

# Associations between tobacco and cannabis use and anxiety and depression among adults in the United States: Findings from the COVID-19 citizen science study

July 9, 2024



## Research into Action Webinar Series



# Today's Presenter



**Dr. Nhung Nguyen**

Assistant Professor  
School of Medicine

University of California, San Francisco

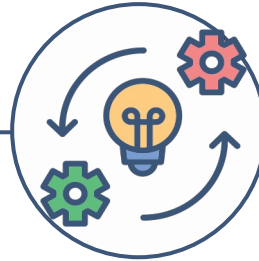
**CO-USE OF TOBACCO AND CANNABIS  
&  
MENTAL HEALTH**

Nhung Nguyen, PhD

# Outline



**Overview of  
co-use of tobacco  
and cannabis**



**Association between  
co-use of tobacco  
and cannabis &  
mental health**



**Implication for  
prevention and  
treatment**

# Overview of co-use of tobacco and cannabis

- 22.1% of US adults reported using tobacco and 12.4% using cannabis in the past month in 2020 (*SAMHSA*)
- Tobacco users were 2-6 times more likely also to use cannabis (*Nguyen et al. 2019*)
- 48% of US young adults (ages 18-24) and 28% of US adults (ages 25+) who use tobacco also use cannabis in the past month (*Cohn & Chen, 2022*)
- Co-use was as common as the use of tobacco alone and more common than the use of cannabis alone among US adolescents (*Do et al., 2024*)
- Co-use may increase exposure to toxicants and pose additive health risks

# What is co-use?

Co-use = Any use of tobacco + cannabis in the past 30 days



ELSEVIER

Contents lists available at [ScienceDirect](#)

## Addictive Behaviors

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

Classification of patterns of tobacco and cannabis co-use based on temporal proximity: A qualitative study among young adults

Nhung Nguyen<sup>a,b,1,\*</sup>, Sabrina Islam<sup>a,b,1</sup>, Karla D. Llanes<sup>a</sup>, Kimberly A. Koester<sup>c</sup>, Pamela M. Ling<sup>a,b</sup>

# “Twin” product landscape facilitates co-use

## TOBACCO



Cigar Images Courtesy of Legacy®

## CANNABIS



Combustible

IQOS 2.4 Plus



Vaporized



Smokeless Tobacco



Moist snuff



Dry snuff



Snus

Oral/Ingestion

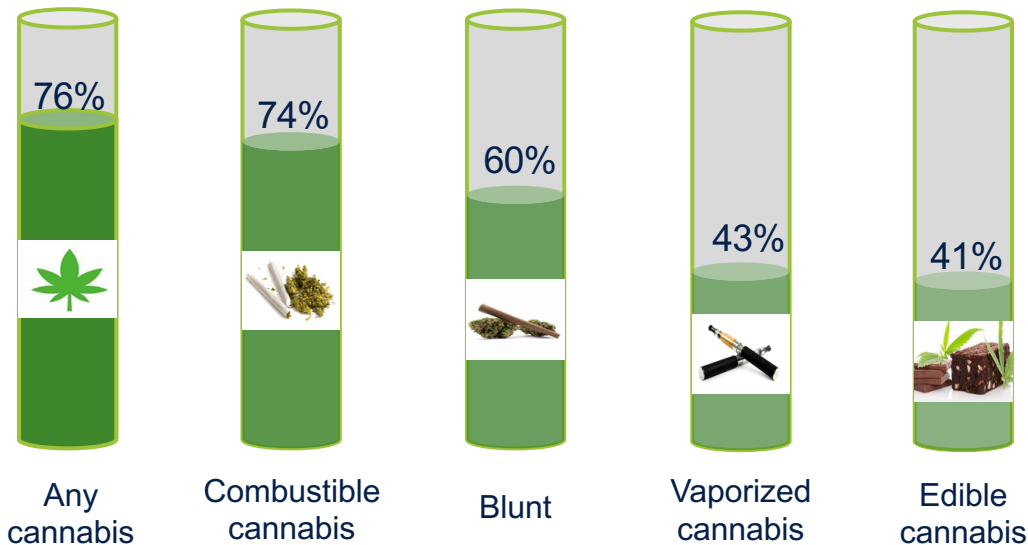


# Combustible cannabis is the most commonly used product among those who use tobacco

Pooled data from 3 school-based surveys in CA during 2016-2017 among 5,000 youth (aged 15-22)

