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Illicit Substance Use and Treatment Access Among Adults Experiencing Homelessness

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 Supplemental content

IMPORTANCE The lack of representative research on homelessness risks mischaracterizing and misrepresenting the prevalence of illicit substance use.

OBJECTIVE To estimate the population prevalence and patterns of illicit substance use, treatment, nonfatal overdose, and naloxone possession among people experiencing homelessness in 1 US state.

DESIGN, SETTING, AND PARTICIPANTS This representative survey study of adults experiencing homelessness from October 2021 to November 2022 in 8 California counties used multistaged probability-based sampling and respondent-driven sampling. Eligible individuals were 18 years or older and met the federal definition of homelessness.

MAIN OUTCOMES AND MEASURES The primary outcome measures included lifetime and past-6-month illicit substance use and substance type (methamphetamine, nonprescription opioids, or cocaine). Lifetime and current substance use treatment, unmet treatment need, types of treatments received, nonfatal overdose (lifetime and current episode of homelessness), and current possession of naloxone were measured. Population prevalence estimates with 95% Wald CIs were calculated using survey replicate weights.

RESULTS Of 3865 individuals approached, 3042 (79%) participated and an additional 158 participants were recruited through respondent-driven sampling. Among 3200 participants, the mean age was 46.1 (95% CI, 45.3-46.9) years, 67.3% (95% CI, 65.2%-69.3%) were cisgender male, and there were similar proportions of Black and African American, Hispanic and Latine, and White participants. Overall, an estimated 65.3% (95% CI, 62.2%-68.4%) of participants used illicit drugs regularly (≥ 3 times per week) in their lifetime; 41.6% (95% CI, 39.4%-43.8%) began using regularly before their first episode of homelessness and 23.2% (95% CI, 20.5%-25.9%) began using regularly after. In the past 6 months, an estimated 37.1% (95% CI, 32.9%-41.3%) of participants reported regular use of any drug; 33.1% (95% CI, 29.4%-36.7%) reported use of methamphetamines, 10.4% (95% CI, 7.9%-12.9%) reported use of opioids, and 3.2% (95% CI, 1.8%-4.6%) reported use of cocaine. In their lifetime, an estimated 25.6% (95% CI, 22.8%-28.3%) injected drugs and 11.8% (95% CI, 9.8%-13.8%) injected drugs in the past 6 months. Among those with any regular lifetime use, an estimated 6.7% (95% CI, 3.8%-9.5%) of participants were currently receiving treatment. Of those with any regular use in the last 6 months, an estimated 21.2% (95% CI, 17.9%-24.5%) reported currently wanting but not receiving treatment. An estimated 19.6% (95% CI, 17.4%-21.8%) of participants had a nonfatal overdose in their lifetime and 24.9% (95% CI, 21.3%-28.5%) currently possessed naloxone.

CONCLUSION AND RELEVANCE In a representative study of adults experiencing homelessness in California, there was a high proportion of current drug use, history of overdose, and unmet need for treatment. Improving access to treatment tailored to the needs of people experiencing homelessness could improve outcomes.

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In the US, more than 650 000 people experience homelessness nightly, of whom 181 000 live in California.¹ The shortage of available and affordable housing for the lowest-income households drives community homelessness rates.² People with individual risk factors, including substance use and mental health issues, are at highest risk.

Substance use disorders increase an individual's risk of homelessness by interfering with legal, economic, and social functioning.^{3,4} People may use substances in response to trauma as a coping mechanism or strategy to protect themselves from violence.^{5,6} Homelessness creates competing priorities and decreases access to harm reduction and substance use treatment.⁷⁻⁹ Substance use contributes to morbidity, acute health care use, and mortality in homeless populations.^{10,11} Overdose is the leading cause of death among people experiencing homelessness.^{12,13}

There is a dearth of representative data on homelessness. Because most studies use convenience samples, samples from service settings, or mortality records with incomplete capture of homelessness, there is wide variability in estimates of substance use, which sampling bias may skew.^{11,12,14-16} The last representative sample of people experiencing homelessness, the National Survey of Homeless Assistance Providers and Clients (NSHAPC) in the 1990s, included only those who used homeless services.¹⁷ Since then, a higher proportion of people have experienced unsheltered homelessness and the population has aged.¹⁷⁻¹⁹ Additionally, drug use patterns in the general population have shifted (eg, increasing methamphetamines and fentanyl use, overdoses).^{14,20,21}

In 2023, a total of 28% of the US homeless population and half of people experiencing unsheltered homelessness lived in California.¹ In a study using a rigorous multistage sampling strategy to generate a representative probability sample of adults experiencing homelessness in California, the prevalence of illicit substance use, treatment engagement, nonfatal overdose, and naloxone possession were estimated and patterns of illicit substance use among sociodemographic subgroups and the prevalence of substance use treatment and unmet treatment need by substance were described.

Methods

Study Overview

The California Statewide Study of People Experiencing Homelessness (CASPEH) was a representative mixed-methods study of adults experiencing homeless in California conducted between October 2021 and November 2022^{22,23} in partnership with community advisory boards. The institutional review board at the University of California, San Francisco (approval # 20-33117) approved the study. We used a teach-back method to obtain written informed consent from participants, which requires participants to verbalize comprehension of the informed consent process.²⁴

Sampling Overview

We used a multistage venue-based sampling protocol with randomization at 3 levels: California counties, venues within these

Key Points

Question What is the prevalence of illicit substance use, treatment, nonfatal overdose, and naloxone possession among adults experiencing homelessness in California?

