMA16-4979/SMA16-4979.pdf>
- U.S. Department of Health and Human Services (HHS), Office of the Surgeon General, *Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health*. Washington, DC: HHS, November 2016. Facing Addiction in America <https://addiction.surgeongeneral.gov/>
- White Paper: Opioid Use, Misuse and Overdose in Women. Office of Research on Women's Health. U.S. Department of Health and Human Services. 2016. <https://www.womenshealth.gov/files/documents/white-paper-opioid-508.pdf>
- Ondersma SJ, Svikis DS, Lam PK, Connors-Burge VS, Ledgerwood DM, Hopper JA. A randomized trial of computer-delivered brief intervention and low-intensity contingency management for smoking during pregnancy. *Nicotine Tob Res* 2012;14:351-60. <https://www.ncbi.nlm.nih.gov/pubmed/22157229>
- Ondersma SJ, Svikis DS, Schuster CR. Computer-based brief intervention: a randomized trial with postpartum women. *Am J Prev Med* 2007;32:231-8. <https://www.ncbi.nlm.nih.gov/pubmed/17236741>

# References

- Brooks A, Meade CS, Potter JS, Likhnygina Y, Calsyn DA, Greenfield SF. Gender differences in the rates and correlates of HIV risk behaviors among drug abusers. *Subst Use Misuse*. 2010 Dec;45(14):2444-69. Epub 2010 Jun 10. PMID: 20536356; PMCID: PMC3169437.
- Ondersma SJ et al. Computer-delivered screening and brief intervention for alcohol use in pregnancy: A pilot randomized trial. [Alcohol Clin Exp Res. 2015 Jul; 39\(7\): 1219–1226.](#)  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4490994/>
- Ondersma SJ, Svikis DS, Thacker LR, Beatty JR, Lockhart N. A randomised trial of a computer-delivered screening and brief intervention for postpartum alcohol use. *Drug Alcohol Rev* 2016;35:710-718  
<https://www.ncbi.nlm.nih.gov/pubmed/27004474>
- Campbell ANC, Nunes EV, Pavlicova M, Hatch-Maillette M, Hu MC, Bailey GL, Sugarman DE, Miele GM, Rieckmann T, Shores-Wilson K, Turrigiano E, Greenfield SF. Gender-based Outcomes and Acceptability of a Computer-assisted Psychosocial Intervention for Substance Use Disorders. *Journal of Substance Abuse Treatment*. 2015;7:9-15. DOI: <http://dx.doi.org/10.1016/j.jsat.2014.12.006>. PMID: 25613105. PMCID: PMC4414709. NIHMSID: 657078.
- Cicero TJ et al. The Changing Face of Heroin Use in the U.S.: A retrospective analysis of the past 50 years: *JAMA Psychiatry* 2014;71:821-826.doi:10.1001/jamapsychiatry.2014.355





# References

- Principles of Drug Addiction Treatment: A Research Based Guid (3<sup>rd</sup> edition):
- ACOG committee opinion on opioid use and OUD in pregnancy  
<https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Opioid-Use-and-Opioid-Use-Disorder-in-Pregnancy>
- Guidance for supporting women in co-ed settings:  
<https://store.samhsa.gov/product/Guidance-Document-for-Supporting-Women-in-Co-ed-Settings/SMA16-4979>
- A collaborative approach to the treatment of pregnant women with OUDs:  
<https://store.samhsa.gov/product/A-Collaborative-Approach-to-the-Treatment-of-Pregnant-Women-with-Opioid-Use-Disorders/SMA16-4978>
- *The Clinical Guidance for Treating Pregnant and Parenting Women with Opioid Use Disorder and Their Infants:* <https://store.samhsa.gov/product/SMA18-5054>
- Back S, Brady K, Greenfield SF. Women and Addiction. Eds: *Women and Addiction: A Comprehensive Textbook*, New York, Guilford Publications, 2009.
- Eeckhaut MCW, Wagner J, Neitzke-Spruill LN, Walker R, Anderson TL. Is the gender gap in overdose deaths (still) decreasing? An examination of opioid deaths in Delaware 2013-2017. *J Stud Alc & Drugs* 2020/81:68-73

# References

- [Addressing the needs of women and girls: Developing core competencies for mental health and substance abuse service professionals](http://store.samhsa.gov/shin/content/SMA11-4657/SMA11-4657.pdf) - U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration (HHS, SAMHSA)  
<http://store.samhsa.gov/shin/content/SMA11-4657/SMA11-4657.pdf>
- Brown QL, Sarvet AL, et al Trends in marijuana use among pregnant and nonpregnant reproductive aged women 2002-2014. JAMA 2017;317:207-209.
- Salas-Wright CP, Vaughn MG, et al. Substance use and teen pregnancy in the U.S. Addict Behav 2015;45:218-225.
- Young-Wolff KC, Tucher L-Y, et al. Trends in self-reported and biochemically tested marijuana use among pregnant females in California from 2009-2016.
- Volkow ND, Compton WM, Wargo EM. The risks of marijuana use during pregnancy. JAMA 2017;317:129-130.
- Ko JY, Farr SL, et al. Prevalence patterns of marijuana use among pregnant and nonpregnant women of reproductive age. Am J Obstet Gynecol 2015;213:201e1-201e10.
- CTN Dissemination Library <http://ctndisseminationlibrary.org/>
- Providers Clinical Support System: PCSS-MAT <https://pcssnow.org/>
- State Targeted Response- Technical Assistance (STR-TA) <https://www.aaap.org/clinicians/education-training/grants/state-targeted-response-technical-assistance-str-ta/>