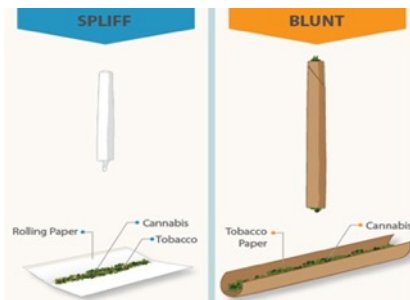
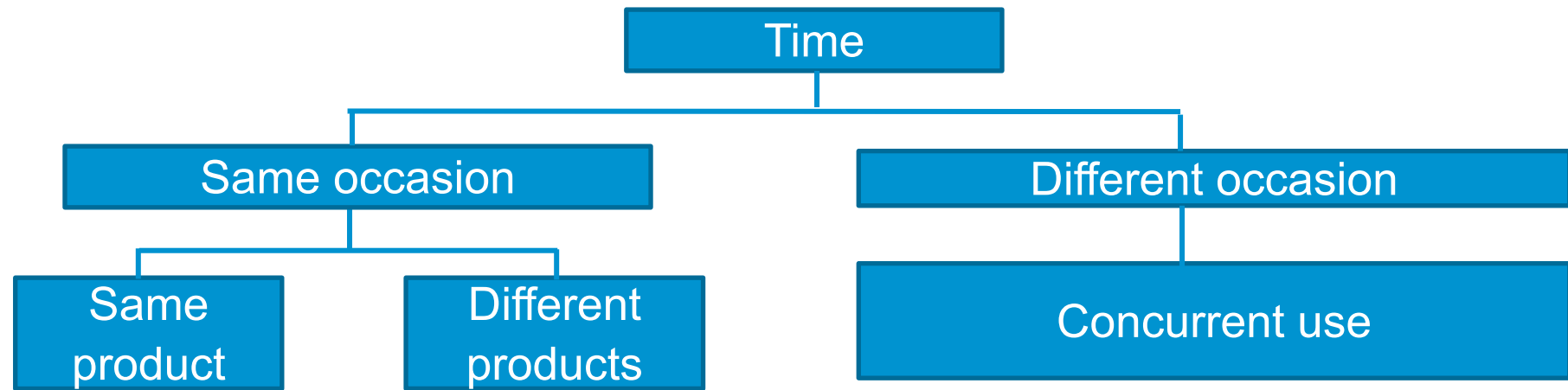
Cannabis-only use (11-15%) > **Co-use** (7-11%) > Tobacco-only use (3-7%)

Type of cannabis use among past 30-day tobacco users





# Varying timing of co-use of tobacco and cannabis



Simultaneous use  
(co-administration)



Sequential use  
(chasing)