Findings In this multistaged probability-based survey of 3200 adults experiencing homelessness in California from October 2021 to November 2022, an estimated 37% reported using any illicit substance regularly (≥ 3 times per week) in the last 6 months; methamphetamine use (33%) was the most common. Of those who reported regular use, an estimated 21% wanted, but were unable, to receive treatment. Approximately 20% of participants reported a nonfatal overdose and 25% reported being in possession of naloxone.

Meaning Substance use and nonfatal overdose was common among people experiencing homelessness in California. There was high unmet need for substance use treatment and naloxone.

counties, and individuals attending these venues.²³ We divided California into 8 regions used in policy planning and sampled 1 county from each that together reflect the demographics of the state's general and homeless populations. Within each county, we compiled a database of venues where people experiencing homelessness gather (ie, congregate and noncongregate shelters, nonshelter service providers, encampments), with prespecified replacement venues if we could not access a specific venue (eg, shelter COVID-19 outbreak, encampment displacement). To sample venues, we used probability proportional-to-size sampling in each county. Within venues, we used a random sampling protocol.

In parallel, we implemented respondent-driven sampling, a peer-referral and social network-based sampling and recruitment method to reach populations that may have been missed in the venue-based sampling.²⁵

Eligibility

Eligible participants were 18 years old or older, experiencing homelessness (according to the Homeless Emergency Assistance and Rapid Transition to Housing [HEARTH] Act), and able to provide informed consent using a teach-back method.^{24,26} We conducted interviews in English and Spanish and used trained interpreters for other languages. We excluded individuals with active COVID-19.

Survey Administration

Trained interview staff administered a 45- to 60-minute survey, recording responses on REDCap. Participants received a \$30 gift card or \$35 grocery card for attending the survey. Respondent-driven sampling participants received additional gift cards for each person they recruited (maximum of 3).

Substance Use, Treatment, and Nonfatal Overdose Measures

We adapted the World Health Organization Alcohol, Smoking and Substance Involvement Screening Test measures to examine lifetime, past-6-month, and type of illicit substance use (methamphetamine, nonprescription opioids [heroin, fentanyl, or other opioid], and cocaine [cocaine/crack cocaine]);

we classified type separately for each substance, in combination, or use of any substance. We categorized use as regular (≥ 3 times per week), occasional (> 2 times per month and < 3 times per week, once or twice a month, or less than monthly), and no use. For those who reported a lifetime history of using any substances regularly, we asked whether they initiated regular use before or after their first episode of homelessness (never used, never used regularly, initiated regular use before first homelessness experience, and initiated after first homelessness experience). For those with any lifetime substance use, we asked whether use had increased, stayed the same, or decreased during this homelessness episode. We measured lifetime and past-6-month injection drug use.

We assessed lifetime and current receipt of substance use treatment (residential treatment, opioid replacement [methadone, suboxone, buprenorphine], outpatient or 1-on-1 counseling, and 12-step Alcoholics Anonymous or Narcotics Anonymous programs). We assessed unmet treatment needs by asking whether participants wanted treatment but were unable to receive it. We assessed lifetime and recent nonfatal overdose episodes and current naloxone possession.

We assessed frequency of heavy episodic alcohol consumption (consuming 6 or more alcoholic drinks on a single occasion) and tobacco use (current, former, never) using questions from the National Health and Nutrition Examination Survey and the National Survey of Homeless Assistance Providers and Clients.^{17,27}

Additional Measures

We categorized age (18-24, 25-49, and ≥ 50 years), family structure (adults living with minor dependent[s], single adults [age ≥ 25 y not living with children], and transitional-aged young adults [age 18-24 y not living with children]), sex assigned at birth and gender identity (cisgender male, cisgender female, and transgender or gender nonconforming), and sexual orientation (heterosexual/straight, gay, bisexual/pansexual, or another sexual orientation). Because structural racism shapes both homelessness and experiences of substance use, we asked participants to report their race and ethnicity, using a single question with fixed categories. We treated Black and African American race as the determining group to account for anti-Black racism, categorizing participants as Black or African American if they reported Black or African American regardless of another race. Other fixed categories (full list provided in Supplement 1) were condensed into the following categories: American Indian and Alaska Native, Asian and Pacific Islander, Hispanic or Latine, White, multiracial and multiethnic, or another race. We used a rural-urban classification scheme based on population size, density, and commuting patterns using zip code data, dichotomizing urbanicity as urban vs suburban or rural areas.

We asked where participants spent the most nights in the past 6 months while homeless; we categorized this as unsheltered nonvehicle, unsheltered vehicle, and sheltered (shelters, hotel/motel, friends/family, and treatment programs). We categorized the length of the current homelessness episode based on the last date of housing/institution (noninstitutional place they lived for 1 month or more or an institutional

setting for more than 3 months) as follows: 1 year or less, more than 1 year to 3 years, and more than 3 years (Supplement 1).

Statistical Analysis

We accounted for survey nonresponse by weighting. We calculated frequency distributions and means for demographics, homelessness characteristics, substance use, substance use treatment, nonfatal overdose, and naloxone possession. For all analyses, we provided the unweighted sample size, population distributions, and 2-sided 95% Wald CIs using survey replicate weights. We completed 4 steps to calculate weights: (1) joint probability for selection (3-stage cluster design at the county, venue, and individual level), (2) nonresponse, (3) combined venue-based and respondent-driven samples, and (4) poststratification to the 2022 point-in-time counts in California.^{23,28}

We ran subgroup analyses for regular illicit substance use and method of use in the past 6 months by demographic and homelessness characteristics between each illicit substance use and each respective variable. We did not report estimates for sample size less than 100.

