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Key Takeaways

- People who use drugs have an increased risk of HIV acquisition and benefit from pre-exposure prophylaxis (PrEP) for HIV prevention
- This population requires additional considerations when selecting PrEP, as certain regimens may have the potential for drug-drug interactions (DDIs) when used with illicit substances or misused prescriptions, and substance use may impact adherence to daily oral PrEP dosing
- In the United States (US), populations who are aged 25 to 50 years, male, and of Black or African American race, particularly in Southern states, are at greater risk of substance use and have a high unmet PrEP need
- While PrEP use should continue to be encouraged in these populations, healthcare providers should consider challenges presented by substance use when selecting an optimal PrEP regimen and account for the fact that substance use is largely underreported

Introduction

- PrEP has been shown to reduce HIV incidence among people who use drugs, a population at increased risk of HIV acquisition¹
- As new PrEP regimen options become available, providers should consider the potential for substance use when identifying candidates and selecting an optimal regimen
- Illicit substances and misused prescription drugs, particularly fentanyl and other opioids, may introduce DDIs with certain PrEP regimens and increase risk of fatal overdose by increasing plasma drug concentrations²
 - Opioids were involved in 76% of the 105,007 drug overdose mortalities in the US in 2023³
- Substance use can also reduce an individual's ability to adhere to daily oral PrEP dosing and may affect risk-taking behaviors that could lead to increased odds of HIV acquisition^{1,4}
 - People who use drugs may benefit from frequent visits with healthcare providers to monitor for health issues (eg, HIV, hepatitis) and address related needs (eg, provision of clean needles, referrals for substance use disorder treatment)⁴

Objective

- To identify overlap between populations who would benefit from PrEP and those with greater likelihood of substance use or mortality due to overdose in the US

Methods

- Descriptive analyses were performed using substance use, PrEP-to-need ratio (PnR), and HIV epidemiology data extracted from US government resources and the AIDSvu and PrEPvu platforms, which use Centers for Disease Control and Prevention (CDC) surveillance and/or IQVIA databases
 - Data sources were accessed from November to December 2024
 - AIDSvu maps are attributed to AIDSvu and Rollins School of Public Health at Emory University and reproduced with permission⁵
 - PnR is defined as the ratio of the number of people using PrEP to the number of people with new HIV diagnoses, where lower ratios indicate higher unmet PrEP needs^{5,7}
 - Detailed data estimation or reporting methodology are available within each source⁵⁻¹⁴
- States with the highest number of counties reporting high HIV incidence, drug overdose mortality, and opioid dispensing rates or low PnRs were descriptively analyzed
 - Thresholds for "high" rates were reflected by the 100 highest values reported by all counties per category (or the 100 lowest values for "low" PnRs)
- In the event that counties beyond the 100-county threshold reported the same value as the 100th county, "high" or "low" was reflected by the number of counties closest to 100 (ie, adding or subtracting the smallest number of counties possible to determine a cutoff based on judgment)