Same-month  
or Same-day



## Co-smoking

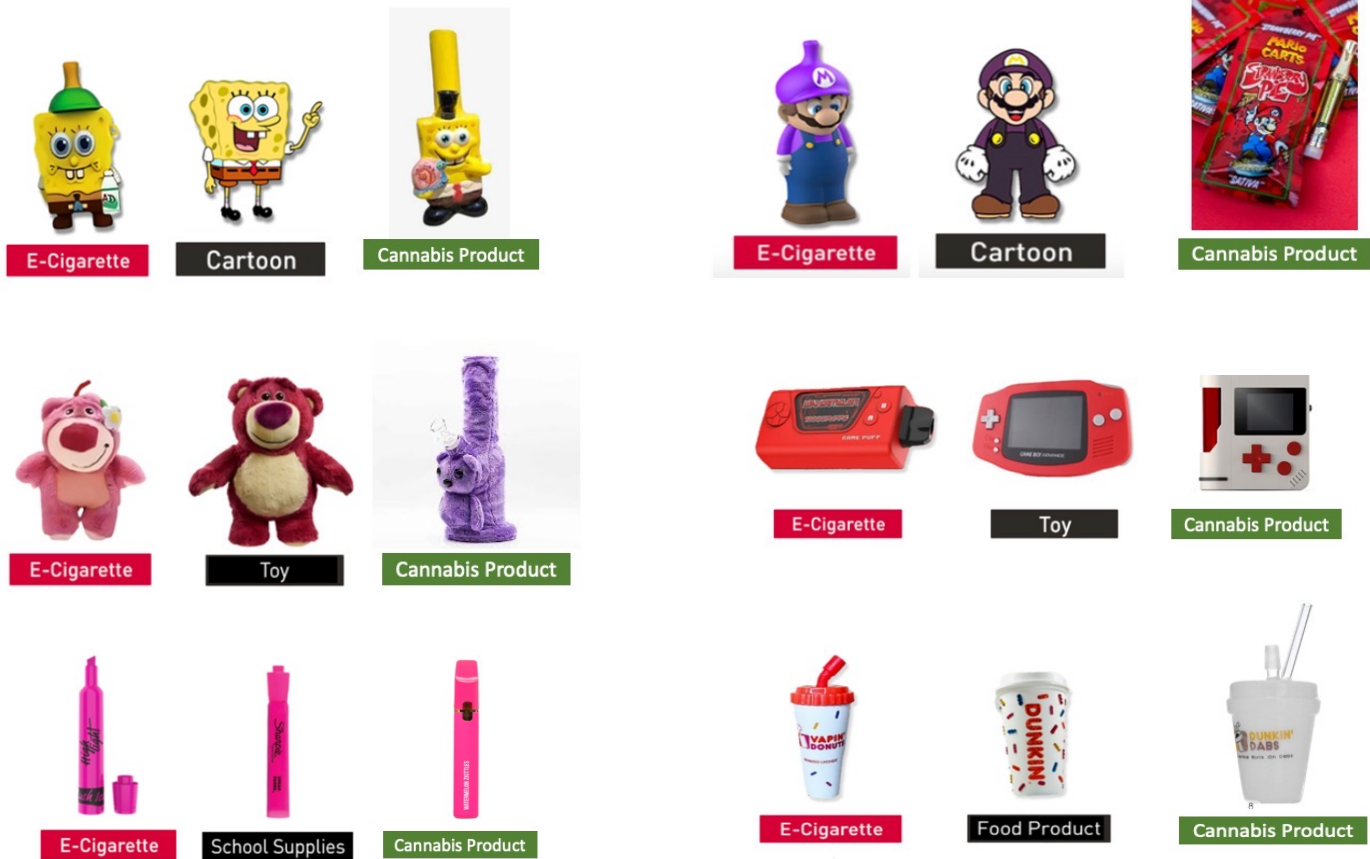
*“Most of the time when I'm smoking marijuana, I would just smoke a cigarette directly after. Then I just started, for some reason, picking up the habit of like - I was already smoking a cigarette and I decided to roll a joint. So, it would be kind of like that, and I'd gotten into the habit of liking both.”*