We ran analyses for current substance use treatment receipt and type by regular lifetime illicit substance use and assessed unmet treatment needs among people who reported regular illicit substance use in the past 6 months.

We excluded instances of missingness from analyses (range, 5.4%-6.7%). Analyses were performed using SAS version 9.4 for Windows (SAS Institute).

Results

Of 1372 venues, 295 were randomly selected for inclusion (22%; county range, 11%-67%). Of 3865 individuals approached, 3104 were eligible for participation. The venue-based sample included 3042 individuals, which accounted for 79% of those approached and 98% of those eligible. An additional 158 participants were recruited through respondent-driven sampling.

Of 3200 participants, the mean age was 46.1 (95% CI, 45.3-46.9) years; most were single adults (90.8% [95% CI, 89.0%-92.6%]), 67.3% (95% CI, 65.2%-69.3%) were cisgender male, and 90.1% (95% CI, 88.6%-91.5%) were heterosexual. Similar percentages of participants were Black or African American (26.3% [95% CI, 22.8%-29.7%]), Hispanic or Latine (26.4% [95% CI, 23.4%-29.4%]), and White (27.9% [95% CI, 25.4%-30.5%]). In the past 6 months, 56.4% (95% CI, 53.2%-59.6%) of adults experiencing homelessness spent most nights unsheltered in nonvehicle settings, 21.2% (95% CI, 18.2%-24.2%) were unsheltered in a vehicle, and 22.4% (95% CI, 21.3%-23.4%) were sheltered. The duration of this episode of homelessness 1 year or less for 34.6% (95% CI, 31.9%-37.3%) of participants, 1 to 3 years for 29.7% (95% CI, 27.0%-32.3%) of participants, and more than 3 years for 35.8% (95% CI, 33.5%-38.0%) of participants (Table 1).

Illicit Substance Use

Approximately three-quarters of participants (75.5% [95% CI, 73.0%-78.0%]) used any illicit substances (cocaine, methamphetamine, and/or opioids) in their lifetime; 65.3% (95% CI, 62.2%-68.4%) reported regular use in their lifetime. Among all

Table 1. Sample Demographics and Characteristics of People Experiencing Homelessness in California, 2021-2022

	Unweighted No. ^a	Weighted percent (95% CI) ^b
Total	3200	
Venue-based sampling	3042	97.1 (96.6-97.7)
Respondent-driven sampling	158	2.9 (2.3-3.4)
Demographics		
Age, mean, y	46.3	46.1 (45.3-46.9)
Family type		
Adult with minor dependent(s)	195	4.5 (3.5-5.6)
Single adult	2811	90.8 (89.0-92.6)
Transitional-age youth ^c	194	4.7 (3.5-6.0)
Gender identity		
Cisgender women	1148	31.2 (29.1-33.2)
Cisgender men	1965	67.3 (65.2-69.3)
Transgender and gender queer	57	1.6 (1.0-2.2)
Sexual orientation		
Heterosexual/straight	2806	90.1 (88.6-91.5)
Gay	105	2.9 (2.1-3.8)
Bisexual/pansexual	193	6.0 (4.9-7.0)
Another sexual orientation not listed	41	1.1 (0.7-1.4)
Race and ethnicity ^d		
American Indian and Alaska Native	107	2.9 (2.4-3.4)
Asian and Pacific Islander	64	1.7 (1.1-2.3)
Black or African American	732	26.3 (22.8-29.7)
Hispanic or Latine	691	26.4 (23.4-29.4)
Multiracial and Multiethnic	441	14.3 (12.3-16.4)
White	1089	27.9 (25.4-30.5)
Another race not listed	15	0.5 (0.3-0.8)
Born in the US	2781	87.3 (85.6-89.0)
Urban residence	2993	95.5 (94.3-96.8)
Lifetime experiences		
Education		
No high school	996	36.0 (33.3-38.7)
High school	934	27.4 (24.9-30.0)
Some college credit, no degree	866	25.7 (23.0-28.5)
College graduate or higher	364	10.9 (9.2-12.5)
Veteran	188	6.3 (5.3-7.3)
Any incarceration in lifetime		
State or county jail only	1387	43.8 (41.5-46.1)
Federal prison only	31	1.5 (0.9-2.0)
Both jail and prison	855	32.6 (29.7-35.5)
Neither jail nor prison	805	22.2 (20.0-24.3)
Age of first homeless experience, mean, y	33.9	33.6 (32.8-34.4)
Place slept most often in the last 6 mo ^e		
Sheltered location	1111	22.4 (21.3-23.4)
Unsheltered nonvehicle	1478	56.4 (53.2-59.6)
Unsheltered vehicle	538	21.2 (18.2-24.2)

(continued)

Table 1. Sample Demographics and Characteristics of People Experiencing Homelessness in California, 2021-2022 (continued)

	Unweighted No. ^a	Weighted percent (95% CI) ^b
Duration of current homelessness episode, y		
≤1	1186	34.6 (31.9-37.3)
1-3	913	29.7 (27.0-32.3)
>3	1096	35.8 (33.5-38.0)
More than 1 occurrence of homelessness	1961	61.6 (59.7-63.6)

^a May not add to 3200 because of missing data.^b Weighted percents were calculated in 4 steps: (1) joint probability for selection; (2) nonresponse; (3) combined venue-based and respondent-driven samples; (4) poststratification to the 2022 point-in-time counts in California. 95% Wald CIs were calculated using survey replicate weights.^c Transitional-aged youth refers to individuals aged 18-24 years not living with dependent(s).^d Black or African American race was treated as the determining group to account for anti-Black racism and the disproportion of Black individuals in the US experiencing homelessness.^e Place slept most often in the last 6 months refers to where individuals spent most of their nights. Sheltered location includes emergency shelter, shelter for people fleeing domestic violence, motel or hotel room paid for by the government during the COVID-19 pandemic, motel or hotel room paid for by friends/family, mental health or drug/alcohol treatment program, or a family member or friends' place. Unsheltered nonvehicle includes outdoors, street, park, tent, and other places not meant for people to live.

