

RADARS[®] **2023**
S Y S T E M

17TH ANNUAL SCIENTIFIC VIRTUAL MEETING

Defining Polysubstance Use in a National Population Based Survey

Kari Rockhill, MPH

PhD Candidate, University of Colorado - Denver

Disclosure

The work:

- Research reported in this presentation was supported by the National Institute On Drug Abuse of the National Institutes of Health under Award Number R36DA057413. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

The data:

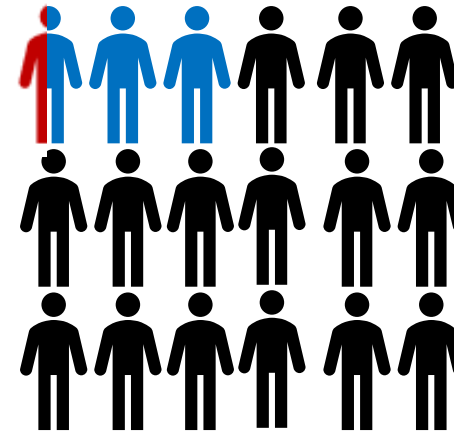
- The research is conducted by the Researched Abuse, Diversion and Addiction-Related Surveillance (RADARS®) System. The RADARS System is supported by subscriptions from pharmaceutical manufacturers, government, and non-government agencies for surveillance, research and reporting services. RADARS System is the property of nonprofit Denver Health and Hospital Authority (DHHA), a political subdivision of the State of Colorado. No subscriber participated in the conception, analysis, drafting, or review of this manuscript.

All collaborators have no other competing interests.

Substance Use Disorders (SUD) in the US

Shift the focus of research from high-risk populations to the general population, with the goal of describing polysubstance use beyond those with diagnosed substance use disorder

- In 2020, 14.5% (40.3 million) among US population ages 12+ had SUD in last year



- Only 6.5% received treatment, and 97.5% did not feel they needed treatment

- Clear unmet need for treatment of SUD in the US with many adults who potentially have an undiagnosed SUD

Systematic Review: Drug Use Profiles – Young Adults

- Largest common class: light alcohol and tobacco
- Another common class: heavy alcohol only
- Single class of low-level engagers – usually low alcohol/tobacco/marijuana use
- 14:20 studies found a single polysubstance use class, typically lowest prevalence
- 6:20 found multiple polysubstance use classes
- 9:20 included non-medical use of prescription drugs in their models
- 0:20 studies included other use behaviors outside drug indicators

Young Adults – Drug Use Profiles

- Authors Advice:
 - To consider “one ‘polysubstance use class to encompass all substance use patterns besides alcohol and marijuana is insufficient in term of prevention, because it does not distinguish between young adults who are at increased risk for developing harmful substance use and those who are not”.



Defining Polysubstance Use In General Population

Study Objectives

1. Investigate definition of polysubstance use to include both all prescription drug use and recreational substance use.
2. Characterize present day polysubstance use patterns in the general adult population to define unique behavioral risk profiles and quantify their prevalence.
 - We hypothesize there will be prevalent polysubstance use patterns which emerge that are indicative of medically driven use and undiagnosed or early-stage substance use disorders which are not captured when exploring high-risk groups.

NMURx Program - 2022

Survey of Non-Medical Use of Prescription Drugs Program



- **Objective**

- Provide **accurate** and **timely** estimates prescription drug non-medical use (including abuse & misuse) and associated motivations and behaviors among the **general population**



- **Study Design**

- Semi-annual
- Cross-sectional
- Online/Self-administered/Confidential



- **Sampling Methods**

- N= 30,000/launch (~60,000 annually)
- Quota sampling based on sex and region
- Calibration Weighting Scheme – demographics and health metrics

Substances of Interest – Use in Last 12 Months

Any Use including Non-Medical Use of:

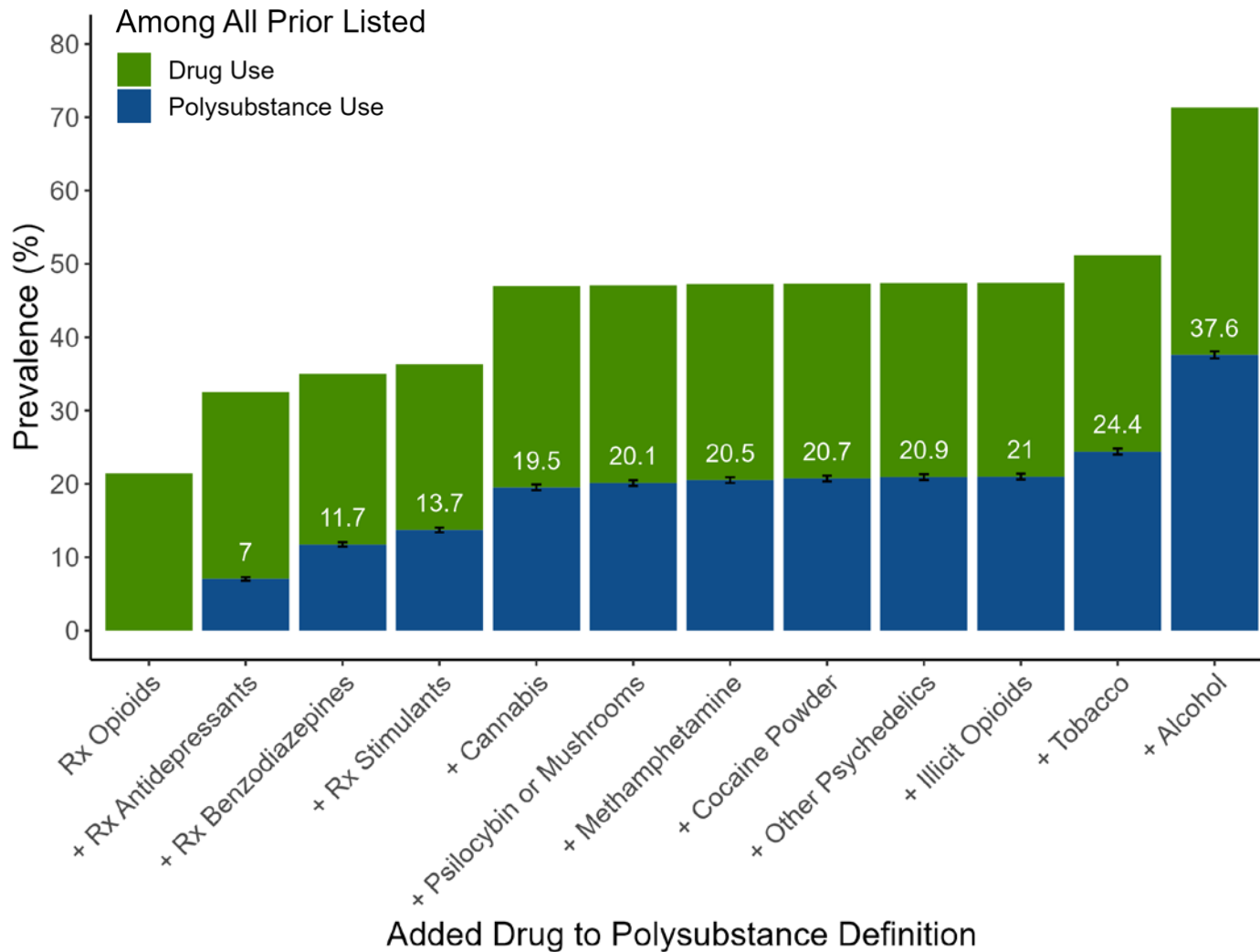
- Prescription opioids
- Prescription stimulants
- Prescription benzodiazepines
- Prescription antidepressants

Any Recreational Use of:

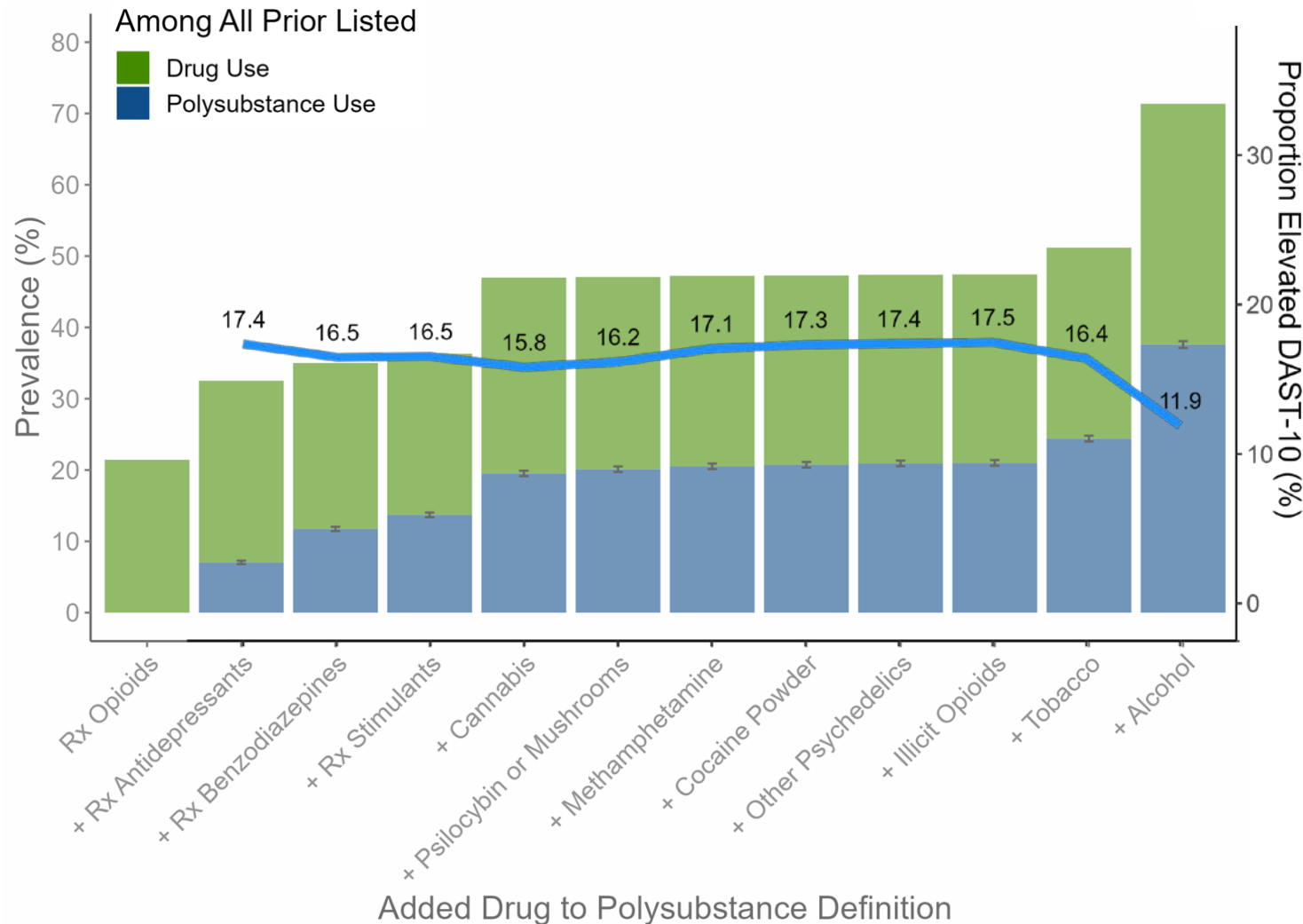
- Cannabis or Marijuana (medical or recreational)
- Psilocybin or Mushrooms
- Other psychedelics
- Cocaine powder
- Methamphetamine
- Opioids

