University of Washington

Kaiser Permanente.

Validity of a single-item cannabis screen for detecting cannabis use disorder when used routinely in primary care
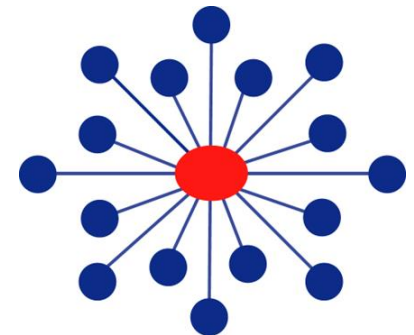
THERESA E. MATSON, PHD, MPH

INEBRIA

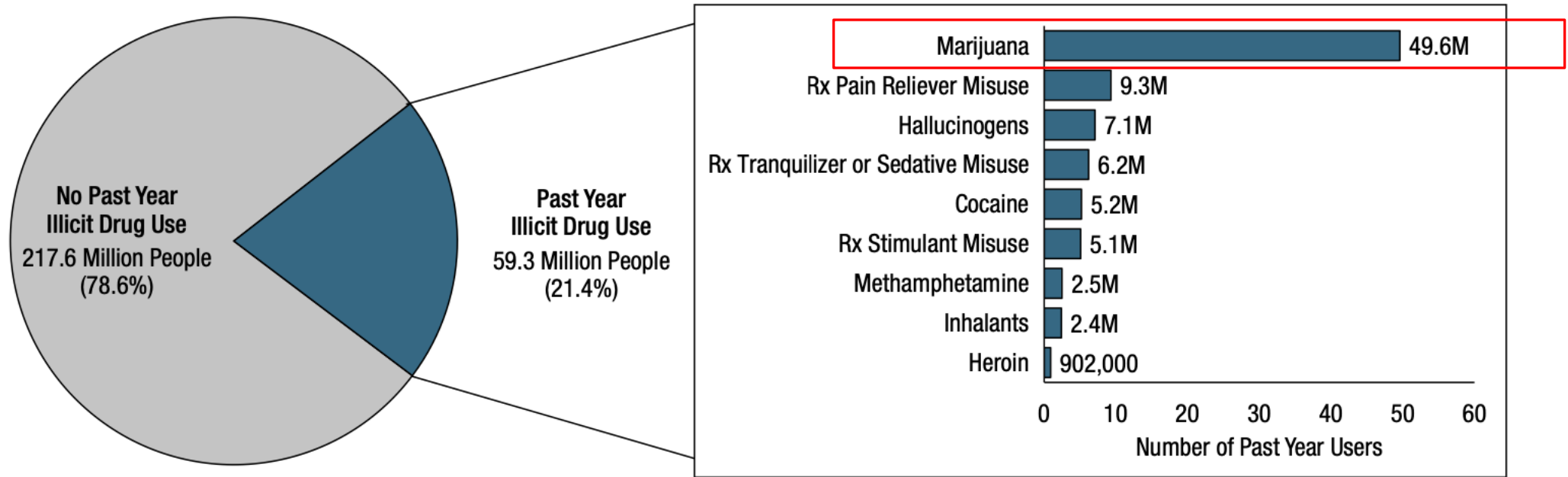SEPTEMBER 22, 2022

DISCLOSURES

This work was supported by an award (UG1DA040314) from the National Institute on Drug Abuse (NIDA), Clinical Trials Network (CTN)

I take full responsibility for the content of this presentation. Views presented to not necessarily represent the official views of NIDA CTN

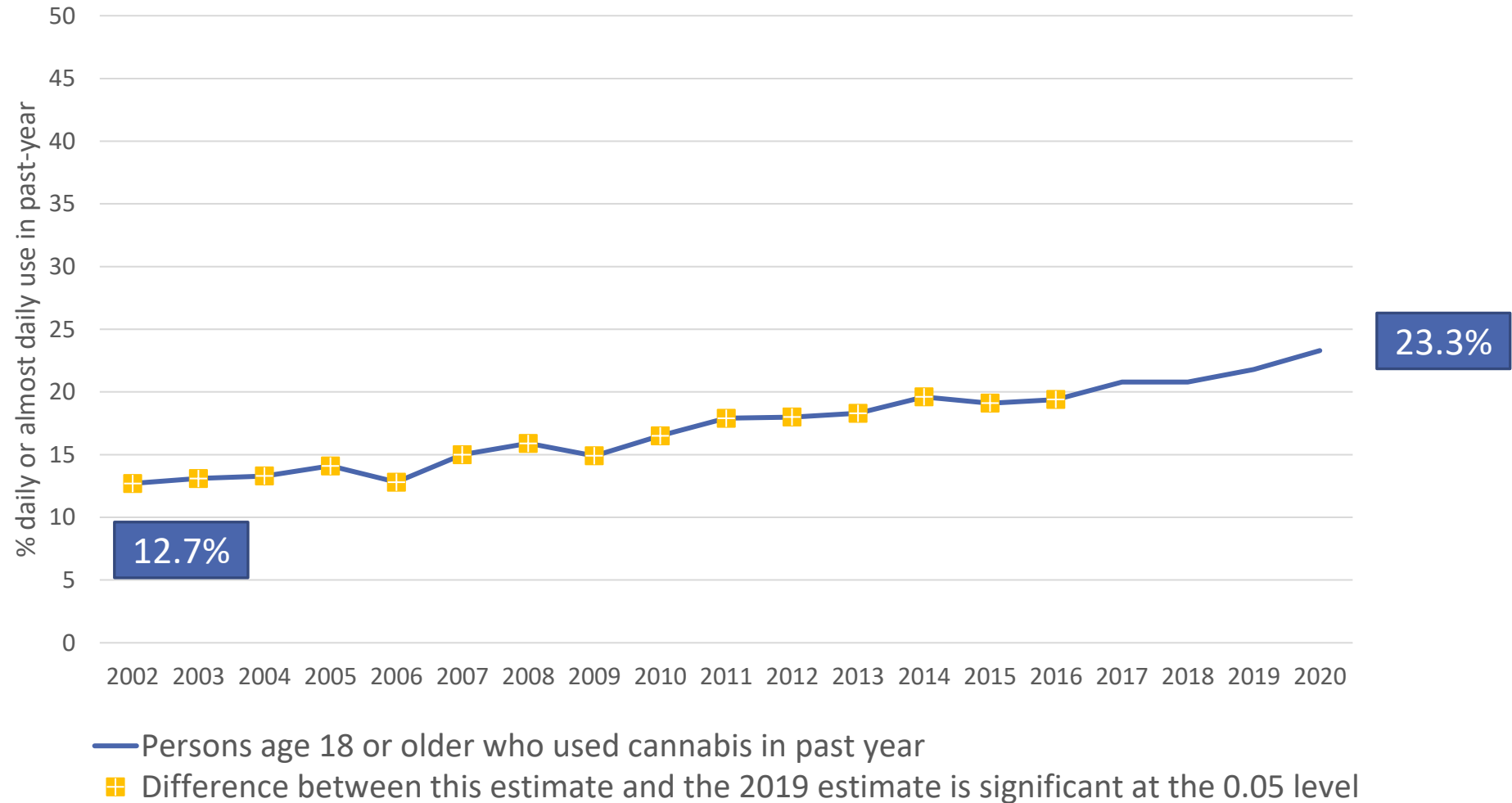I have no financial or other conflicts of interest

PREVALENCE OF CANNABIS USE

No Past Year
Illicit Drug Use
217.6 Million People
(78.6%)

Past Year
Illicit Drug Use
59.3 Million People
(21.4%)