participants, 41.6% (95% CI, 39.4%-43.8%) began regularly using illicit drugs before first experiencing homelessness and 23.2% (95% CI, 20.5%-25.9%) began after first experiencing homelessness. Among those who reported any history of illicit substance use, 27.3% (95% CI, 23.9%-30.8%) reported increased use during this episode of homelessness, 37.9% (95% CI, 35.2%-40.6%) reported no change, and 34.8% (95% CI, 32.4%-37.3%) reported decreased use. Approximately half of participants (49.6% [95% CI, 46.6%-52.8%]) reported any illicit substance use in the past 6 months and 37.1% (95% CI, 32.9%-41.3%) reported regular use in the past 6 months.

In their lifetime, 64.9% (95% CI, 62.4%-67.5%) of participants reported any methamphetamine use and 55.4% (95% CI, 52.7%-58.1%) reported regular use. In the last 6 months, 45.8% (95% CI, 42.7%-48.7%) of participants reported any methamphetamine use and 33.1% (95% CI, 29.4%-36.7%) reported regular use. In their lifetime, 29.0% (95% CI, 26.0%-32.0%) of participants reported any opioid use and 20.4% (95% CI, 17.6%-23.3%) reported regular use. In the last 6 months, 14.1% (95% CI, 11.3%-17.0%) of participants reported any opioid use and 10.4% (95% CI, 7.9%-12.9%) reported regular use. In their lifetime, 58.0% (95% CI, 55.4%-60.7%) of participants reported any cocaine use and 33.0% (95% CI, 29.0%-37.0%) reported regular use. In the last 6 months, 9.4% (95% CI, 7.2%-11.6%) of participants reported any cocaine use and 3.2% (95% CI, 1.8%-4.6%) reported regular use.

In the last 6 months, 24.2% (95% CI, 21.4%-27.1%) of participants reported regular methamphetamine use without regular use of other drugs, 7.3% (95% CI, 5.2%-9.4%) reported using methamphetamines and opioids regularly, 2.2% (95% CI, 1.4%-3.0%) reported regular opioid use without regular use of other

drugs, and 1.4% (95% CI, 0.5%-2.4%) reported regular cocaine use without regular use of other drugs (Table 2).

In their lifetime, 25.6% (95% CI, 22.8%-28.3%) of participants reported a history of injecting drugs and 11.8% reported injecting drugs in the last 6 months (95% CI, 9.8%-13.8%). (Table 2) Among those who reported injection drug use in their lifetime, 46.0% (95% CI, 41.3%-50.7%) reported injecting drugs in the last 6 months, 38.5% (95% CI, 33.2%-43.8%) reported using illicit substances but not injecting in the last 6 months, and 15.5% (95% CI, 12.2%-18.8%) reported not injecting or using illicit substances in the last 6 months.

Subgroup Patterns of Regular Illicit Substance Use and Method of Use in the Last 6 Months

Regular illicit substance use and method of use in the last 6 months varied by age, family type, gender, race and ethnicity, where people spent most of their nights, and the length of the current homelessness episode (Table 3).

Substance Use Treatment

Of those who reported regular illicit substance use in their lifetime, 6.7% (95% CI, 3.8%-9.5%) reported currently receiving treatment. Overall, 9.8% (95% CI, 4.4%-15.3%) of those who used opioids regularly in their lifetime, 6.7% (95% CI, 3.6%-9.8%) of those who used methamphetamine regularly in their lifetime, and 6.8% (95% CI, 4.2%-9.5%) of those who used cocaine regularly in their lifetime reported currently receiving treatment. For those who reported regular lifetime opioid use, the most prevalent treatment was medication for opioid use disorder (4.7% [5% CI, 1.9%-7.4%]); for those who reported methamphetamine use and cocaine use, 12-step Alcoholics Anonymous and Narcotics Anonymous programs were the most common treatments (3.7% [95% CI, 1.9%-5.4%] and 3.0% [95% CI, 1.9%-4.1%], respectively) (Table 4).

Of those who used any illicit substance regularly in the last 6 months, 21.2% (95% CI, 17.9%-24.5%) reported a currently unmet treatment need. Of those who reported regular opioid use in the last 6 months, 35.8% (95% CI, 27.0%-44.6%) reported an unmet treatment need, while 20.2% (95% CI, 16.5%-23.8%) of those with regular methamphetamine use and 26.5% (95% CI, 15.7%-37.4%) with regular cocaine use reported an unmet treatment need (Table 5).

Nonfatal Overdose and Naloxone Possession

Overall, 19.6% (95% CI, 17.4%-21.8%) of participants experienced a nonfatal overdose at least once during their lifetime and 10.0% (95% CI, 8.2%-11.7%) experienced a nonfatal overdose during the current homelessness episode. Of the total population, 24.9% (95% CI, 21.3%-28.5%) reported currently possessing naloxone (Table 2).