**Definition of
polysubstance use: ≥ 2**

Sensitivity of Sample to Definition for Polysubstance Use



Sensitivity of Sample to Definition for Polysubstance Use



Elevated DAST-10:

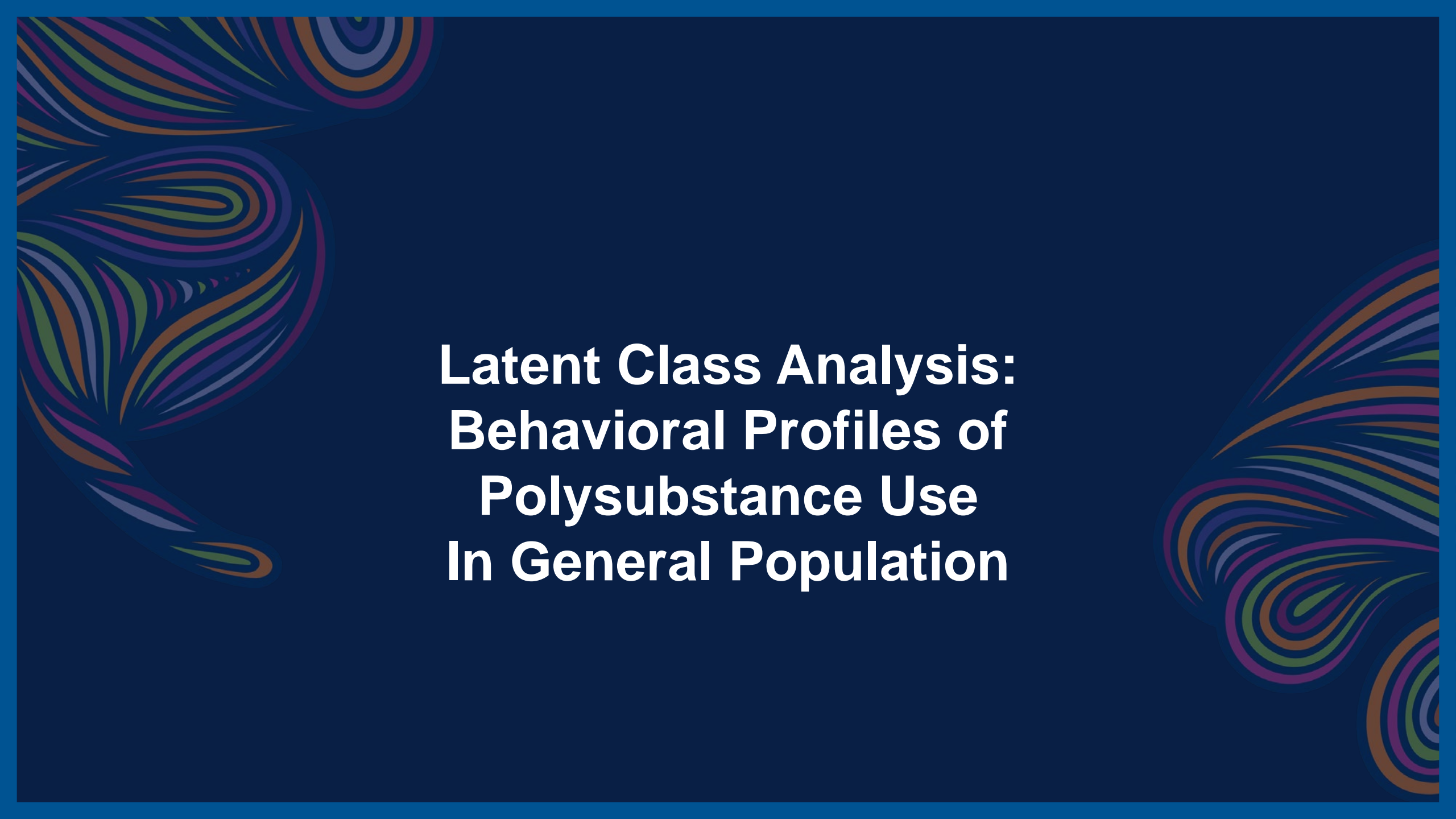
- 1) Proportion highest through prescription drugs
- 2) Constant through recreational drugs
- 3) Drops at Tobacco & Alcohol