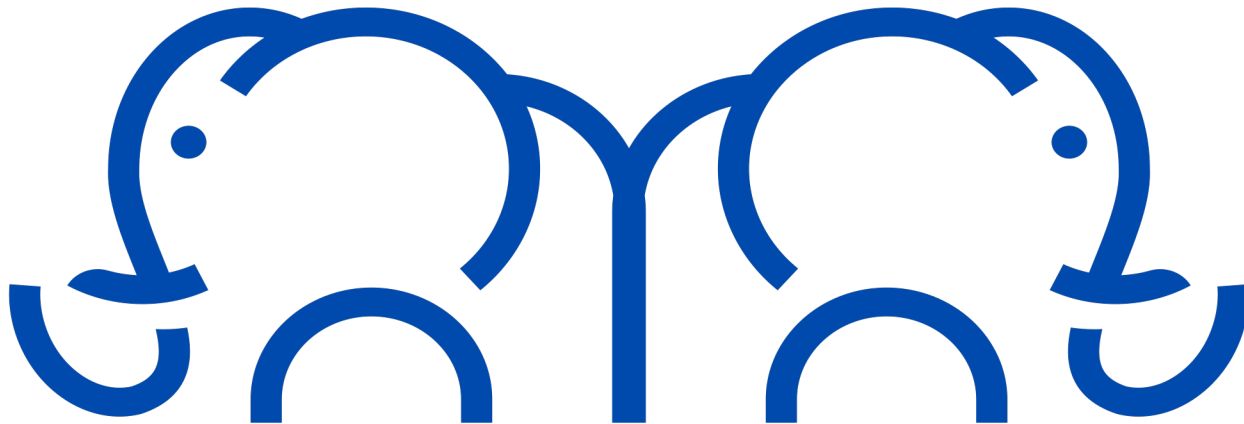
## Co-vaping

*“So all I have to do is unscrew my vape cartridge [nicotine vaping] and then screw on the hash cartridge [cannabis vaping] and use it right there.”*





**An urgent need to address co-use instead of single-substance use**







# What are mental health effects of co-use ?

PLOS ONE

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RESEARCH ARTICLE

## Associations between tobacco and cannabis use and anxiety and depression among adults in the United States: Findings from the COVID-19 citizen science study

Nhung Nguyen <sup>1\*</sup>, Noah D. Peyser <sup>2</sup>, Jeffrey E. Olgin<sup>2</sup>, Mark J. Pletcher <sup>3</sup>, Alexis L. Beatty<sup>2,3</sup>, Madelaine F. Modrow<sup>3</sup>, Thomas W. Carton<sup>4</sup>, Rasha Khatib<sup>5</sup>, Djeneba Audrey Djibo <sup>6</sup>, Pamela M. Ling<sup>1</sup>, Gregory M. Marcus<sup>2</sup>

## Public health significance

Potential health consequences and the pandemic situation underscore a need for understanding the association between co-use and mental health



## Gap

Use of either tobacco or cannabis is related to poor mental health;  
Little is known about the mental health effects of using both substances.

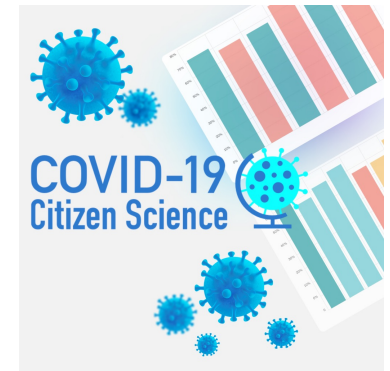


## Research question

Is **co-use** more or less likely to link to mental health problems compared to **non-use** and **single-substance use**?

# Methods

- **Data:** a longitudinal digital cohort study
- **Sample:** 53,813 US adults
- **Time:** 03/2020 – 04/2022
- **Past 30-day use of substance**
  - ✓ Tobacco: cigarettes, e-cigarettes, other tobacco products
  - ✓ Cannabis: combustible and vaporized cannabis
- **Covariates:** demographics, subjective social status, alcohol use, physical activity
- **Analysis:** Regression modeling estimated the odd ratios (the associations)