Discussion

In a representative study of adults experiencing homelessness in California from October 2021 to November 2022, more than one-third reported regular use of any illicit substance in the last 6 months, primarily methamphetamine. Of the 10%

Table 2. Substance Use, Nonfatal Overdose, and Naloxone Possession^a

	Unweighted No.	Weighted percent (95% CI) ^b
Any illicit substance use (not inclusive of marijuana use)		
Any lifetime illicit substance use	2216/3025	75.5 (73.0-78.0)
Any lifetime regular illicit substance use	1824/2987	65.3 (62.2-68.4)
Frequency of illicit substance use (last 6 mo)	n = 2985	
Regular	911	37.1 (32.9-41.3)
Occasional	366	12.5 (10.6-14.5)
No use	1708	50.3 (47.3-53.4)
Timing of regular illicit substance use	n = 2961	
Never used	809	25.1 (22.5-27.6)
Never used regularly	354	10.2 (9.1-11.3)
Began using regularly before becoming homeless	1183	41.6 (39.4-43.8)
Began using regularly after becoming homeless	615	23.2 (20.5-25.9)
Change in illicit substance use since experiencing homelessness in this current episode ^c	n = 2167	
Increased	516	27.3 (23.9-30.8)
Stayed the same	780	37.9 (35.2-40.6)
Decreased	871	34.8 (32.4-37.3)
Methamphetamine		
Any lifetime methamphetamine use	1878/3025	64.9 (62.4-67.5)
Lifetime regular methamphetamine use	1536/3001	55.4 (52.7-58.1)
Frequency of methamphetamine use (last 6 mo)	n = 2998	
Regular	815	33.1 (29.4-36.7)
Occasional	351	12.7 (10.7-14.6)
No use	1832	54.3 (51.3-57.3)
Opioid		
Any lifetime opioid use	840/3020	29.0 (26.0-32.0)
Lifetime regular opioid use	541/3009	20.4 (17.6-23.3)
Frequency of opioid use (last 6 mo)	n = 3011	
Regular	219	10.4 (7.9-12.9)
Occasional	121	3.7 (2.8-4.7)
No use	2671	85.8 (83.0-88.7)
Cocaine/crack cocaine		
Lifetime cocaine/crack cocaine ever use	1680/3022	58.0 (55.4-60.7)
Lifetime regular cocaine/crack cocaine use	930/3004	33.0 (29.0-37.0)
Frequency of cocaine/crack cocaine use (last 6 mo)	n = 3010	
Regular	68	3.2 (1.8-4.6)
Occasional	161	6.2 (4.8-7.6)
No use	2781	90.6 (88.5-92.8)

(continued)

Table 2. Substance Use, Nonfatal Overdose, and Naloxone Possession^a (continued)

	Unweighted No.	Weighted percent (95% CI) ^b
Combination of regular illicit substance use		
Regular use of illicit substance (last 6 mo)	n = 2959	
No regular use	2063	63.0 (58.8-67.3)
Methamphetamine use without other regular drug use	626	24.2 (21.4-27.1)
Opioid use without other regular drug use	60	2.2 (1.4-3.0)
Cocaine/crack cocaine without other regular drug use	28	1.4 (0.5-2.4)
Methamphetamine and opioid use	142	7.3 (5.2-9.4)
Cocaine/crack cocaine and methamphetamine	27	0.9 (0.5-1.2)
Cocaine/crack cocaine and opioid use	5	0.4 (0.0-1.0)
Cocaine/crack cocaine, methamphetamine, and opioid use	8	0.6 (0.01-1.2)
Other substance use experience		
Lifetime injection use (ever)	699/3011	25.6 (22.8-28.3)
Injection use (in the last 6 mo)	282/3011	11.8 (9.8-13.8)
Tobacco use		
Current smoker	1987	70.0 (67.8-72.2)
Former smoker	346	9.8 (8.4-11.2)
Never smoker	716	20.3 (18.2-22.3)
Frequency of heavy episodic drinking (6 or more alcoholic drinks on one occasion) (last 6 mo)		
Daily or almost daily/weekly	273	9.7 (8.3-11.0)
Monthly/less than monthly	421	17.1 (14.4-19.8)
Never drink more than 6 drinks	654	22.8 (20.8-24.7)
Does not drink	1678	50.5 (46.6-54.5)
Lifetime nonfatal overdose (ever)	521/3027	19.6 (17.4-21.8)
Nonfatal overdose during the current episode of homelessness	223/3016	10.0 (8.2-11.7)
Currently in possession of naloxone	665/3024	24.9 (21.3-28.5)

^a "Any illicit substance use" does not include marijuana or cannabis use. Regular use was defined as 3 or more times a week; occasional use, more than 2 times a month, once or twice a month, or less than a month.

^b Weighted percents were calculated in 4 steps: (1) joint probability for selection; (2) nonresponse; (3) combined venue-based and respondent-driven samples; (4) poststratification to the 2022 point-in-time counts in California. 95% Wald CIs were calculated using survey replicate weights.

^c Among those who reported illicit substance use in their lifetime.

of participants who regularly used nonprescription opioids, the majority reported using them with methamphetamines. Although approximately one-third of the participants reported regular drug use prior to homelessness, nearly one-quarter began regularly using illicit drugs only after they first experienced homelessness. Treatment access was low; about 20% of the participants with regular illicit substance use in the past 6 months reported wanting treatment but being unable to access it. Approximately 20% had a nonfatal overdose in their lifetime, and about 25% currently carried naloxone.