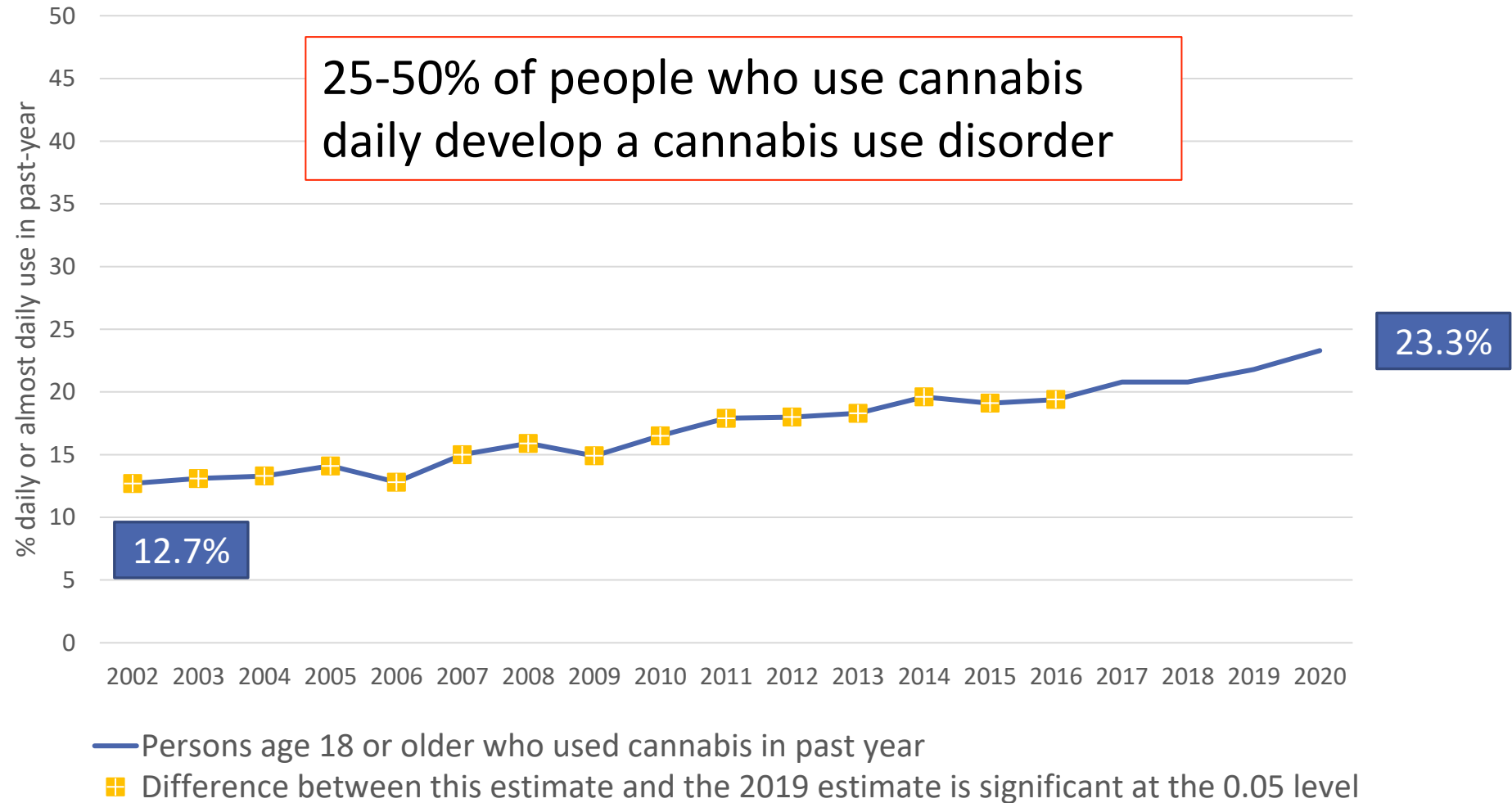| Drug	Number of Past Year Users
Marijuana	49.6M
Rx Pain Reliever Misuse	9.3M
Hallucinogens	7.1M
Rx Tranquilizer or Sedative Misuse	6.2M
Cocaine	5.2M
Rx Stimulant Misuse	5.1M
Methamphetamine	2.5M
Inhalants	2.4M
Heroin	902,000

Rx = prescription.

Note: The estimated numbers of past year users of different illicit drugs are not mutually exclusive because people could have used more than one type of illicit drug in the past year.

PREVALENCE OF DAILY CANNABIS USE

% daily or almost daily use in past-year

12.7%

23.3%

—— Persons age 18 or older who used cannabis in past year

■ Difference between this estimate and the 2019 estimate is significant at the 0.05 level

PREVALENCE OF DAILY CANNABIS USE

25-50% of people who use cannabis daily develop a cannabis use disorder

% daily or almost daily use in past-year

23.3%

12.7%

2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

—— Persons age 18 or older who used cannabis in past year

▦ Difference between this estimate and the 2019 estimate is significant at the 0.05 level

CANNABIS USE DISORDER (CUD)

Casual, Low-Risk Use

Use that has negligible health or social effects

CANNABIS USE DISORDER (CUD)

Begins to have negative consequences
for person, friends, family or society
(driving under the influence)

**High-Risk,
Harmful Use**

**Casual,
Low-Risk Use**

Use that has negligible
health or social effects

**DSM-5 Cannabis
Use Disorder**

High-risk use that becomes
habitual and compulsive
despite negative effects

CANNABIS USE DISORDER (CUD)

Begins to have negative consequences
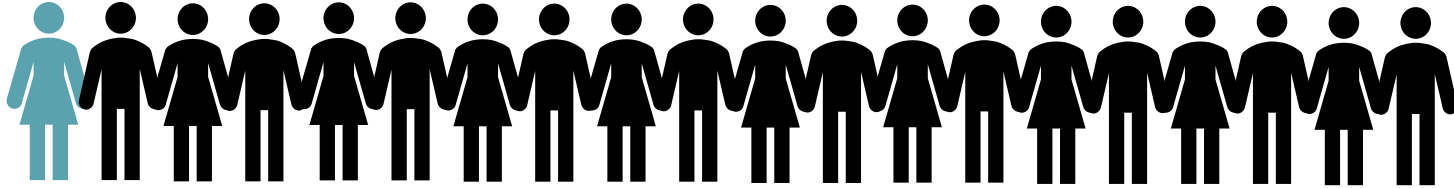for person, friends, family or society
(driving under the influence)

High-Risk,
Harmful Use

mild, moderate, severe

Casual,
Low-Risk Use

DSM-5 Cannabis
Use Disorder

Use that has negligible
health or social effects

High-risk use that becomes
habitual and compulsive
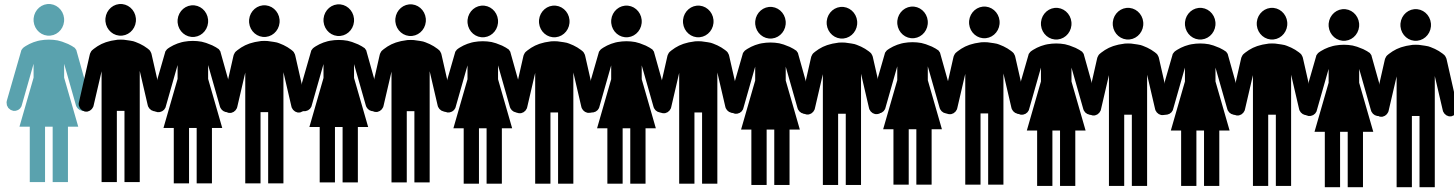despite negative effects
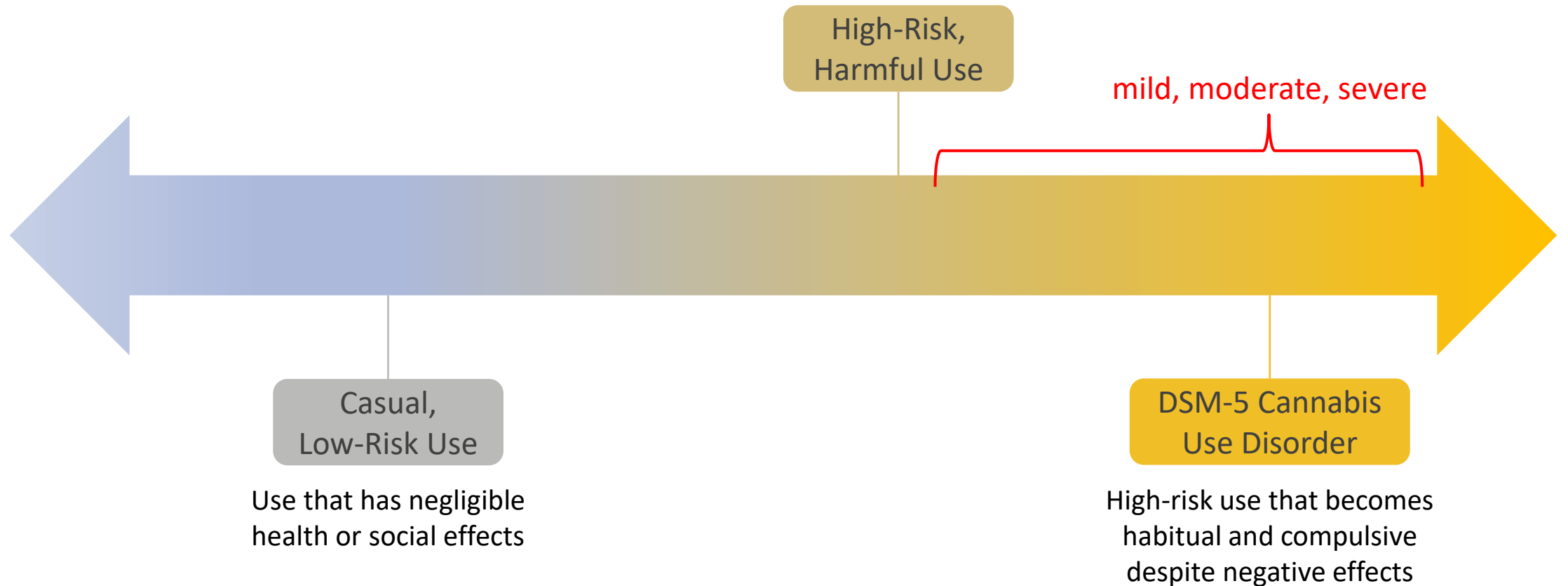
PREVALENCE OF CUD