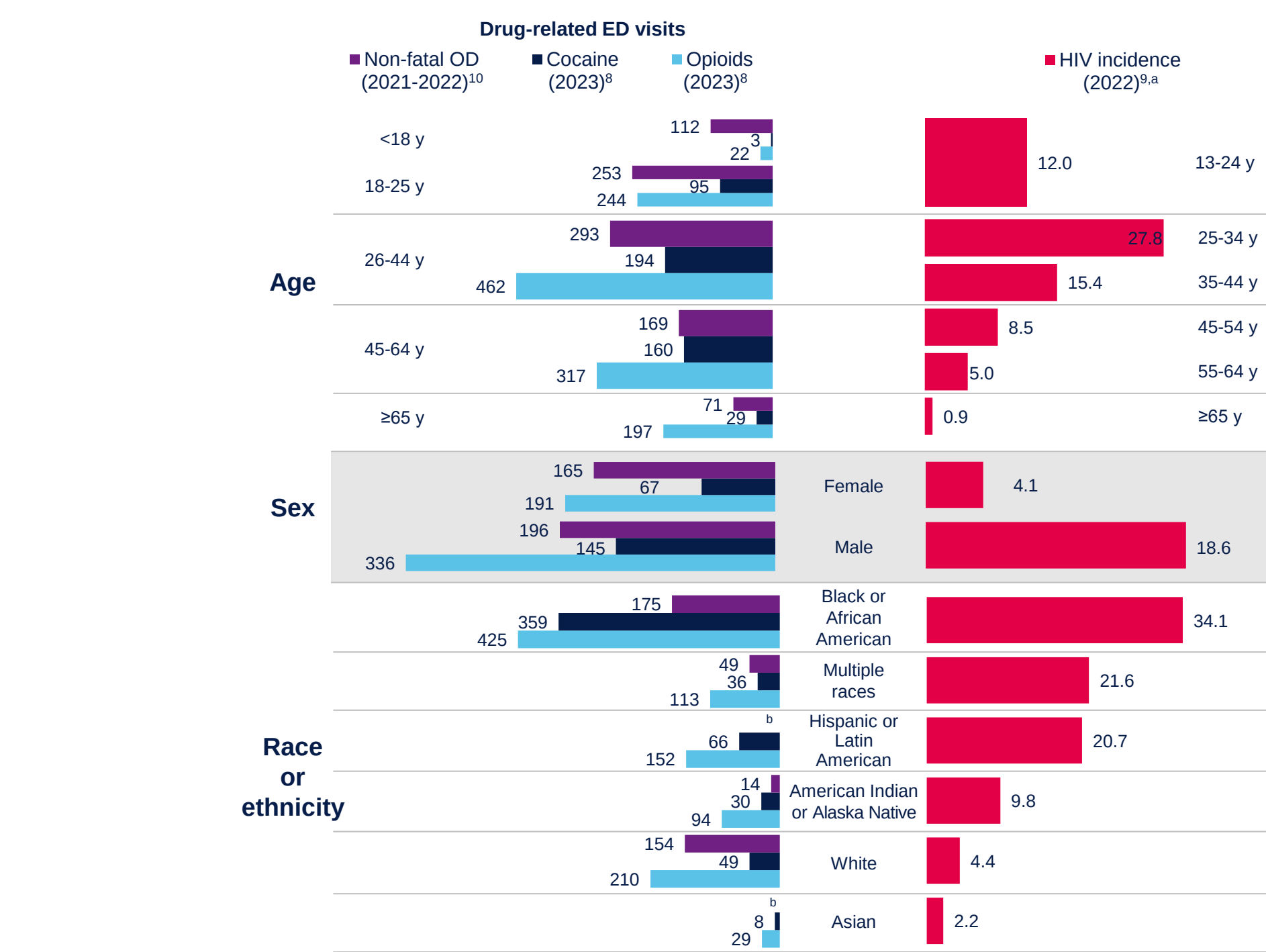
Results

Demographics With High HIV Incidence and Substance Use Overlap

- HIV incidence was highest among adults aged ~25 to 50 years, male individuals, and individuals of Black or African American race based on data from 2021 to 2023 (Figure 1)⁹
 - These 3 groups also had the highest rates of emergency department (ED) visits related to opioids and cocaine⁹
 - Adults aged 26 to 44 years and individuals of Black or African American race had the highest rates of non-fatal drug overdose¹⁰

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Figure 1. Estimated Rates of HIV Incidence and Drug-Related ED Visits (per 100,000) by Demographic