Conclusions:

Included as Polysubstance Use:
 All Prescription and Recreational
 Drugs
 N=15,863

Excluded:

Addition of Tobacco and Alcohol

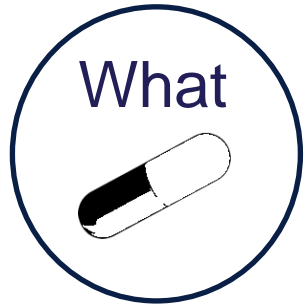
The background features a dark blue field with abstract, colorful swirls in shades of purple, green, orange, and blue, primarily located in the top-left and bottom-right corners. The text is centered in the middle of the slide.

**Latent Class Analysis:
Behavioral Profiles of
Polysubstance Use
In General Population**

Benefits to LCA Approach: Latent Class Analysis

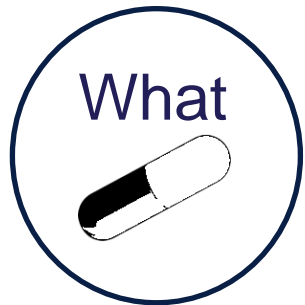
- LCA are a person-centered approach by examining patterns across a population and placing individuals into mutually exclusive groups
 - Data driven approach, the model decides what factors group, and the researcher is tasked with interpreting those resultant groups
- Delineation of nuanced behaviors among those who report polysubstance use
 - Drug of choice across time (last year) and at same time (concomitant use)
- Inclusion of weighting scheme – national prevalence estimates of subpopulations identified