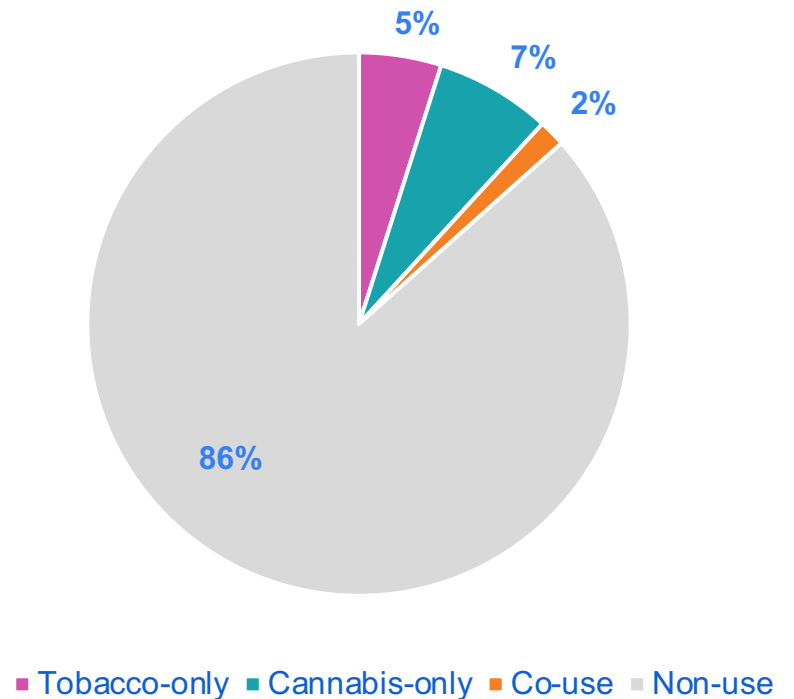




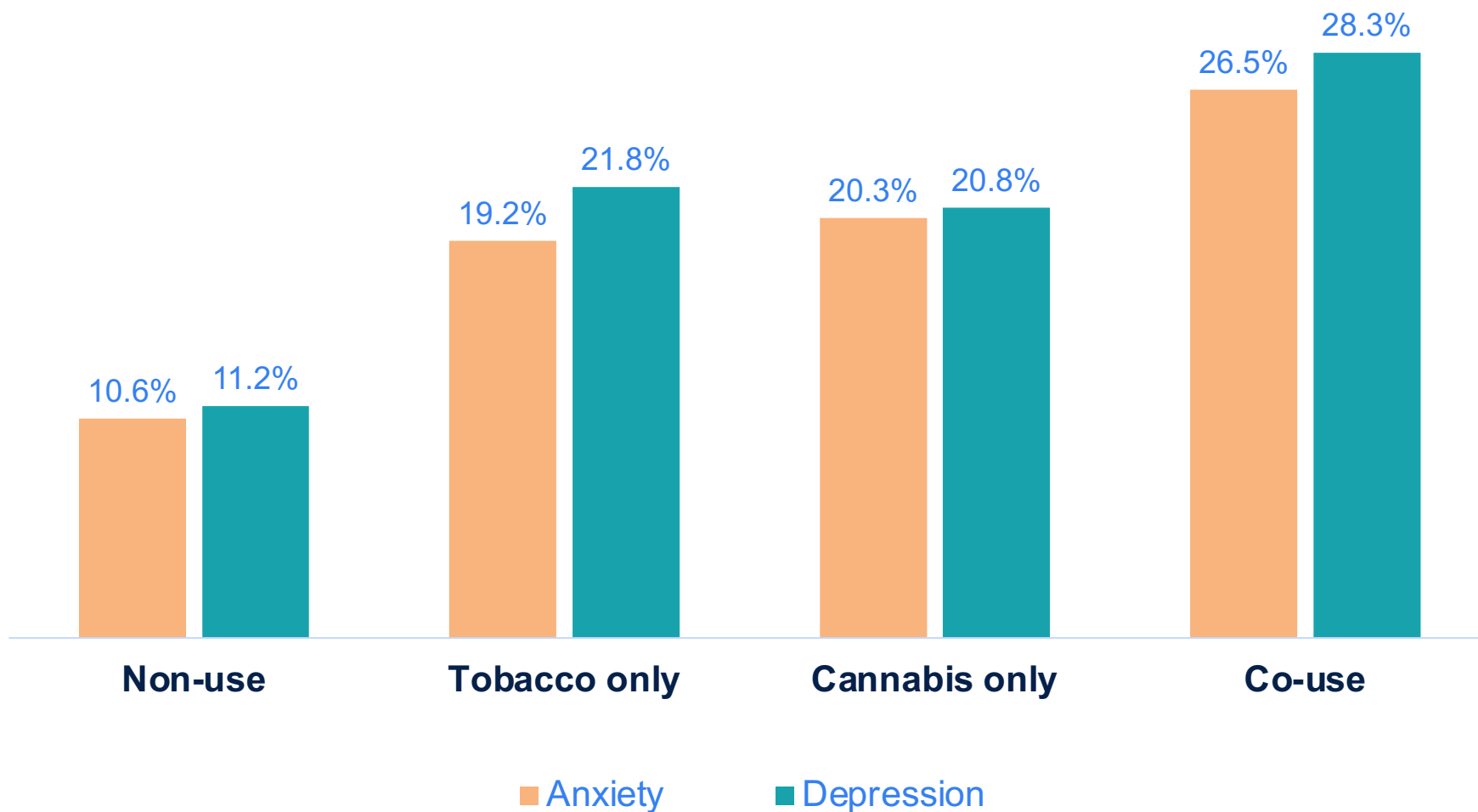
# Sample characteristics

Demographic characteristics	Mean (SD) or N(%)
Age, Mean (SD)	51.1 (15.2)
Age groups, n (%)	
18-29	4,005 (7.4)
30-39	10,903 (20.3)
40-49	10,218 (19.0)
50-59	10,927 (20.3)
60-69	10,549 (19.6)
70+	7,168 (13.3)
Sex, n (%)	
Male	17,219 (32.0)
Female	36,512 (67.9)
Gender identity, n (%)	
Heterosexual	53,053 (98.6)
LGBTQ+	658 (1.2)
Race and Ethnicity, n (%)	
NH White	44,043 (81.8)
NH Black	1,244 (2.3)
NH Asian	3,108 (5.8)
NH Other	1,109 (2.1)
Hispanic	3,873 (7.2)
Education attainment, n (%)	
Highschool degree or less	1,781 (3.3)
Some college/College graduate	27,680 (51.4)
Postgraduate	23,832 (44.3)
Other/Unknown	510 (1.0)