U.S. Population (2-5%)

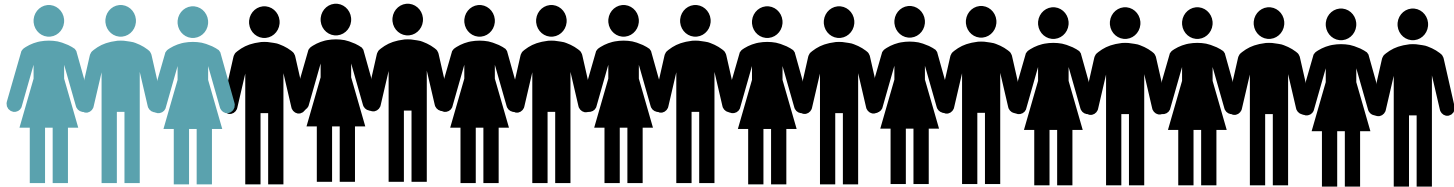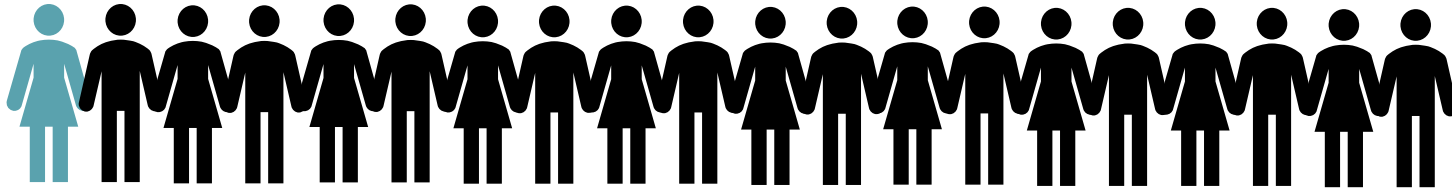# PREVALENCE OF CUD

U.S. Population (2-5%)

Young Adults (4-14%)
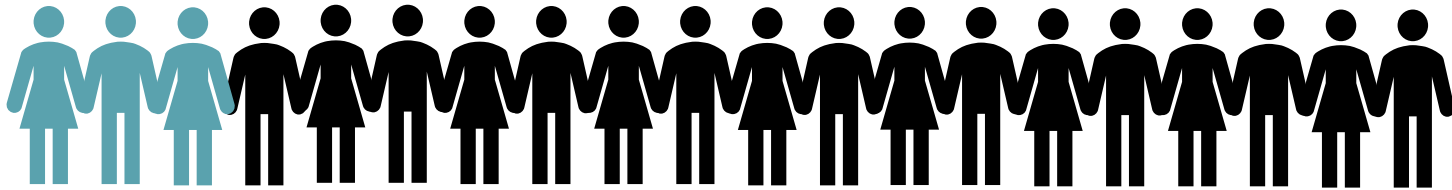
PREVALENCE OF CUD
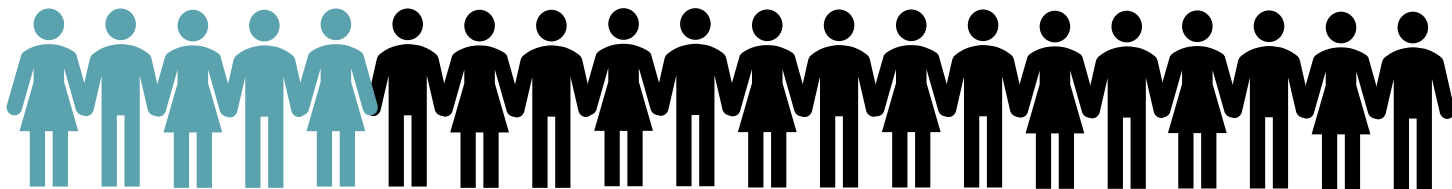
U.S. Population (2-5%)

Young Adults (4-14%)

Co-occurring mental health and other substance use disorders (8-24%)

PREVALENCE OF CUD

Less than 7% of people with CUD receive CUD treatment
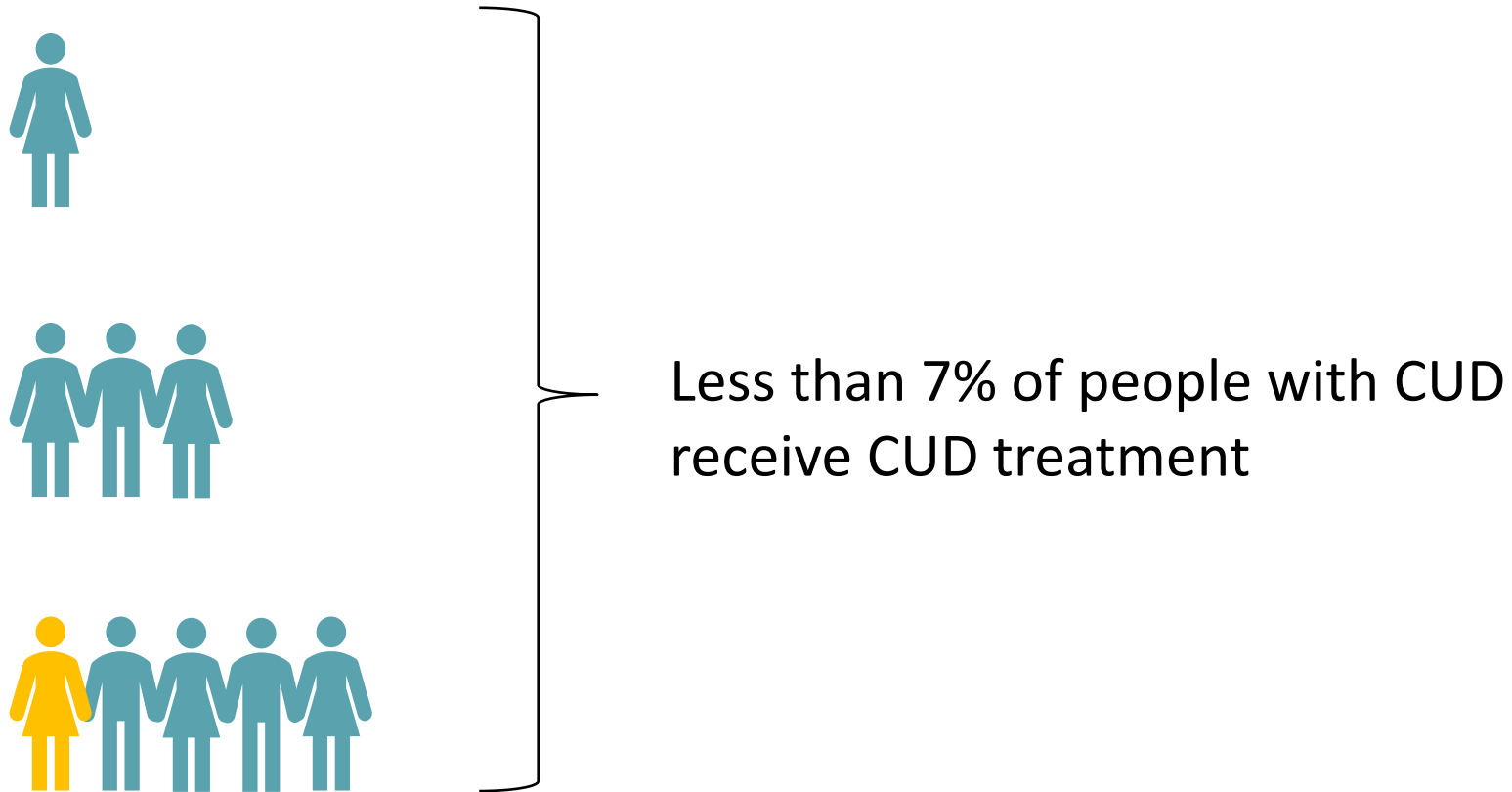
Motivational enhancement