LCA inputs



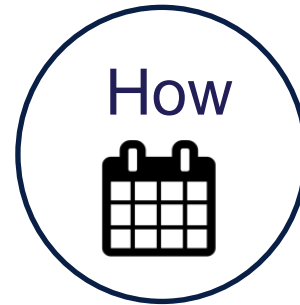
Prescription Drugs – Use and NMU

- Opioids
- Stimulants
- Sedatives
- Antidepressants



Recreational Drugs - Use

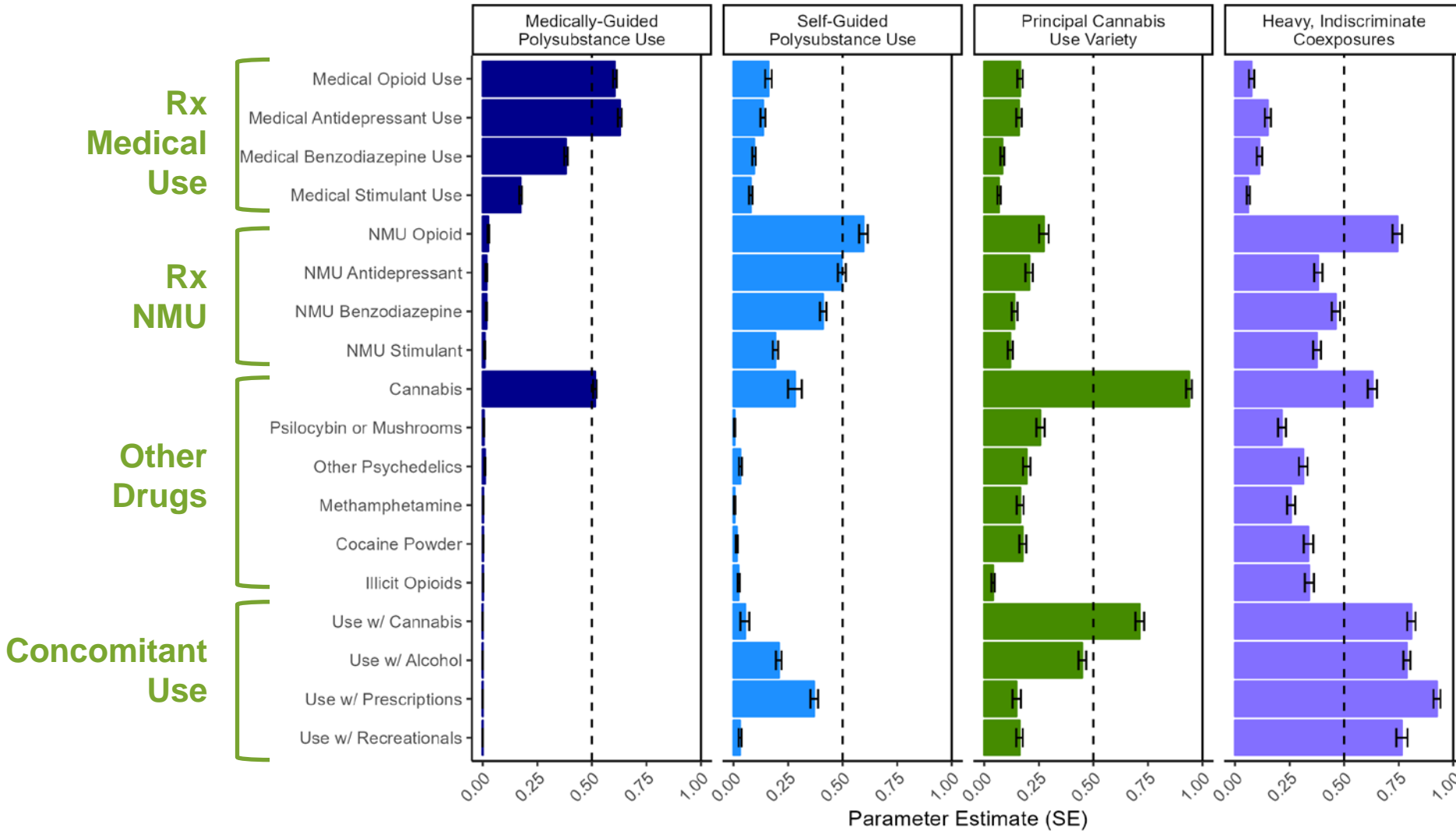
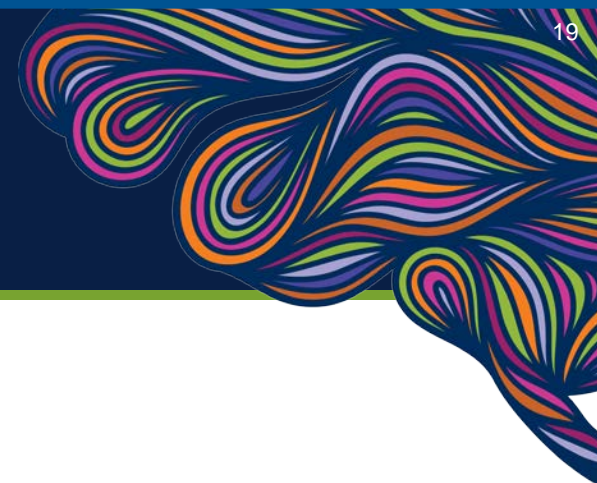
- Cannabis
- Psilocybin/Mushrooms
- Methamphetamine
- Cocaine
- Other Psychedelics
- Opioids



Concomitant Use

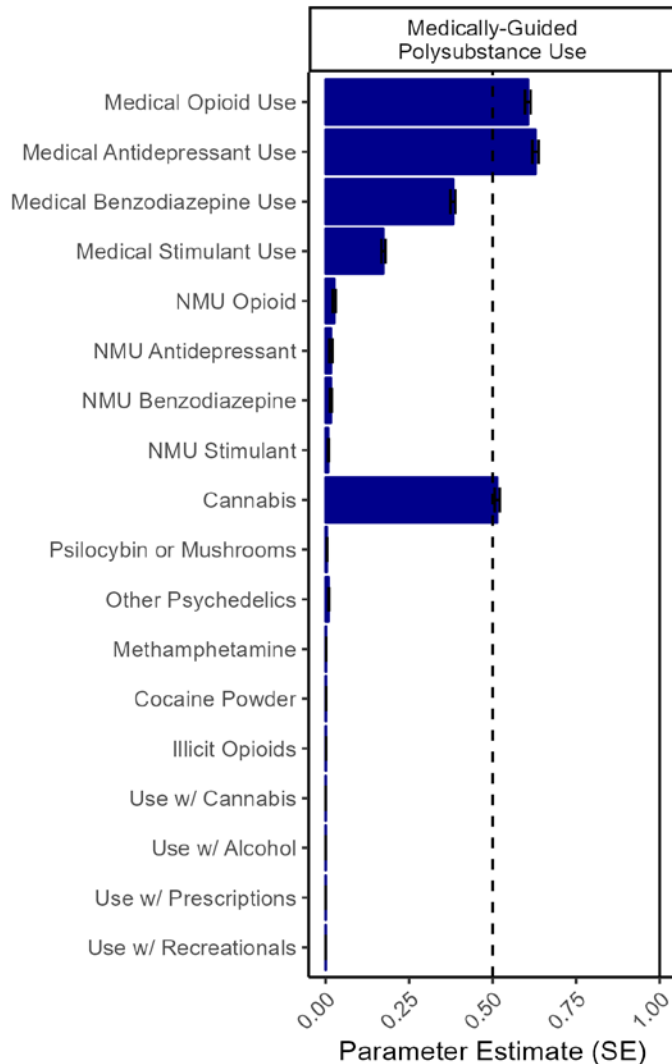
- Alcohol
- Prescription Drugs
- Cannabis
- Recreational Drugs