Methamphetamine use in the last 6 months among people experiencing homelessness in this survey was higher than prior estimates from the 1995-1996 NSHAPC (6%) and use in the US adult population 26 years or older in 2023 (1.1%).^{29,30} In the general population in the West and Midwest US, methamphetamine use likely has increased due to its wide availability and low cost.^{20,31} The qualities of methamphetamines—prolonged intoxication, keeping people awake, and reducing the feeling of hunger—may increase its appeal among people experiencing homelessness.^{6,20}

A high proportion of those who used opioids regularly did so concurrently with methamphetamines. Regular opioid use in the last 6 months was estimated at 10.4% in this study, and NSHAPC reported an estimate of regular use of heroin within the past year at 6% and other opiates at 3%. Any opioid use in the past 6 months in this study was higher than past-year use in the general US adult population in 2023 (14.1% vs 3.3%).^{29,30} Concurrent use of opioids and stimulants is consistent with national trends and associated with poorer treatment outcomes and heightened overdose risk.^{31,32}

This study found a lower prevalence of regular cocaine use in the last 6 months (3.2%) compared with past-year use in the NSHAPC (19% crack cocaine and 10% cocaine use).²⁹ Regular use of cocaine in the past 6 months was substantially lower than lifetime regular use (3.2% vs 33.0%), reflecting individuals' shifting their drug use over time.

This study is the first, to the authors' knowledge, to provide a population estimate of injection drug use among people experiencing homelessness; 12% of participants reported injection drug use in the last 6 months, compared with 1.5% of the US population reporting prior-year use in 2018.³³ Even among those who continued to use drugs, fewer people currently injected drugs than reported having done so in their lifetime. This reflects shifts in individual behavior among people who use drugs, secondary to concerns about infectious diseases, social concerns, concerns about drug potency, or because they could no longer inject.³⁴

Forty-three percent of participants reported regular substance use prior to becoming homeless. Regular drug use can lead to impairments in social, economic, and legal function, increasing homelessness risk.^{3,4} But, the finding that nearly one-quarter of participants began regular drug use after they first became homeless suggests that homelessness may increase substance use. People experiencing homelessness have high rates of experiencing trauma; substance use can be a coping mechanism for trauma.^{5,6} Some people may use drugs to stay alert, build community, or manage hunger or other stressors.⁶ Homelessness can interfere with the motivation to reduce use through these mechanisms or the ability to obtain treatment.

Black or African American participants had a lower prevalence of regular illicit substance use compared with White participants. Black individuals in the US have a 4- to 5-times greater risk of homelessness than White individuals in the US, likely due to the enduring impacts of structural racism on access to housing, intergenerational wealth, employment, and criminal justice policies, leading to people with fewer individual risk factors (including substance use) becoming homeless.^{30,35,36} American Indian and Alaska Native participants experiencing

Table 3. Regular Illicit Substance Use and Method of Use in the Past 6 Months^a

	Overall, unweighted No.	Regular use in the last 6 mo, weighted percent (95% CI) ^b				
		Any illicit substance	Methamphetamine	Opioid	Cocaine/crack cocaine	Injection
Total	3200	37.1 (32.9-41.3)	33.1 (29.4-36.7)	10.4 (7.9-12.9)	3.2 (1.8-4.6)	11.8 (9.8-13.8)
Demographics						
Age, y						
18-24	216	29.5 (19.0-40.1)	20.4 (12.7-28.2)	16.9 (6.3-27.5)	7.4 (0.0-16.9)	5.8 (2.0-9.6)
25-49	1543	45.0 (40.4-49.7)	41.9 (37.4-46.5)	13.6 (10.1-17.1)	2.3 (0.9-3.6)	15.6 (12.5-18.7)
50 or older	1441	28.8 (23.6-34.1)	24.2 (19.1-29.2)	5.9 (3.1-8.8)	3.8 (1.4-6.1)	8.0 (5.1-11.0)
Family type						
Adult with minor dependent(s)	195	24.2 (14.1-34.2)	24.2 (14.1-34.2)	2.8 (0.0-5.8)	2.0 (0.8-3.2)	7.3 (3.5-11.0)
Single adult	2811	38.2 (33.7-42.7)	34.2 (30.0-38.4)	10.4 (8.0-12.8)	3.0 (1.6-4.5)	12.3 (10.1-14.6)
Transitional-age youth ^c	194	29.5 (18.2-40.9)	19.4 (11.2-27.6)	18.8 (7.5-30.1)	7.5 (0.0-18.0)	6.5 (2.3-10.7)
Gender identity						
Cisgender women	1148	29.5 (25.1-33.9)	27.3 (23.0-31.6)	8.2 (5.3-11.0)	2.0 (0.4-3.5)	8.7 (6.3-11.0)
Cisgender men	1965	40.9 (35.5-46.3)	36.0 (31.4-40.5)	11.6 (8.7-14.5)	3.8 (2.0-5.6)	13.1 (10.5-15.6)
Transgender and gender queer ^d	57					
Sexual orientation						
Heterosexual/straight	2806	36.8 (32.5-41.1)	32.6 (28.9-36.4)	10.2 (7.5-12.8)	3.1 (1.7-4.5)	11.5 (9.4-13.6)
Gay	105	41.1 (29.3-52.9)	38.4 (26.4-50.5)	11.2 (5.0-17.5)	1.1 (0.2-2.0)	9.6 (3.2-16.1)
Bisexual/pansexual	193	44.9 (31.0-58.7)	41.5 (28.5-54.5)	15.4 (6.3-24.4)	4.5 (0.0-11.5)	18.2 (9.6-26.7)
Another sexual orientation not listed ^d	41					
Race and ethnicity ^e						
American Indian and Alaska Native	107	40.5 (33.1-47.8)	39.0 (31.5-46.5)	8.7 (4.8-12.7)	4.2 (0.5-7.9)	12.5 (8.2-16.8)
Asian and Pacific Islander ^d	64					
Black and African American	732	28.6 (21.4-35.9)	21.9 (15.7-28.1)	4.9 (0.01-9.7)	6.5 (3.1-9.8)	5.3 (0.0-10.6)
Hispanic and Latine	691	38.2 (32.0-44.3)	36.6 (30.4-42.9)	7.7 (4.0-11.4)	0.8 (0.3-1.3)	12.2 (7.8-16.5)
Multiracial and Multiethnic	441	37.1 (27.4-46.8)	34.0 (24.9-43.1)	16.3 (8.7-23.8)	3.9 (0.4-7.4)	12.3 (7.8-16.8)
White	1089	44.2 (40.6-47.8)	38.9 (35.2-42.5)	15.4 (11.8-18.9)	2.4 (0.9-3.9)	17.2 (14.0-20.4)
Another race not listed ^d	15					
Urbanicity						
Urban	2993	37.0 (32.6-41.4)	32.8 (29.0-36.7)	10.7 (8.1-13.3)	3.3 (1.9-4.7)	11.9 (9.8-14.0)
Suburban/rural	207	40.1 (33.9-46.4)	37.3 (30.6-44.1)	5.2 (3.7-6.7)	0.7 (0.0-1.5)	10.6 (8.5-12.8)
Place slept most often in the last 6 mo ^f						
Sheltered location	1111	18.2 (15.3-21.1)	13.5 (11.1-15.9)	4.5 (3.0-6.1)	3.7 (0.8-6.6)	4.9 (3.7-6.1)
Unsheltered nonvehicle	1478	47.1 (40.2-54.0)	42.6 (36.7-48.4)	13.4 (9.6-17.3)	3.4 (1.8-5.1)	15.5 (12.6-18.3)
Unsheltered vehicle	538	32.5 (26.4-38.6)	30.4 (24.4-36.4)	9.2 (4.3-14.1)	2.2 (0.1-4.4)	10.1 (5.7-14.5)
Time homeless during current episode						
1 y or Less	1186	28.7 (24.1-33.2)	24.4 (20.4-28.3)	6.4 (4.8-8.0)	3.2 (1.5-4.9)	11.2 (8.2-14.2)
1 to 3 y	913	41.5 (36.2-46.8)	36.7 (32.2-41.2)	12.9 (8.5-17.3)	4.0 (1.3-6.8)	13.6 (9.2-18.1)
More than 3 y	1096	42.2 (37.0-47.5)	38.9 (34.2-43.7)	12.4 (8.5-16.3)	2.5 (1.2-3.9)	11.0 (8.6-13.4)