Cognitive behavioral treatment

Contingency management

Digital therapeutics

CUD TREATMENT

SCREENING AND ASSESSMENT IN PRIMARY CARE

➢Primary care is ideally suited to identify cannabis and manage CUD

Richard Saitz, MD, MPH, FACP, DFASAM[1]
Timothy P. Daaleman, DO, MPH[2]

[1]Boston University School of Public Health, Boston, Massachusetts
[2]Department of Family Medicine, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

Although over 21 million people in the United States have substance use disorders, most individuals with addiction do not receive treatment.[1] Of those who are fortunate enough to receive treatment, less than 7% access it through their doctor.[2] In addition, fewer than 10% of people with opioid use disorder in specialty care receive buprenorphine.[3]

Primary care physicians are on the front lines of this epidemic and we see it in the faces and stories of our patients: in the night sweats or gastrointestinal symptoms that are due to alcohol or opioid withdrawal; in the anxiety symptoms that are associated with cocaine use; in managing chronic pain that raises concerns about possible addiction. We are good at managing people with many coexisting conditions, and at prioritizing and knowing when we and our patients need specialists. The current opioid epidemic and marginalization of substance use disorders away from primary care has been a disaster,[4] however, and it is a marker for the under-attention to primary care. The most complex functions in health care—the much needed integrating, prioritizing, and personalizing care across prevention, acute illness care, mental health care, and management of multiple chronic illnesses—crammed into 10 minutes.

This issue of *Annals of Family Medicine* contains several

CORRESPONDING AUTHOR

Richard Saitz, MD, MPH, FACP, DFASAM
Boston University School of Public Health

Background | Methods | Results | Implications

SCREENING AND ASSESSMENT IN PRIMARY CARE

➤ Primary care is ideally suited to identify cannabis and manage CUD

➤ Measurement is crucial for cannabis-related care

EDITORIAL

Now is the Time to Address Substance Use Disorders

Priming primary care providers to engage in evidence-based discussions about cannabis with patients

Devan Kansagara ✉, William C. Becker, Chelsea Ayers & Jeanette M. Tetrault

Abstract

Cannabis use has become increasingly common in the U.S. in recent years, with legalization for medical and recreational purposes expanding to more states. With this increase in use and access, providers should be prepared to have more conversations with patients about use. This review provides an overview of cannabis terminology, pharmacology, benefits, harms, and risk mitigation strategies to help providers engage in these discussions with their patients. Current evidence for the medical use of cannabis, cannabis-related diagnoses including cannabis use disorder (CUD) and withdrawal syndromes, and the co-use of opioids and cannabis are discussed. It is crucial that providers have the tools and information they need to deliver consistent, evidence-based assessment, treatment, prevention and harm-reduction, and we offer practical guidance in these areas.

SCREENING AND ASSESSMENT IN PRIMARY CARE

➢Primary care is ideally suited to identify cannabis and manage CUD

➢Measurement is crucial for cannabis-related care

➢Brief screening for cannabis and other drug use is feasible and recommended

Now is the Time to Address Substance Use Disorders

Priming primary care providers to engage in evidence-based discussions about cannabis with p...

Integration of screening, assessment, and treatment for cannabis and other drug use disorders in primary care: An evaluation in three pilot sites

Julie E. Richards[a,b,*], Jennifer F. Bobb[a], Amy K. Lee[a], Gwen T. Lapham[a,b], Emily C. Williams[a,b,e], Joseph E. Glass[a,f], Evette J. Ludman[a], Carol Achtmeyer[a,c], Ryan M. Caldeiro[d], Malia Oliver[a], Katharine A. Bradley[a,b,e,g]

[a] Kaiser Permanente Washington Health Research Institute, Seattle USA
[b] Department of Health Services, University of Washington, Seattle USA
[c] VA Puget Sound Health Care System, Center of Excellence in Substance Abuse Treatment and Education, Seattle, USA
[d] Kaiser Permanente Washington, Mental Health and Wellness, Seattle USA
[e] VA Puget Sound, Health Services Research and Development Center of Innovation for Veteran-Centered and Value-Driven Care, Seattle, WA USA
[f] Department of Psychiatry and Behavioral Sciences, University of Washington, Seattle USA
[g] Department of Medicine, University of Washington, Seattle USA

ABSTRACT

Background: This pilot study evaluated whether use of evidence-based implementation strategies to integrate care for cannabis and other drug use into primary care (PC) as part of Behavioral Health Integration (BHI) increased diagnosis and treatment of substance use disorders (SUDs).

Methods: Patients who visited the three pilot PC sites were eligible. Implementation strategies included practice coaching, electronic health record decision support, and performance feedback (3/2015-4/2016). BHI introduced annual screening for past-year cannabis and other drug use, a Symptom Checklist for DSM-5 SUDs, and shared decision-making about treatment options. Main analyses tested whether the proportions of PC patients diagnosed with, and treated for, new cannabis or other drug use disorders (CUDs and DUDs, respectively), differed significantly pre- and post-implementation.

Results: Of 39,599 eligible patients, 57% and 59% were screened for cannabis and other drug use, respectively. Among PC patients reporting daily cannabis use (2%) or any drug use (1%), 51% and 37%, respectively, completed an SUD Symptom Checklist. The proportion of PC patients with newly diagnosed CUD increased significantly post-implementation (5 v 17 per 10,000 patients, $p < 0.0001$), but not other DUDs (10 vs 13 per 10,000, $p = 0.24$). The proportion treated for newly diagnosed CUDs did not increase post-implementation (1 vs 1 per 10,000, $p = 0.80$), but did for those treated for newly diagnosed other DUDs (1 vs 3 per 10,000, $p = 0.038$).

Conclusions: A pilot implementation of BHI to increase routine screening and assessment for SUDs was associated with increased new CUD diagnoses and a small increase in treatment of new other DUDs.

Background | Methods

BRIEF VALIDATED SCREENS

Table. Brief (< 4 items) validated substance use screens to identify current CUD/SUD in an adult population in a general medical setting

Screen	# Items	# Items that are cannabis-specific	Evaluated as part of research or real world
SoDU	1-2	0	Research
TAPS-1	4	0	Research
TAPS	4-30	3	Research
ASSIST-Drug	1-2	0	Research
DAST-2	2	0	Research
RDPS	4	0	Research
SSIQ	1	0	Research
SQST	1	0	Research
SUBS	4	0	Research
TICS	2	0	Research

OBJECTIVE:

Test the performance of the Single-item Screen - Cannabis (SIS-C) use when documented in the electronic health record as part of routine care

SETTING: KAISER PERMANENTE WASHINGTON

Integrated
health system
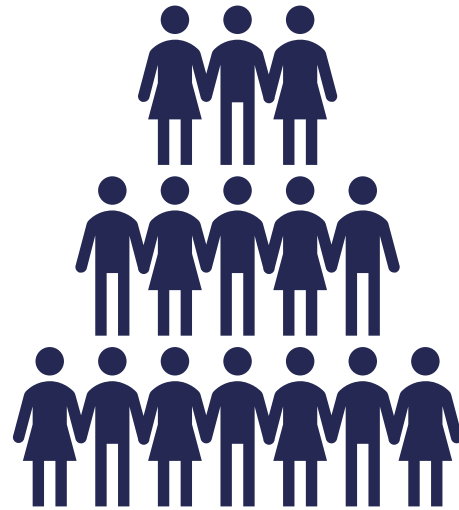
>700,000
patients

33 primary care
sites spanning
>250 miles

Integrated
electronic health
record (EHR)