Past 30-day Use of Tobacco and Cannabis

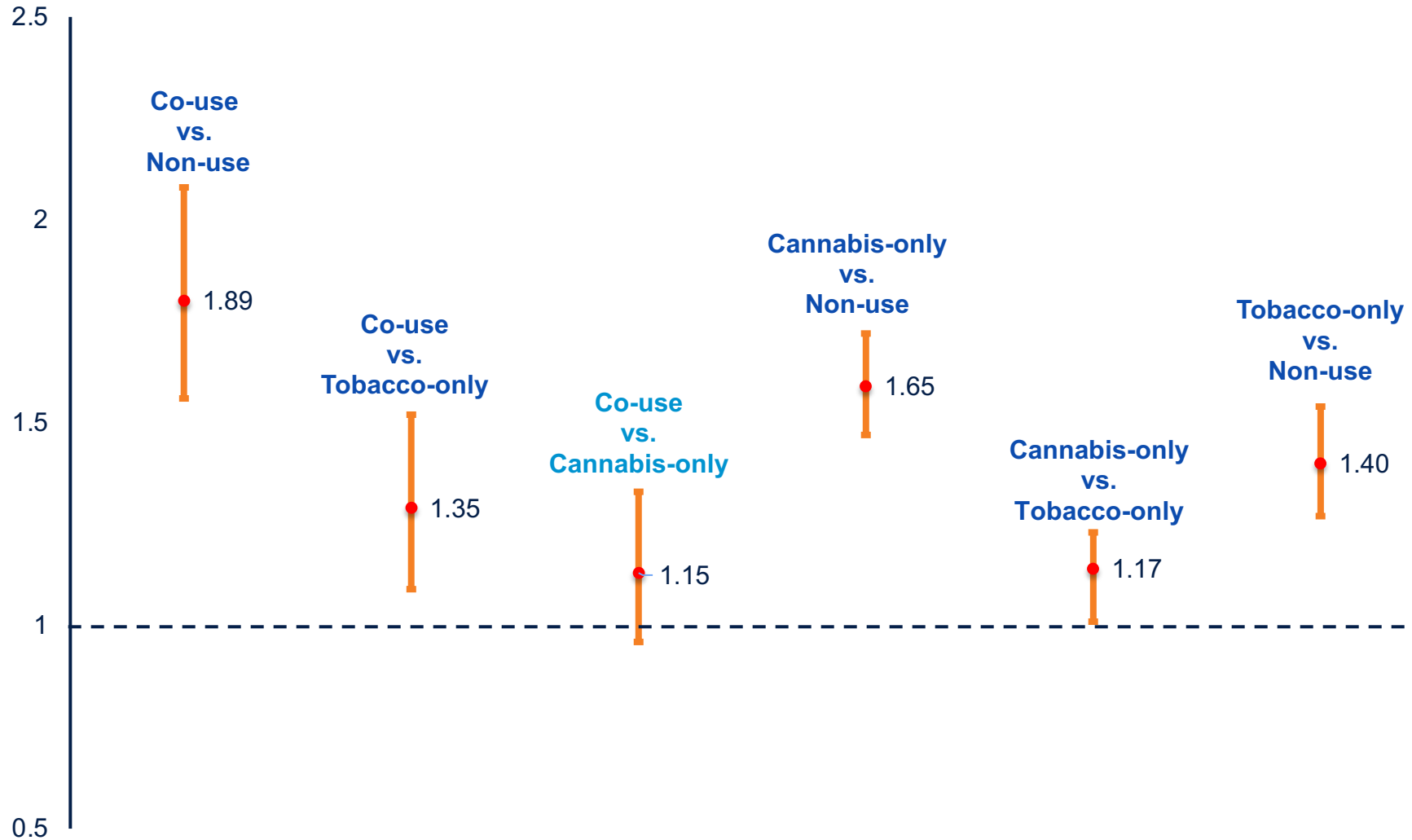


# Prevalence of anxiety and depression by