^a Presented proportions are row precents of those who reported illicit substance use. ^bWeighted percents were calculated in 4 steps: (1) joint probability for selection; (2) nonresponse; (3) combined venue-based and respondent-driven samples; (4) poststratification to the 2022 point-in-time counts in California. 95% Wald CIs were calculated using survey replicate weights.

^c Transitional-aged youth refers to individuals aged 18-24 years and not living with dependent(s).

^d Weighted percent not calculated for this subpopulation because the sample was less than 100 individuals in the unweighted No.

^e Black and African American race was treated as the determining group to account for anti-Black racism and the disproportion of Black US residents experiencing homelessness.

^f Place slept most often in the last 6 months refers to where individuals spent most of their nights. Sheltered location includes emergency shelter, shelter for people fleeing domestic violence, motel or hotel room paid for by the government during COVID-19, motel or hotel room paid for by friends/family, mental health or drug/alcohol treatment program, a family member or friends' place. Unsheltered nonvehicle includes outdoors, street, park, tent, and other places not meant for people to live.

homelessness outside of tribal lands experienced the highest prevalence of substance use in the current study, particularly methamphetamine. They remain overrepresented among people experiencing homelessness in California. Intergenera-

tional trauma, colonialism, and poverty may drive substance use.^{37,38}

Among participants with lifetime regular illicit substance use, only 7% were currently receiving treatment. Among those

Table 4. Substance Use Treatment by Lifetime Regular Illicit Substance Use Type^a

	Weighted percent (95% CI) ^b					
	Overall	Regular lifetime use				No regular lifetime use of any illicit substance
		Any illicit substance	Methamphetamine	Opioid	Cocaine/crack cocaine	
Unweighted No.		1824	1536	541	930	1163
Total, weighted percent (95% CI)		65.3 (62.2-68.4)	55.4 (52.7-58.1)	20.4 (17.6-23.3)	33.0 (29.0-37.0)	34.7 (31.6-37.8)
Ever received treatment or counseling for alcohol or drug problems	46.5 (44.0-48.9)					
Currently receiving treatment or counseling for alcohol or drug problems	4.9 (3.0-6.8)	6.7 (3.8-9.5)	6.7 (3.6-9.8)	9.8 (4.4-15.3)	6.8 (4.2-9.5)	1.8 (0.9-2.7)
Type of substance use treatment currently received						
Residential treatment	0.6 (0.3-0.9)	0.6 (0.2-1.0)	0.6 (0.2-1.0)	1.0 (0.2-1.8)	0.8 (0.2-1.4)	0.6 (0.1-1.0)
Opioid replacement (methadone, suboxone, buprenorphine)	1.0 (0.4-1.6)	1.5 (0.6-2.5)	1.3 (0.4-2.3)	4.7 (1.9-7.4)	1.6 (0.9-2.3)	0.05 (0.0-0.1)
Outpatient or 1-on-1 counseling	1.6 (1.2-2.1)	2.2 (1.5-2.9)	2.1 (1.4-2.7)	3.2 (1.7-4.7)	2.4 (1.6-3.3)	0.6 (0.1-1.0)
12-Step Alcoholics Anonymous or Narcotics Anonymous program	2.8 (1.7-3.9)	3.5 (1.9-5.1)	3.7 (1.9-5.4)	3.3 (1.8-4.8)	3.0 (1.9-4.1)	1.5 (0.7-2.3)

^a Presented proportions are column percents of those who reported illicit substance use. Regular use was defined as use 3 or more times a week.