CASCADE OF CANNABIS CARE

Population-based screening — AIM 1

Standardized assessment — AIM 2

Diagnosis and treatment — AIM 3

CASCADE OF CANNABIS CARE

Population-based screening

AIM 1

Standardized assessment

AIM 2

Diagnosis and treatment

AIM 3
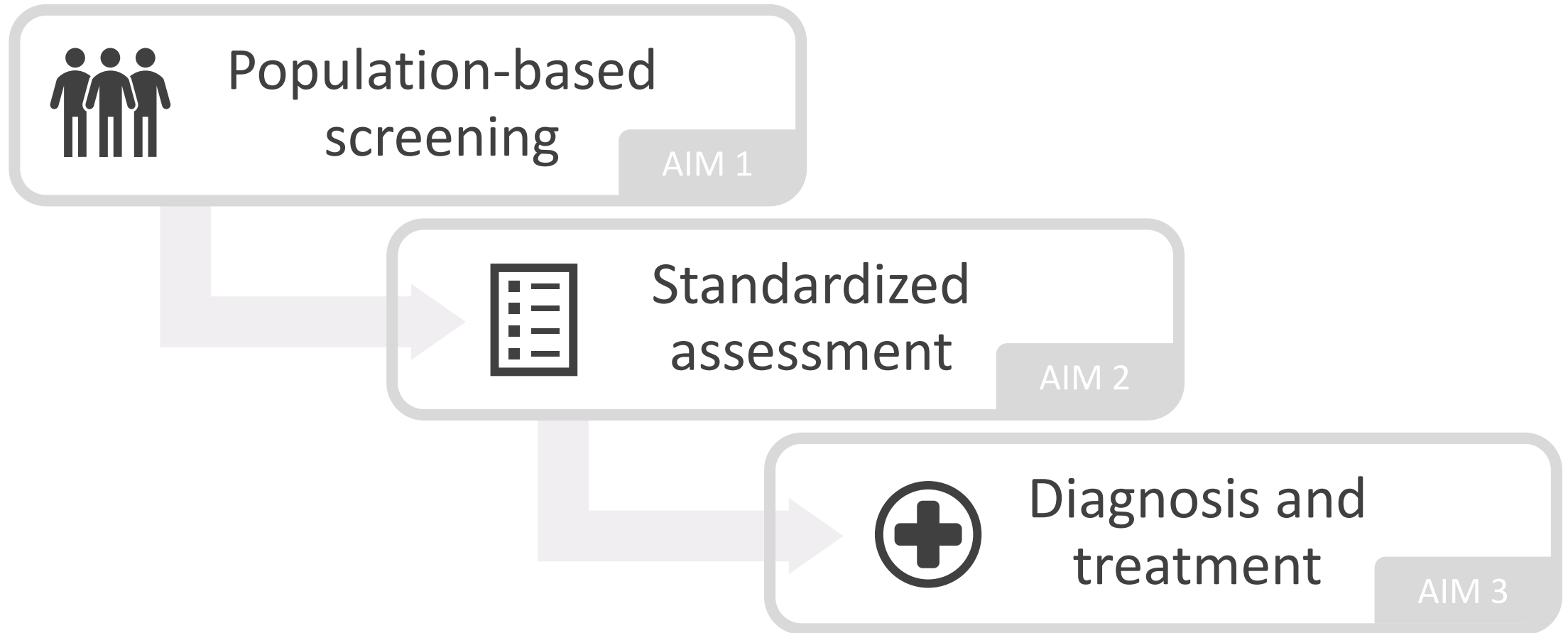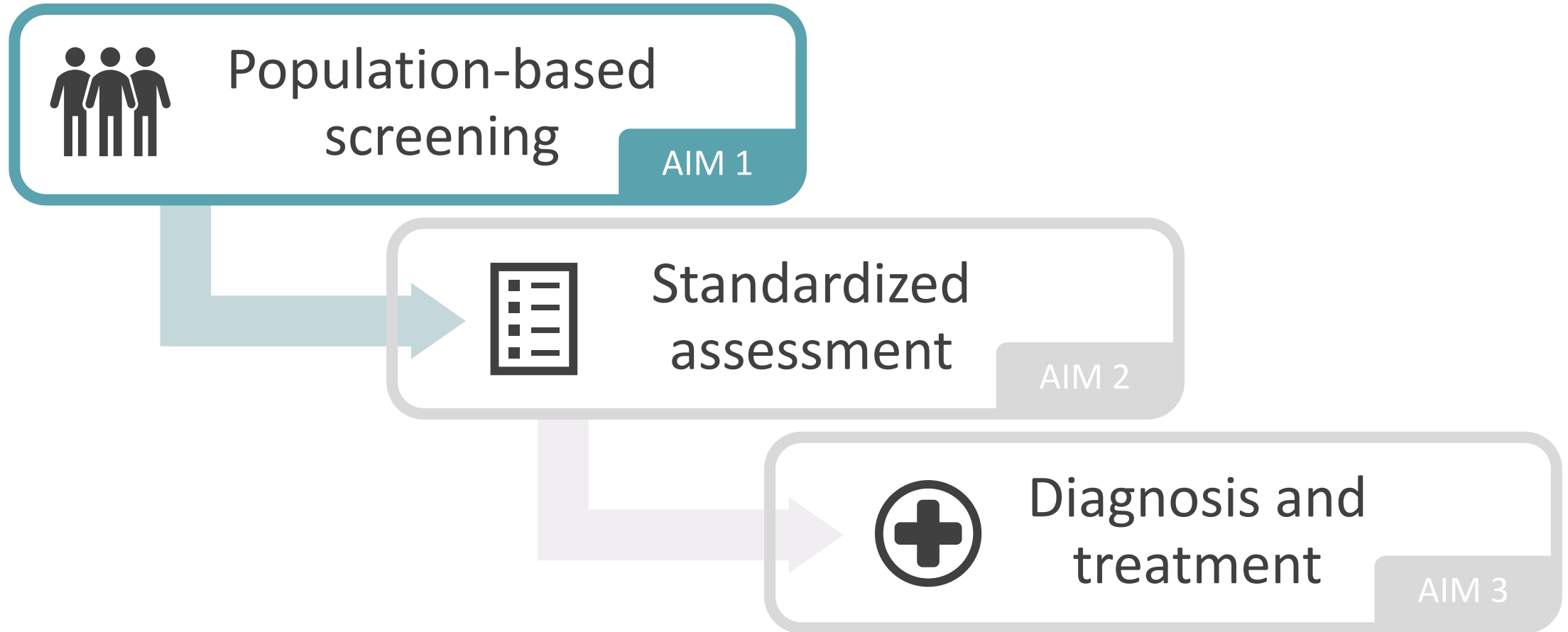
P

Over the past 2 weeks, how often have you been bothered by any of the following problems:

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things?	0	1	2	3
2. Feeling down, depressed, or hopeless?	Not at all 0	Several days 1	More than half the days 2	Nearly every day 3

In the past year...

	Never	Monthly or less	2 to 4 times a month	2 to 3 times a week	4 or more times a week
3. How often did you have a drink containing alcohol in the past year?	0	1	2	3	4

	None	1 or 2 drinks	3 or 4 drinks	5 or 6 drinks	7 to 9 drinks	10 or more drinks
4. How many drinks containing alcohol did you have on a typical day when you were drinking in the past year?	0	0	1	2	3	4

	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
5. How often did you have 6 or more drinks on one occasion in the past year?	0	1	2	3	4
6. How often in the past year have you used marijuana?	Never 0	Less than monthly 1	Monthly 2	Weekly 3	Daily or almost daily 4
7. How often in the past year have you used an illegal drug (not marijuana) or used a prescription medication for non-medical reasons?	Never 0	Less than monthly 1	Monthly 2	Weekly 3	Daily or almost daily 4