Best Classes Determined - 4



Medically Guided Polysubstance Use

49.91% of Sample – Largest Group

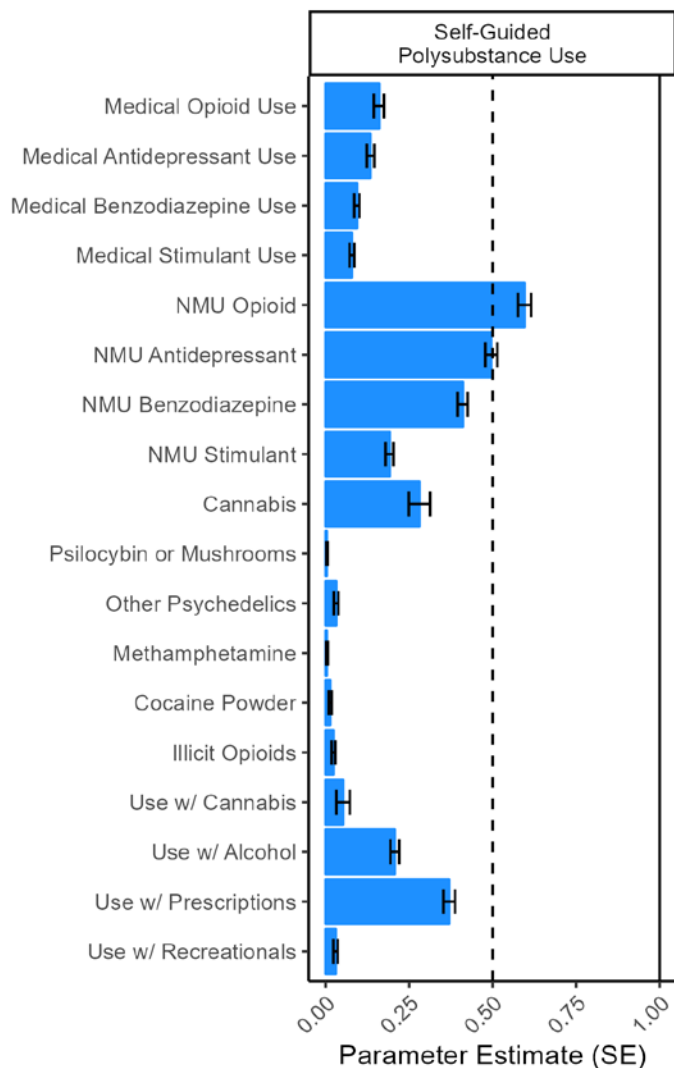


Defined by:

- Almost exclusively medical use of prescriptions
 - Sourced from HCP (>98% across drugs)
- Probability of cannabis use = 50%
 - But not concomitant use with prescriptions
- No concomitant use of prescription drug use with other substances including alcohol