^b Weighted percents were calculated in 4 steps: (1) joint probability for

selection; (2) nonresponse; (3) combined venue-based and respondent-driven samples; (4) poststratification to the 2022 point-in-time counts in California. 95% Wald CIs were calculated using survey replicate weights.

Table 5. Unmet Treatment Need by Regular Substance Use Type in the Past 6 Months^a

	Weighted percent (95% CI) ^b					
	Overall	Regular use in the last 6 mo				No regular use of any illicit substance in the last 6 mo
		Any illicit substance	Methamphetamine	Opioid	Cocaine/crack cocaine	
Unweighted No.		911	815	219	68	2074
Total		37.1 (32.9-41.3)	33.1 (29.4-36.7)	10.4 (7.9-12.9)	3.2 (1.8-4.6)	62.9 (58.7-67.1)
Ever wanted treatment or counseling for alcohol or drug problems but unable to receive it	23.2 (21.0-25.3)					
Currently wanting treatment or counseling for alcohol or drug problems, but unable to receive it	10.9 (9.0-12.8)	21.2 (17.9-24.5)	20.2 (16.5-23.8)	35.8 (27.0-44.6)	26.5 (15.7-37.4)	4.7 (3.6-5.8)

^a Presented proportions are column percents of those who reported substance use. Regular use was defined as use 3 or more times per week.

^b Weighted percents were calculated in 4 steps: (1) joint probability for

selection; (2) nonresponse; (3) combined venue-based and respondent-driven samples; (4) poststratification to the 2022 point-in-time counts in California. 95% Wald CIs were calculated using survey replicate weights.

with regular use in the past 6 months, 21% reported currently wanting treatment but being unable to receive it. Substance use treatment is most successful in those who express readiness for it.³⁹ Homelessness disrupts engagement in treatment; people experiencing homelessness encounter obstacles such as limited storage for their belongings, difficulties communicating with health care professionals, lack of transportation, and challenges obtaining documents. Basic survival needs take priority over seeking medical care.⁴⁰ Barriers, including insufficient treatment settings and programs that do not meet the needs of people experiencing homelessness, compound these challenges.⁴¹ Expanding treatment access through outreach to places in which people experiencing homelessness are (including encampments, shelters, and emergency departments) could increase engagement.

Less than 5% of participants with a lifetime history of non-prescribed opioid use reported receiving medications for opioid use treatment, despite evidence for effectiveness, including mor-

talities reductions.⁴² Among those with methamphetamine and cocaine use who received treatment, 12-step peer-group programs were the most prevalent form of treatment, although still rare. Contingency management, now covered by California's Medicaid program, has evidence for modest reductions in methamphetamine use²⁰; meeting the needs of people experiencing homelessness may require adaptations.⁹

Ten percent of participants reported having experienced a nonfatal overdose during their current homelessness episode, vs 0.3% among the US population in 2020.⁴³ Only 25% reported currently possessing naloxone. Targeted distribution strategies for people experiencing homelessness could reduce fatal overdose.⁴⁴

The differences between the current findings and the NSHAPC results may be due to secular trends in drug use and homelessness, differences in sampling frame, geography, and the timeframe for substance use. NSHAPC included those who used homeless services in the US, while the current study

included a representative sample of all adults experiencing homelessness in California. Service utilization frames likely undersampled unsheltered people. Convenience- or probability service-based samples are subject to selection bias and are not generalizable to the larger population of people experiencing homelessness.^{9,11,16} The current study, conducted in a large, diverse state that accounts for more than one-quarter of all people experiencing homelessness in the US, provides the most recent prevalence estimates with a rigorous sampling frame, weighting that adjusts for nonresponse, and replicate weights to provide CIs around the reported estimates.

Limitations

This study has limitations. First, venue-based sampling may undersample transitional-age young adults.⁴⁵ Despite respondent-driven sampling of this population, they may have remained undersampled. Second, venue-based sampling may miss some individuals who meet the federal definition of homelessness, as defined by the HEARTH Act. The HEARTH Act defines homelessness as those who are unsheltered, live in emergency shelters, or who need to leave where they are staying in less than 14 days with no other place to go, such as those who stay intermittently with friends or family or are being evicted.²⁶ Those who stay temporarily with family or friends or are facing imminent eviction may have lower rates of substance use. Third,

sampling in tribal lands was not conducted, so there may be an underrepresentation of American Indian participants. Fourth, in-person interviews may have led participants to underreport drug use due to social desirability. To reduce this bias, validated measures, working with community liaisons to build trust, and administered anonymous surveys were used. Anchoring techniques were used to reduce recall bias. Fifth, questions were limited to those involving methamphetamines, cocaine, and opioids, not capturing other substances. Sixth, nonfatal overdose may have been underestimated due to survival bias because it was not possible to include those who later experienced fatal overdoses. Seventh, results may not apply to all regions of the US, but likely reflect similar patterns across the nation, particularly in the West Coast, Mountain West, and Southwest, where drug use and patterns of unsheltered homelessness are similar.

Conclusion

In this representative study of homelessness in California, there was a high proportion of regular illicit substance use, particularly methamphetamine use. The high prevalence of nonfatal overdose and the unmet need for substance use treatment highlights the need for low-barrier evidence-based interventions.

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