and
ent

AIM 3

CASCADE OF CANNABIS CARE

Population-based screening — **AIM 1**

DAILY CANNABIS USE

Standardized assessment — AIM 2

Diagnosis and treatment — AIM 3

CASCADE OF CANNABIS CARE

Population-based screening — AIM 1

DAILY CANNABIS USE

Standardized assessment — AIM 2

Diagnosis and treatment — AIM 3
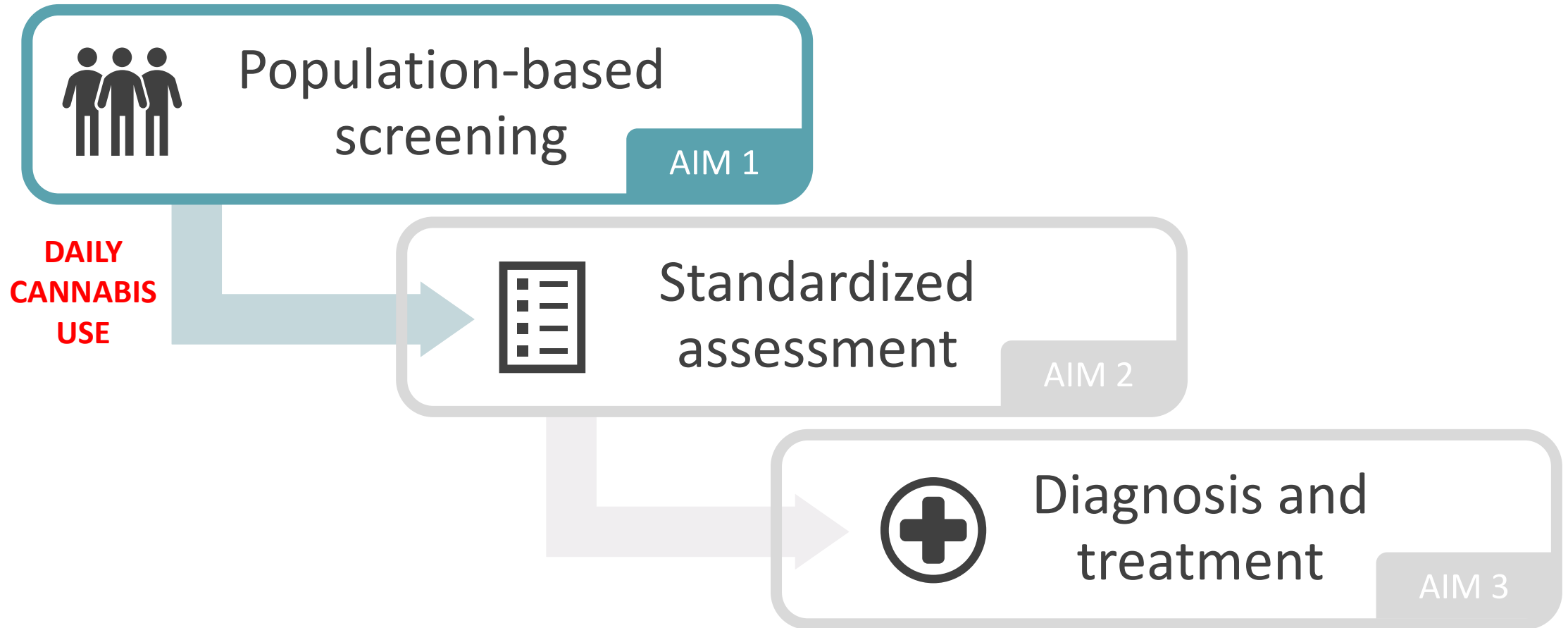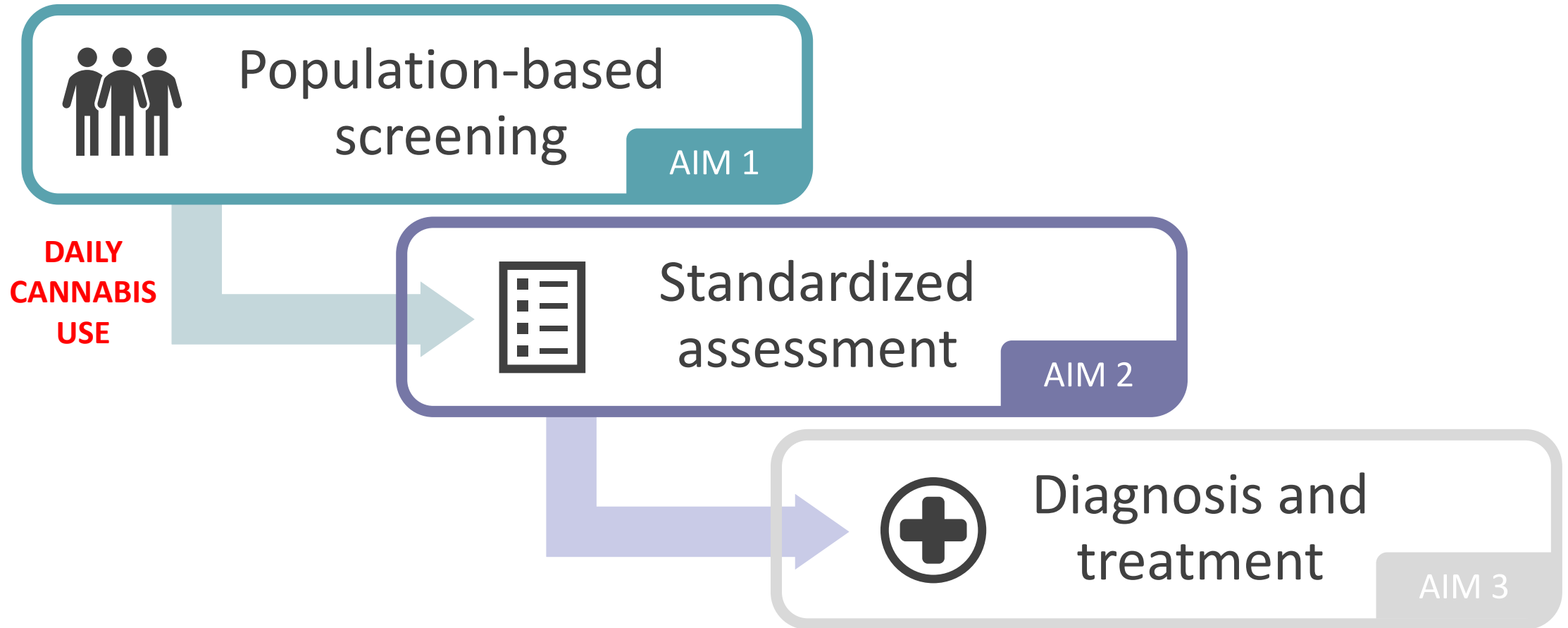
DESIGN & DATA

Prospective study

Confidential survey (online or phone; 34% response rate)

Survey linked to electronic health record (EHR) data

SAMPLE

Total sample included 1688 participants

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Inclusion criteria

➢KPWA patients 18 years

➢Screened for cannabis use in primary care January 28, 2019–September 12, 2019

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Selection: Oversampled persons of color, reported daily cannabis use

MEASURES: REFERENCE STANDARD

The Composite International Diagnostic Interview (CIDI):

- Gold standard measure of DSM-5 CUD symptom severity

- Scores range 0-11

  - 2 consistent with any CUD (i.e., mild-severe)

  - 4 consistent with moderate-severe CUD

- Participants who reported no past-year cannabis use on the survey received a score of 0 on the CIDI

MEASURES: CANDIDATE CANNABIS SCREENS

SOURCE	LABEL	MEASURE/QUESTION	RESPONSE OPTIONS
EHR	Single-Item Screen - Cannabis (SIS-C)	*How often in the past year did you use marijuana?*	0 – Never 1 – Less than monthly 2 – Monthly 3 – Weekly 4 – Daily/almost daily

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- Requested by clinicians from the health system
- Adapted from the single-question screening test for drug use
- Response option from the AUDIT-C.