Self-Guided Polysubstance Use

21.40% of Sample – 2nd Largest Group

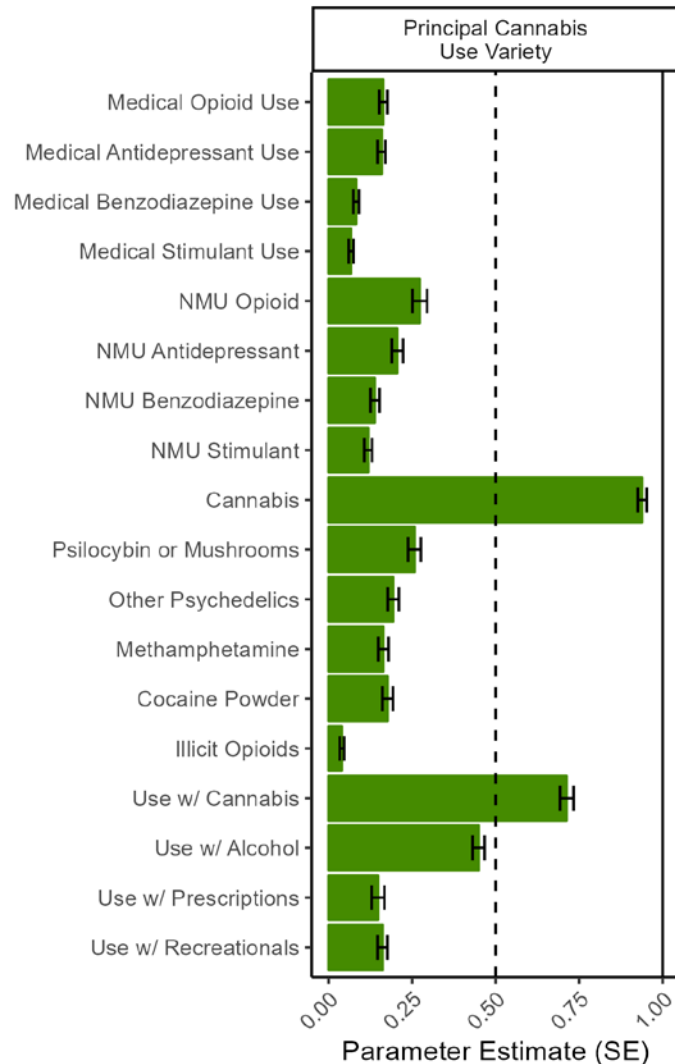


Defined by:

- Dominant use of prescription drugs
 - More non-medical use than medical use for each type
 - Sourced from HCP ~55% (stimulants) to ~74% (antidepressants)
- Lowest probability of cannabis use
- Minimal recreational drug use
- Concomitant use when using prescription drugs with other prescriptions and alcohol

Principal Cannabis Use Variety

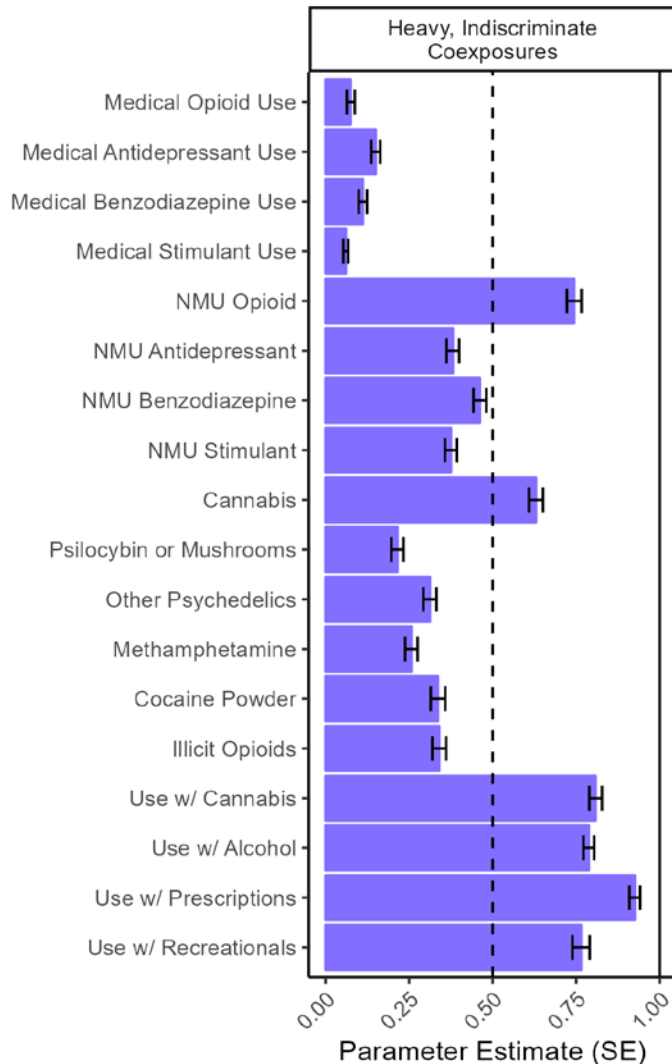
18.75% of Sample – 3rd Largest Group



Defined by:

- Near exclusive cannabis users
- When using prescription drugs concomitant cannabis use ~47%
- When using recreational drugs concomitant cannabis use ~36%
- No other specific drug dominants, all roughly equal mixed with high concomitant use with cannabis
 - Indicates that this group has a lot of variety of what they use alongside their cannabis

Heavy, Indiscriminate Coexposures 9.94% of Sample – Smallest Group



Defined by:

- High concomitant use
 - When using prescriptions $\geq 70\%$ concomitant use with all four categories
 - When using recreational drugs $\sim 40\%$ concomitant use with all four categories
- Similar probabilities of non-medical use of prescription drugs and cannabis use
 - Sourced from HCP $\sim 25\%$ (opioids/stimulants) to $\sim 50\%$ (antidepressants)
- Highest probability of other recreational drugs of any class