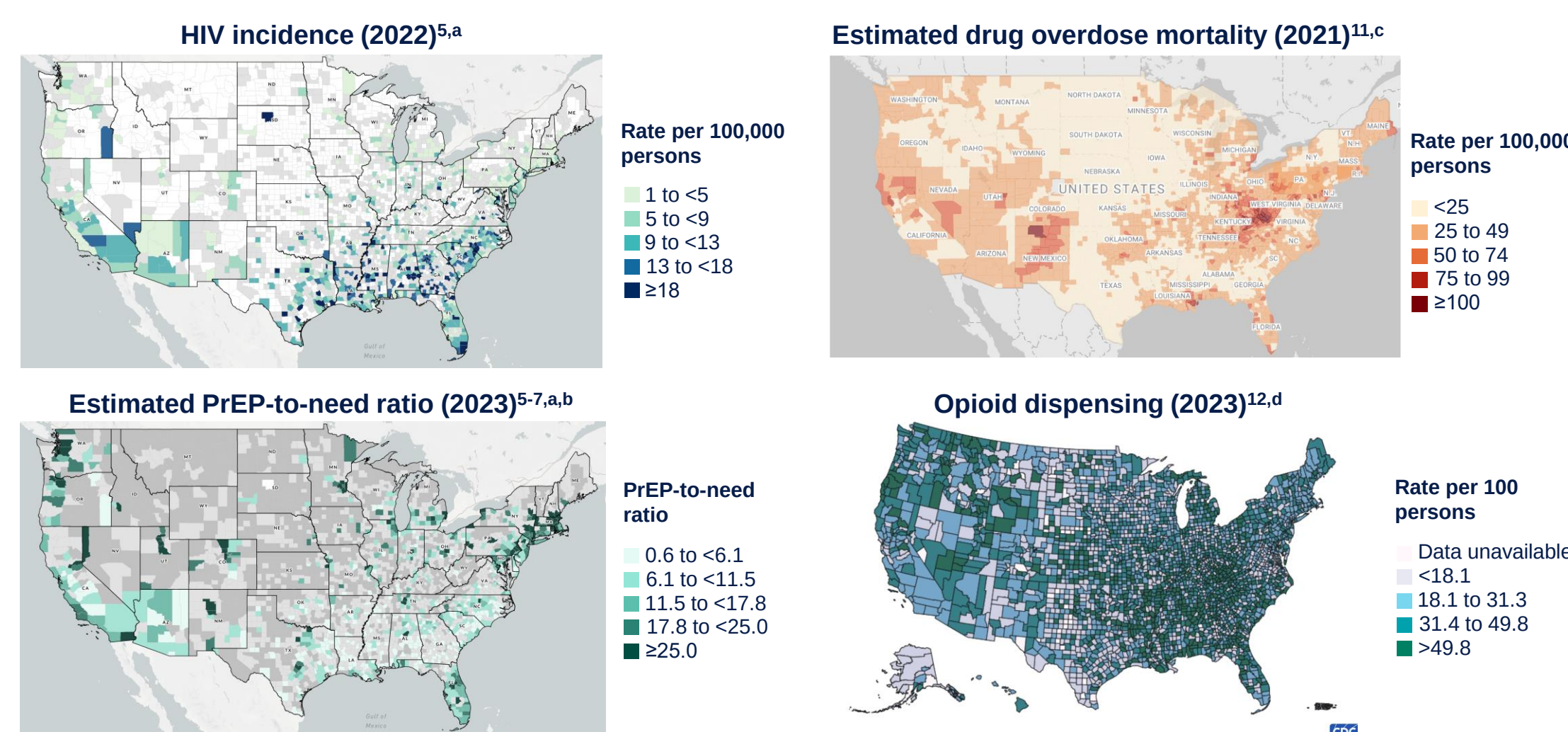


OD, overdose. ^aAmong people aged ≥13 years. ^bNot reported due to high (>50%) relative standard error.

Geographic Overlap of High HIV Incidence, Substance Use, and Unmet PrEP Need

- Most US counties with overlap between high HIV incidence and low PnR (ie, high unmet PrEP need), high opioid dispensing rates, and/or high overdose mortality rates were in the South, particularly Georgia (Figure 2)^{5-7,11,12}
 - Georgia and Alabama had the highest number of counties with the lowest PnRs (≤2.63 to ≤2.88); when stratified by sex, Georgia and Texas had the most counties with low PnR (male, ≤6.68 to ≤6.75; female, ≤2.85 to ≤2.90)⁵⁻⁷
- PnR values at the county level generally increased with increasing age
 - Georgia, Texas, and North Carolina had the most counties reporting the lowest PnRs (range, <4.5 to <10) among age groups <55 years; among age groups ≥55 years, California and Texas had the most counties with low PnR (<25)⁵⁻⁷
- Georgia had the highest or second highest number of counties reporting the highest HIV incidence rates for male (≥35 per 100,000) and female populations (≥8 per 100,000); age groups <55 years (range, ≥15 to ≥53 per 100,000); and among Black or African American, White, and Hispanic or Latin American populations (≥58, ≥11, and ≥27 per 100,000, respectively)⁵
 - Other states with a high number of counties reporting high HIV incidence rates for these demographics included Texas, Florida, and North Carolina⁹