substance use pattern



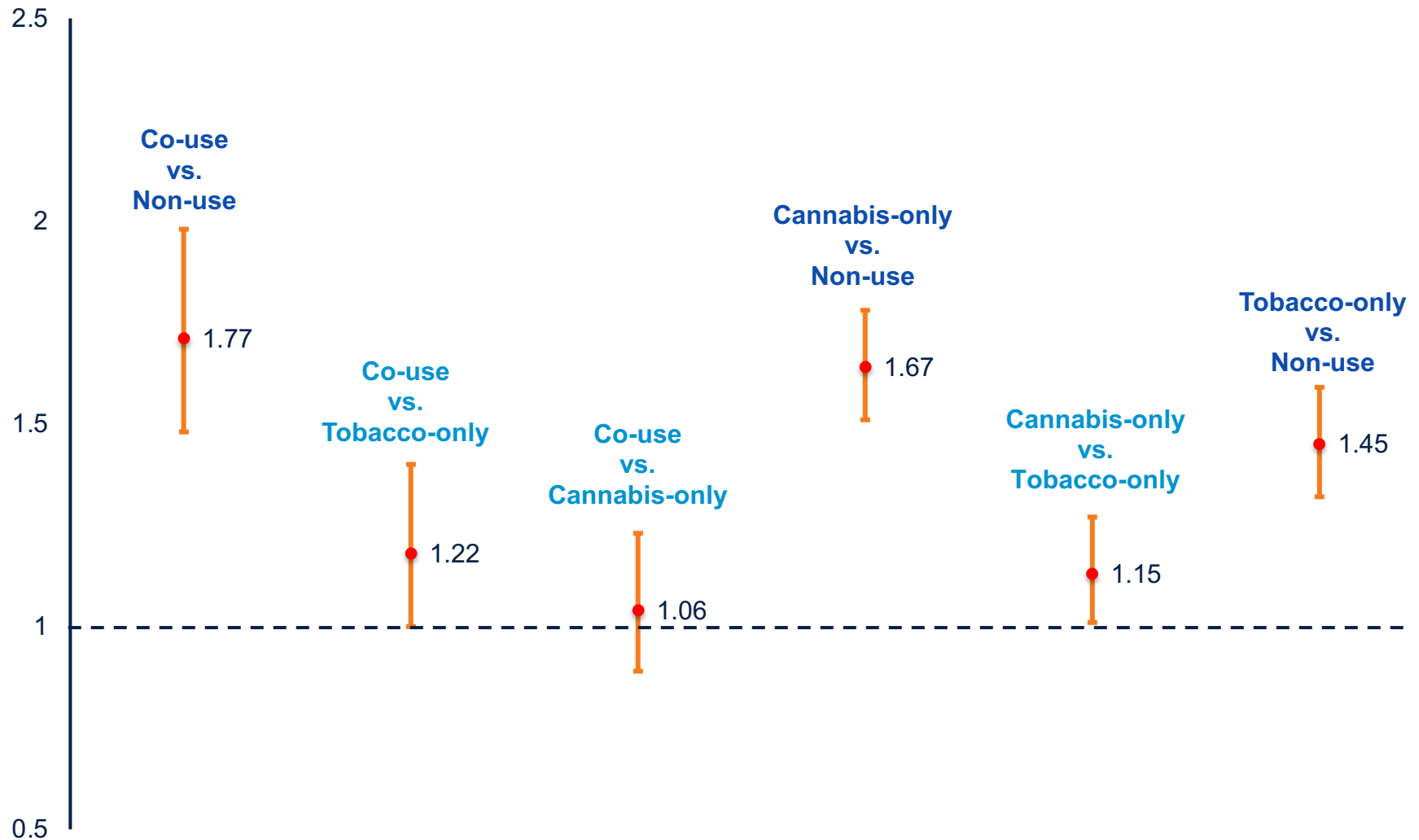
# Associations between patterns of substance use and Anxiety