ANALYSES: VALIDATING SINGLE ITEM SCREEN-CANNAIBS

Analyses were weighted to account for oversampling and non-response

Descriptive statistics

Estimated sensitivity and specificity of the SIS-C

Computed receiver operator characteristics (ROC) curves and estimated the area under curves (AUC)

◦ Bootstrapped 95% confidence intervals for AUC

Estimated predictive values (e.g., probability of correctly identifying CUD given a positive test) using Bayes Theorem

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Descriptives

Table 1. Characteristics of the eligible primary care population (N=1688)

	Unweighted N	Weighted % (SE)
Age		
18-29	459	14.9 (2.8)
30-49	582	31.0 (3.9)
50-64	329	26.3 (3.8)
65+	318	27.7 (3.4)
Female	861	55.9 (4.1)
Race		
American Indian/Alaska Native	13	0.1 (0.0)
Asian	73	8.4 (2.2)
Black	136	4.6 (1.7)
Native Hawaiian/Pacific Islander	15	0.7 (0.5)
White	1,184	74.2 (3.7)
More than one race	109	3.6 (1.5)
Other/Unknown race	158	8.4 (2.5)
Hispanic Ethnicity	174	3.3 (1.0)

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Descriptives

Table 1. Characteristics of the eligible primary care population (N=1688)

	Unweighted N	Weighted % (SE)
Past-Year Mental Health or SUD Diagnosis	662	28.7 (3.7)
CIDI Criteria for Cannabis Use Disorder		
< 2 (no CUD)	1,070	93.3 (1.0)
2-3 (mild CUD)	364	4.7 (0.9)
≥ 4 (moderate-severe CUD)	254	1.9 (0.2)
Single-Item Screen - Cannabis Responses		
Never	99	78.1 (2.0)
Less than monthly	99	9.6 (1.2)
Monthly	118	3.3 (0.4)
Weekly	376	4.0 (0.4)
Daily or almost daily	996	5.1 (0.4)

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< 2 (no CUD)	1,070	93.3 (1.0)	
2-3 (mild CUD)	364	4.7 (0.9)	~7% with any CUD
≥ 4 (moderate-severe CUD)	254	1.9 (0.2)	
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Never	99	78.1 (2.0)	
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Single-Item Screen - Cannabis Responses			
Never	99	78.1 (2.0)	
Less than monthly	99	9.6 (1.2)	
Monthly	118	3.3 (0.4)	~21% with response other than "never"
Weekly	376	4.0 (0.4)	
Daily or almost daily	996	5.1 (0.4)	

Sensitivity and Specificity

Table 2. Prevalence and performance characteristics for identification of CUD of the Single-Item Screen - Cannabis

Potential cut-points for the Single-Item Screen - Cannabis	Screening performance for past-year cannabis use disorder (CUD)					
	Any CUD			Moderate-Severe CUD		
	Sens (%)	Spec (%)	AUC (95% CI)[d]	Sens (%)	Spec (%)	AUC (95% CI)
≥ Less than monthly (1)	88	83		100	80	
≥ Monthly (2)	71	92	0.89 (0.78-0.96)	96	89	0.95 (0.94-0.96)
≥ Weekly (3)	57	94		81	92	
Daily or almost daily (4)	36	97		57	96	

Abbreviations: CUD = cannabis use disorder; Sens = sensitivity; Spec = specificity; AUC = area under the curve; CI = confidence interval

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Potential cut-points for the Single-Item Screen - Cannabis	Screening performance for past-year cannabis use disorder (CUD)					
	Any CUD			Moderate-Severe CUD		
	Sens (%)	Spec (%)	AUC (95% CI)[d]	Sens (%)	Spec (%)	AUC (95% CI)
≥ Less than monthly (1)	88	83		100	80	
≥ Monthly (2)	71	92	0.89 (0.78-0.96)	96	89	0.95 (0.94-0.96)
≥ Weekly (3)	57	94		81	92	
Daily or almost daily (4)	36	97		57	96	

Abbreviations: CUD = cannabis use disorder; Sens = sensitivity; Spec = specificity; AUC = area under the curve; CI = confidence interval

Sensitivity and Specificity

Table 2. Prevalence and performance characteristics for identification of CUD of the Single-Item Screen - Cannabis

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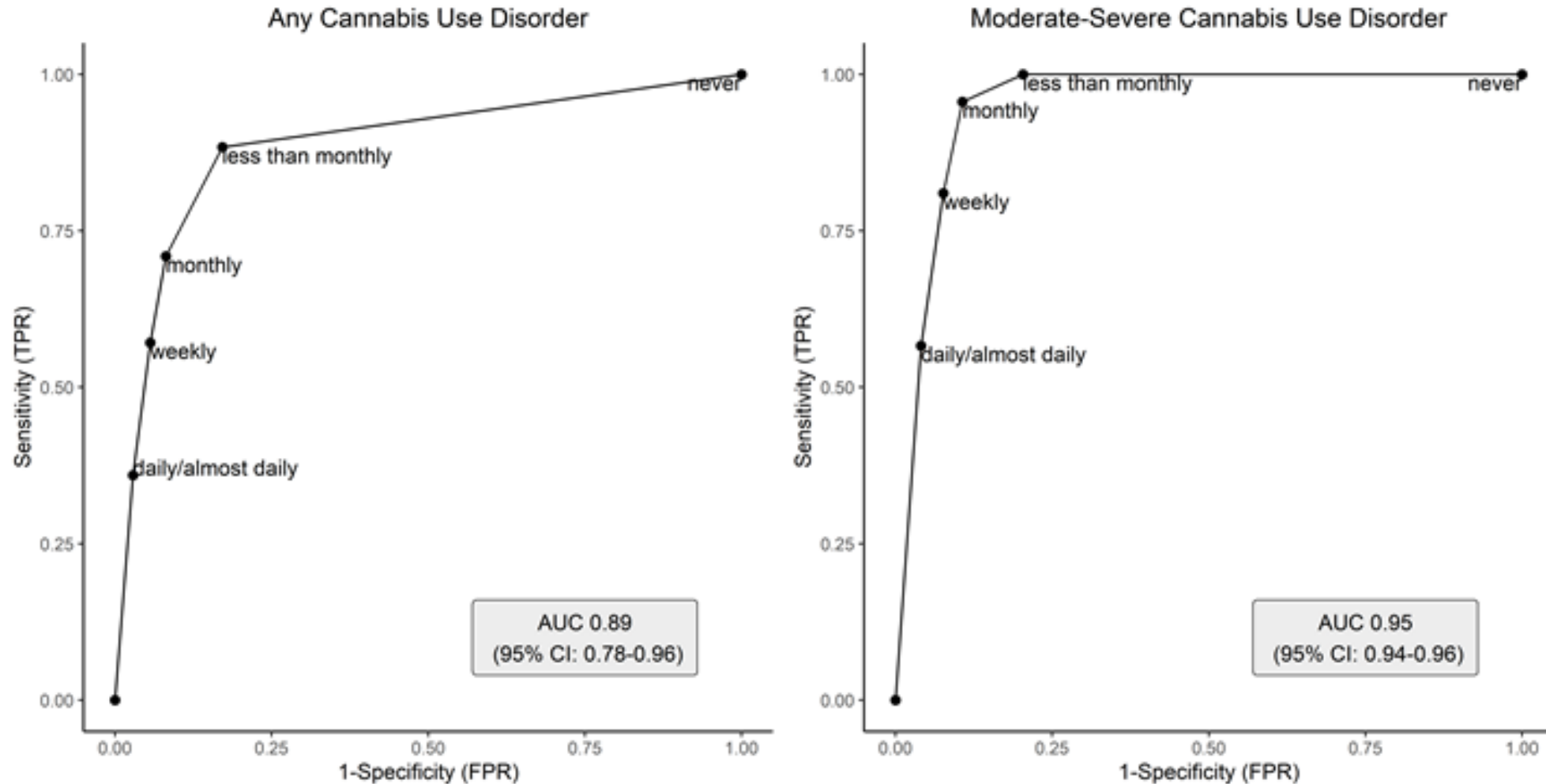
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Receiver Operating Curves and AUC

PERFORMANCE IN THE REAL WORLD

What does it mean when the SIS-C is positive?

Table 3: Post-screening probability of past-year cannabis use disorder (CUD) given different screening results and estimated prevalence rates of CUD in the screened population

	Population-Based Prevalence of Any CUD (%)							
	0.5%	**2%**	**4%**	**6%**	**8%**	**10%**	**20%**	**30%**
	Probability of a Patient has CUD if Screen Positive (%)							
≥ Less than monthly	1.6	6.3	12.1	17.4	22.4	26.9	45.3	58.7
≥ Monthly	2.6	9.9	18.4	25.7	32.0	37.5	57.5	69.9
≥ Weekly	2.8	10.3	19.0	26.5	32.9	38.5	58.5	70.7
Daily or almost daily	4.0	14.4	25.5	34.4	41.7	47.7	67.3	77.9