Who belongs to these groups



Medically-Guided Polysubstance Use

Mean: 48 years

♀ 64.5%

White 87.2%
Black/AA 8.1%
Hispanic 8.5%

Very Good/
Excellent Health
31.4%

Anxiety 56.9%

Self-Guided Polysubstance Use

Mean: 44 years

♀ 53.8%

White 81.7%
Black/AA 9.9%
Hispanic 15.1%

Very Good/
Excellent Health
42.4%

Anxiety 47.7%

Principal Cannabis Use Variety

Mean: 38 years

♂ 53.2%

White 77.2%
Black/AA 13.5%
Hispanic 15.9%

Very Good/
Excellent Health
34.6%

Anxiety 50.5%

Heavy, Indiscriminate Coexposures

Mean: 36 years

♂ 64.6%

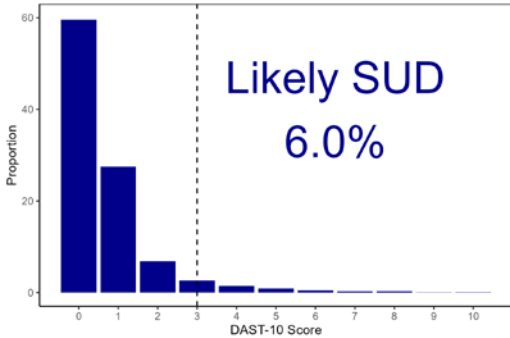
White 77.9%
Black/AA 12.2%
Hispanic 20.4%

Very Good/
Excellent Health
50.3%

Anxiety 45.9%

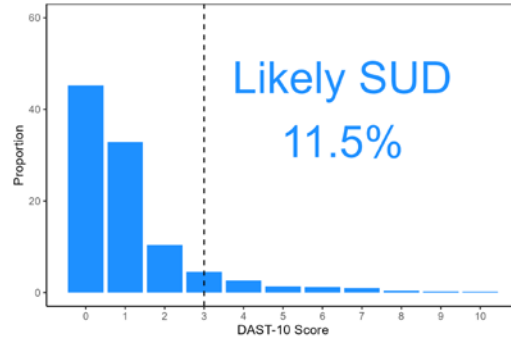
Risk Profiles

Medically-Guided Polysubstance Use



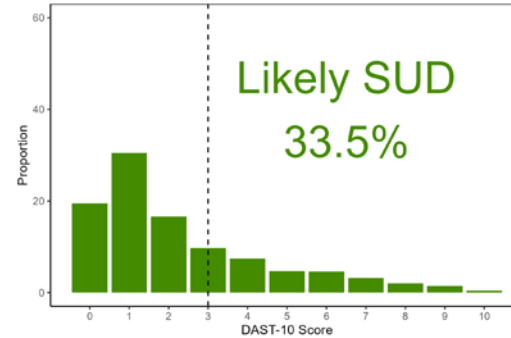
Substance Treatment in Last Year
2.1%

Self-Guided Polysubstance Use



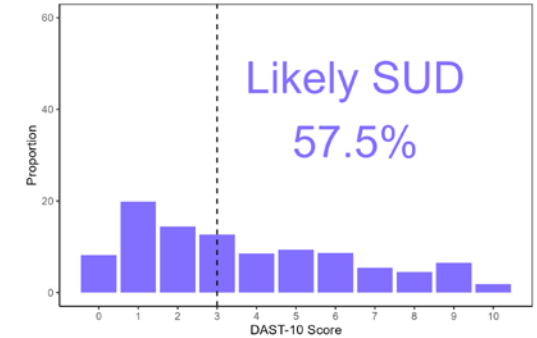
Substance Treatment in Last Year
4.3%

Principal Cannabis Use Variety



Substance Treatment in Last Year
8.5%

Heavy, Indiscriminate Coexposures



Substance Treatment in Last Year
22.2%

Conclusions

- Medically-Guided Polysubstance Use - 10.5% of general population
 - New to the literature and large
 - Low SUD risk but high comorbidities with other health concerns
- Self-Guided Polysubstance Use – 4.5% of general population
 - Similar to previously described
 - Opportunity for HCP intervention – screening and early referrals could have value
- Principal Cannabis Use Variety – 3.9% of general population
 - Previously not described - albeit expected
 - 1:3 SUD with large variety of concomitant use profiles
 - Hard to access population, lowest measured HCP interaction
- Heavy, Indiscriminate Coexposures – 2.1% of general population
 - Consistent with literature
 - High risk for SUD, 1:5 in treatment
 - Risk of other health outcomes through illicit sourcing

Study Limitations

Limitations

- Subject to “naming fallacy” based on qualitative interpretation of classes and probabilistic assignment
- Potential for birth cohort effects – will be explored further
- Recall bias

Acknowledgements



- Dr. Alison Abraham, Mentor
- Dr. Lori Crane, Committee Member
- Dr. Tessa Crume, Chair
- Dr. Debashis Ghosh, Committee Member



- Dr. Joshua Black, Mentor
- Dr. Janetta Iwanicki, Committee Member
- Dr. Andrew Monte
- Dr. Jennifer Jewell
- NMURx Program Team

Funded by:

Research reported was supported by the National Institute On Drug Abuse of the National Institutes of Health under Award Number R36DA057413.

Kari Rockhill

Karilynn.Rockhill@rmpds.org

301-641-3317