(Adjusted odd ratios > 1 indicated a higher likelihood of having anxiety disorder)



# Associations between Patterns of Substance Use and Depression

(Adjusted odd ratios > 1 indicated higher likelihood of having depression)



A close-up photograph of a hand holding a lit cigarette. The hand is in the foreground, slightly out of focus, with the cigarette held between the fingers. The background is a soft, blurred sunset or sunrise, with a large, bright orange sun low on the horizon. The overall mood is contemplative and serene.

## Co-use for coping with stress and anxiety

*“Smoking cigarettes at a work break was almost like a meditation for me, just like a moment of solitude where I could not have to talk for 10 minutes.... There have been high CBD/low THC vaping products that I've used that have helped my anxiety.”*

*Nguyen N, Islam S, Llanes KD, Koester KA, Ling PM. Classification of patterns of tobacco and cannabis co-use based on temporal proximity: A qualitative study among young adults. Addict Behav. 2024*



# Key findings

- Co-use of tobacco and cannabis is associated with higher odds of having anxiety and depression
- Bidirectional relationship



- Mental health support for people who use both tobacco and cannabis
- Limitations: not representative sample, no causal inference, reporting bias

Home / News / Health News / Depression Risk Rises in Folks...

# Depression Risk Rises in Folks Who Use Both Marijuana & Tobacco

By HealthDay | Sept. 13, 2023, at 2:00 p.m.

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EurekaAlert! | AAAS  
HOME NEWS RELEASES MULTIMEDIA MEETINGS

1:15 PM EDT

## Medical Daily

QUALITY MENTAL HEALTH INNOVATION HEALTHY LIVING

MENTAL HEALTH

# Using Tobacco And Cannabis Increases Risk Of Anxiety, Depression, Researchers Warn

Published Sep 14, 2023 2:47 AM EDT By Thanmay Arun

NEWS RELEASE 13-SEP-2023

# High rates of depression and anxiety in people who use both tobacco and cannabis

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News

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## Using both tobacco and marijuana linked to higher risk of depression, anxiety

Steven Reinberg, HealthDay News  
13 September 2023 · 4-min read



# Implications for prevention and treatment

- Raise awareness of the increased risks of mental health disorders associated with co-use of tobacco and cannabis: the general public, communities, and healthcare providers
- Increasing the perception of harm toward using tobacco and cannabis is needed to correct misperceptions: Using tobacco and cannabis to deal with anxiety and depression may exacerbate mental health issues in the long run
- Advocate for policies that integrate mental health services with substance use prevention and treatment programs: Routine screening and referral to treatment, integrated treatment approach for co-use & mental health
- Increase and prioritize resources dedicated to addressing the co-morbidity of tobacco and cannabis co-use and mental health



# SUMMARY



Co-use is prevalent with a variety of combinations of tobacco and cannabis products



Co-use is associated with a higher likelihood of mental health problems compared to non-use or single-substance use



Public health campaigns to increase harm perception of tobacco and cannabis

Integrated treatment for co-cessation & mental health to address this linkage





The smartphone-based research lab on tobacco and substance use for health equity (HEARTY)

**Learn more about our research here:**



<https://heartylab.ucsf.edu/>



[@NguyenHEARTYlab](https://twitter.com/NguyenHEARTYlab)



[nhung.nguyen@ucsf.edu](mailto:nhung.nguyen@ucsf.edu)

# Thank You!

CADCA wishes to thank Dr. Nhung Nguyen for her insightful presentation.

For help with any evaluation or research related issue, or questions about this webinar, please send an email to [evaluation@cadca.org](mailto:evaluation@cadca.org)