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STRENGTHS & LIMITATIONS

Limitations

- **Low response rate**

- SIS-C measures one dimension of cannabis use

- Patients may underestimate or underreport use and symptoms

- Survey skip pattern

- Findings may not generalize to other settings

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Strengths

- Use of routinely collected EHR data

- Strong representation of women and young adults

- Purposive sampling of people of color

- Responsive to expert recommendations

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STUDY IMPLICATIONS

IMPLICATIONS

RECOMMENDATIONS FOR TRAINING AND GUIDELINES

SUPPORT REAL-WORLD DECISION-MAKING

IMPROVE CANNABIS RESEARCH USING EHR DATA

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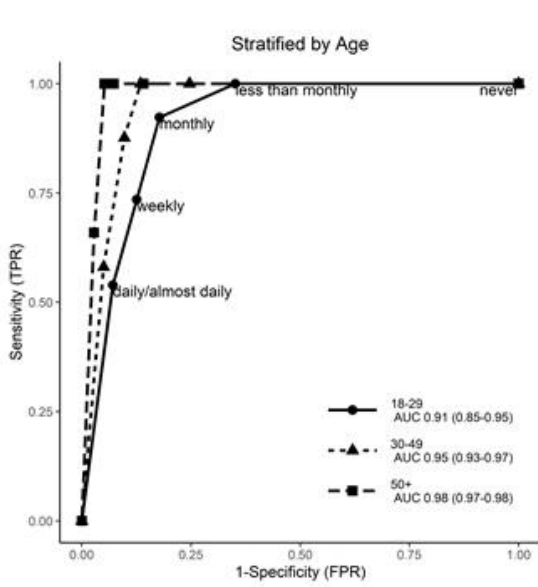SUPPORT REAL-WORLD DECISION-MAKING
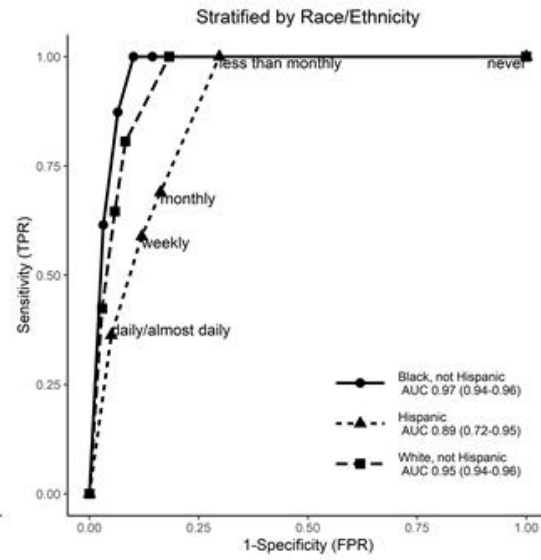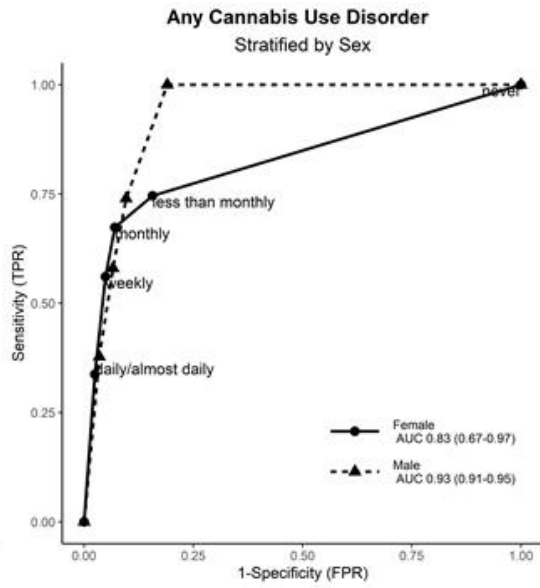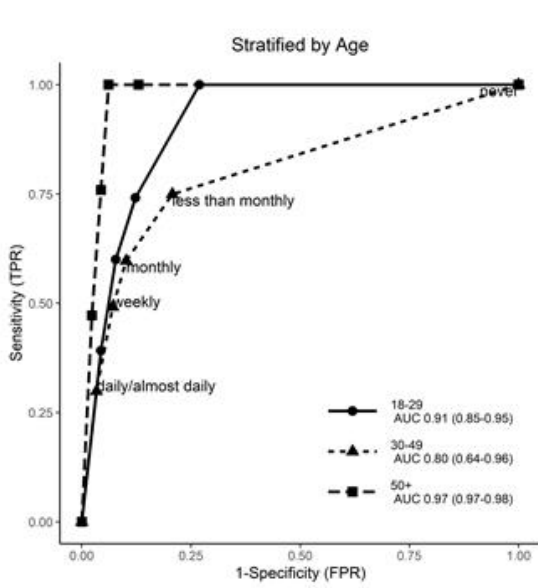
IMPROVE CANNABIS RESEARCH USING EHR DATA

ACKNOWLEDGEMENTS

THANK YOU!

APPENDIX
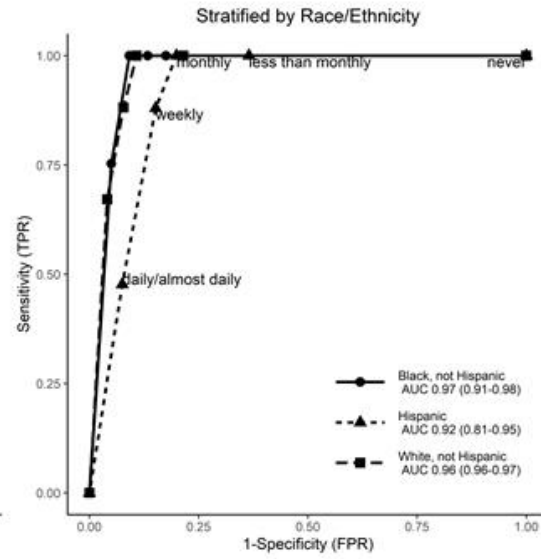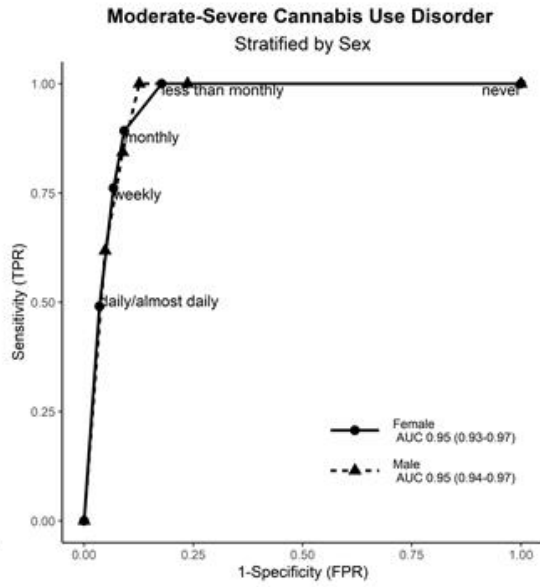
SCREENING PERFORMANCE ACROSS SUBGROUPS

PERFORMANCE IN THE REAL WORLD

Table 3: Post-screening probability of past-year cannabis use disorder (CUD) given different screening results and estimated prevalence rates of CUD in the screened population

| | Population-Based Prevalence of Any CUD (%) | | | | | | | |
	0.5	2	4	6	8	10	20	30
	Probability of CUD if Screen Positive (%)							
≥ Less than monthly	1.6	6.3	12.1	17.4	22.4	26.9	45.3	58.7
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Daily or almost daily	4.0	14.4	25.5	34.4	41.7	47.7	67.3	77.9
	Probability of CUD if Screen Negative (%)							
≥ Less than monthly	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
≥ Monthly	0.1	0.3	0.6	0.9	1.2	1.6	3.4	5.8
≥ Weekly	0.2	0.8	1.6	2.4	3.2	4.1	8.7	14.1
Daily or almost daily	0.3	1.1	2.2	3.3	4.5	5.6	11.9	18.8

PERFORMANCE IN THE REAL WORLD

Table 3: Post-screening probability of past-year cannabis use disorder (CUD) given different screening results and estimated prevalence rates of CUD in the screened population

	Population-Based Prevalence of Moderate-Severe CUD (%)							
	0.5	**2**	**4**	**6**	**8**	**10**	**20**	**30**
	Probability of CUD if Screen Positive (%)							
≥ Less than monthly	1.5	5.7	11.1	16.0	20.6	24.9	42.7	56.1
≥ Monthly	2.4	9.1	16.9	23.7	29.8	35.2	55.0	67.7
≥ Weekly	3.0	11.1	20.4	28.2	34.8	40.6	60.6	72.5
Daily or almost daily	4.5	16.1	28.2	37.5	45.0	51.1	70.2	80.1
	Probability of CUD if Screen Negative (%)							
≥ Less than monthly	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
≥ Monthly	0.0	0.1	0.2	0.3	0.5	0.6	1.3	3.5
≥ Weekly	0.1	0.3	0.7	1.0	1.4	1.8	3.9	9.8
Daily or almost daily	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0