# References

- Sugarman DE, Meyer LE, Reilly ME, Greenfield SF. Feasibility and Acceptability of a Web-Based, Gender-Specific Intervention for Women with Substance Use Disorders. *Journal of Women's Health*. 4 Oct 2019 <https://doi.org/10.1089/jwh.2018.7519>.
- EW Fish, LB Murdaugh, C Zhang, KE Boschen, O Boa-Amponsem, HN Mendoza-Romero, M Tarpley, L Chdid, S Mukhopadhyay, GJ Cole, KP Williams, and SE Parnell. [Cannabinoids Exacerbate Alcohol Teratogenesis by a CB1-Hedgehog Interaction](#). *Sci Rep* 9, 16057 (2019) doi:10.1038/s41598-019-52336-w.
- Porath AJ, Konefal S, Kent P. Clearing the Smoke on Cannabis: Maternal cannabis use during pregnancy – an update. Canadian Centre on Substance Use and Addiction 2018. <https://www.ccsa.ca/sites/default/files/2019-04/CCSA-Cannabis-Maternal-Use-Pregnancy-Report-2018-en.pdf>
- Gunn JKL et al. Prenatal exposure to cannabis and maternal and child health outcomes: a systematic review and meta-analysis. *BMJ Open* 2016;64:7.
- El Marroun H et al. Intrauterine cannabis exposure affects fetal growth trajectories: the Generation R Study. *JAACAP* 2009;48:1173-1181.
- National Academies of Sciences Engineering and Medicine. The health effects of cannabis and cannabinoids: the current state of evidence and recommendations for research. Washington DC: National Academies Press, 2017.
- Chabarria KC, Racusin DA, Antony KM et al. Marijuana use and its effects in pregnancy. *Am J Ob Gyn* 2016;215(4), 506.e1-e7.

# References

- 2019 National Survey on Drug Use and Health Annual Report, September, 20202 (<https://www.samhsa.gov/data/report/2019-nsduh-annual-national-report> accessed 3.8.21)
- 2019 CDC  
<https://www.cdc.gov/ncbddd/fasd/data.html#:~:text=Using%20medical%20and%20ot%20her%20records,areas%20of%20the%20United%20States.&text=The%20most%20re%20cent%20CDC%20study,to%209%20years%20of%20age> .
- 2019 CDC:
- <https://www.cdc.gov/ncbddd/fasd/features/alcohol-use-during-pregnancy.html>
- Rodriguez LM, Litt DM, Stewart SH. Drinking to cope with the pandemic: The unique associations of COVID-19-related perceived threat and psychological distress to drinking behaviors in American men and women Addict Behav. 2020 Nov; 110: 106532. Published online 2020 Jun 27. doi: [10.1016/j.addbeh.2020.106532](https://doi.org/10.1016/j.addbeh.2020.106532); PMID: [32652385](https://pubmed.ncbi.nlm.nih.gov/32652385/)
- McHugh RK, Nguyen MD, Chartoff EH, Sugarman DE, Greenfield SF. Gender differences in the prevalence of heroin and opioid analgesic misuse in the United States, 2015-2019. *Drug Alcohol Depend.* 2021 Oct 1;227:108978. doi: [10.1016/j.drugalcdep.2021.108978](https://doi.org/10.1016/j.drugalcdep.2021.108978). Epub 2021 Aug 27. PMID: 34488078; PMID: PMC8516063.

# References

- Sugarman DE, Meyer, LE, Reilly ME, Rauch SL, & Greenfield SF. Exploring Technology-Based Enhancements to Inpatient and Residential Treatment for Young Adult Women with Co-Occurring Substance Use. *J Dual Diagn.* 2021:1-12. doi:10.1080/15504263.2021.1940412
- Welsh JW, Hunnicutt-Ferguson K, Cattie JE, Shentu Y, Mataczynski MJ, LoParo D, Greenfield SF. Adaptation and Pilot Testing of the Women's Recovery Group for Young Adults (WRG-YA). *Alcohol Treat Q.* 2021;39(2):225-237. doi: 10.1080/07347324.2020.1837044. Epub 2020 Oct 30. PMID: 33767527; PMCID: PMC7986244.
- Sugarman, D.E., Meyer, L.E., Reilly, M.E., & Greenfield, S.F. Feasibility and acceptability of a web-based, gender-specific intervention for women with substance use disorders. *Journal of Women's Health*, 2020. 29; 636-646.
- Barbosa-Leiker C, Campbell ANC, McHugh RK, Guille C, Greenfield SF. Opioid Use Disorder in Women and the Implications for Treatment. *Psych Res Clin Practice*. October 13, 2020. <https://doi.org/10.1176/appi.prcp.20190051>
- McHugh RK, Votaw VR, Sugarman DE, Greenfield SF. Sex and gender differences in substance use disorders. *Clin Psychol Rev.* 2017 Nov 10. PMID: 29174306.
- Sugarman DE, Reilly M, Greenfield SF. Treatment Outcomes for Women with Substance Use Disorders: A Critical Review of the Literature (2010-2016). *Current Addiction Reports.* 2017;4:482-502.