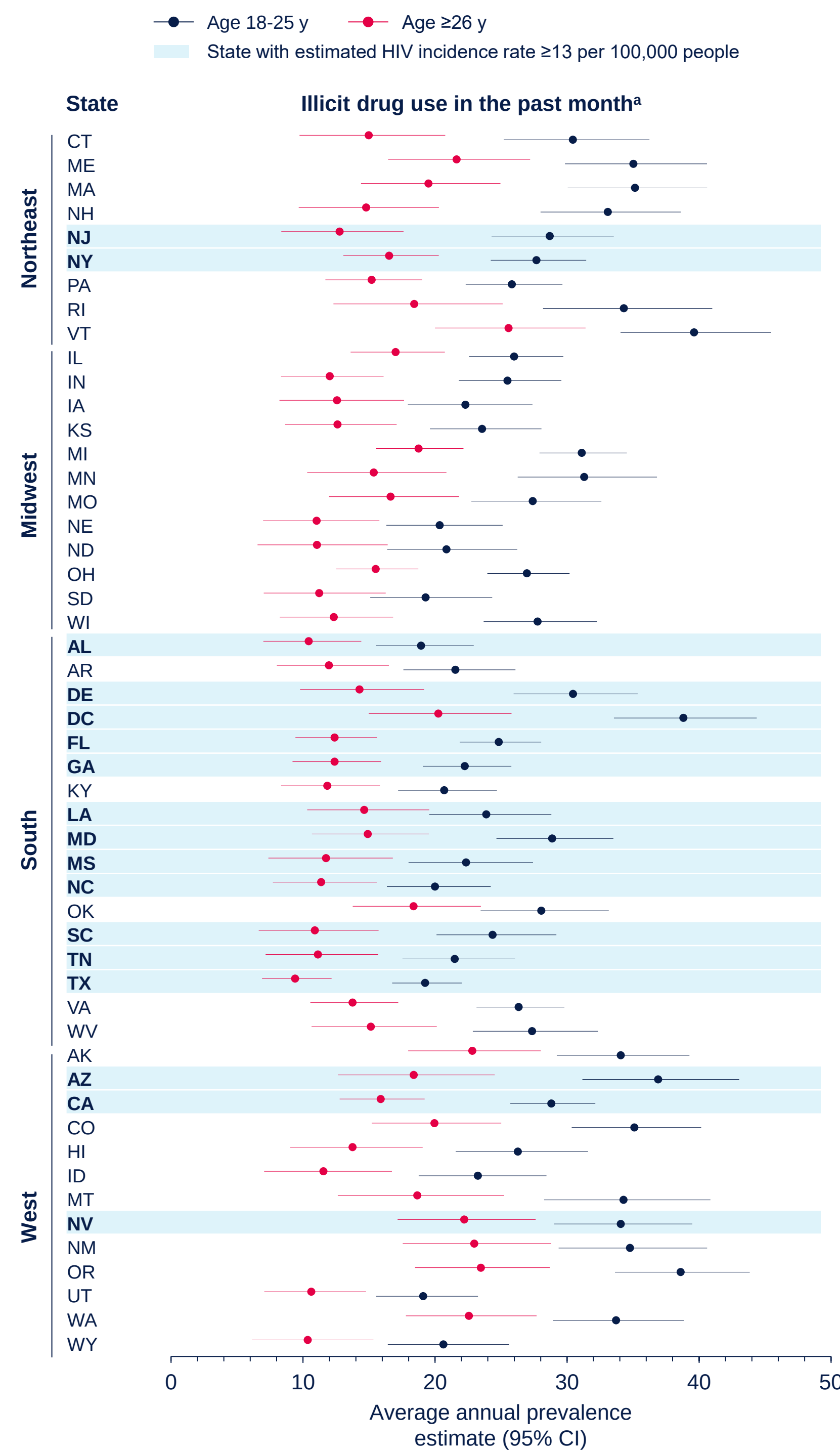
Figure 2. County-Level Data Maps of HIV Epidemiology, Mortality Rates Due to Drug Overdose, and Opioid Dispensing Rates in the Continental US



^aAmong individuals aged ≥13 years. From the AIDSvu Interactive Map. ^bDefined as the ratio of the number of people using PrEP to the number of people with new HIV diagnoses, where lower ratios indicate higher unmet PrEP needs. ^cDeaths classified using International Classification of Diseases, Tenth Revision (ICD-10) underlying cause-of-death codes X40-X44 (unintentional), X60-X64 (suicide), X85 (homicide), or Y10-Y14 (undetermined intent). ^dIdentified by National Drug Codes. Mail-order prescriptions and methadone distributed through methadone treatment programs are not included. AIDSvu maps attributed to AIDSvu and Rollins School of Public Health at Emory University and reproduced with permission. Map showing drug overdose mortality data created using Azure Maps.

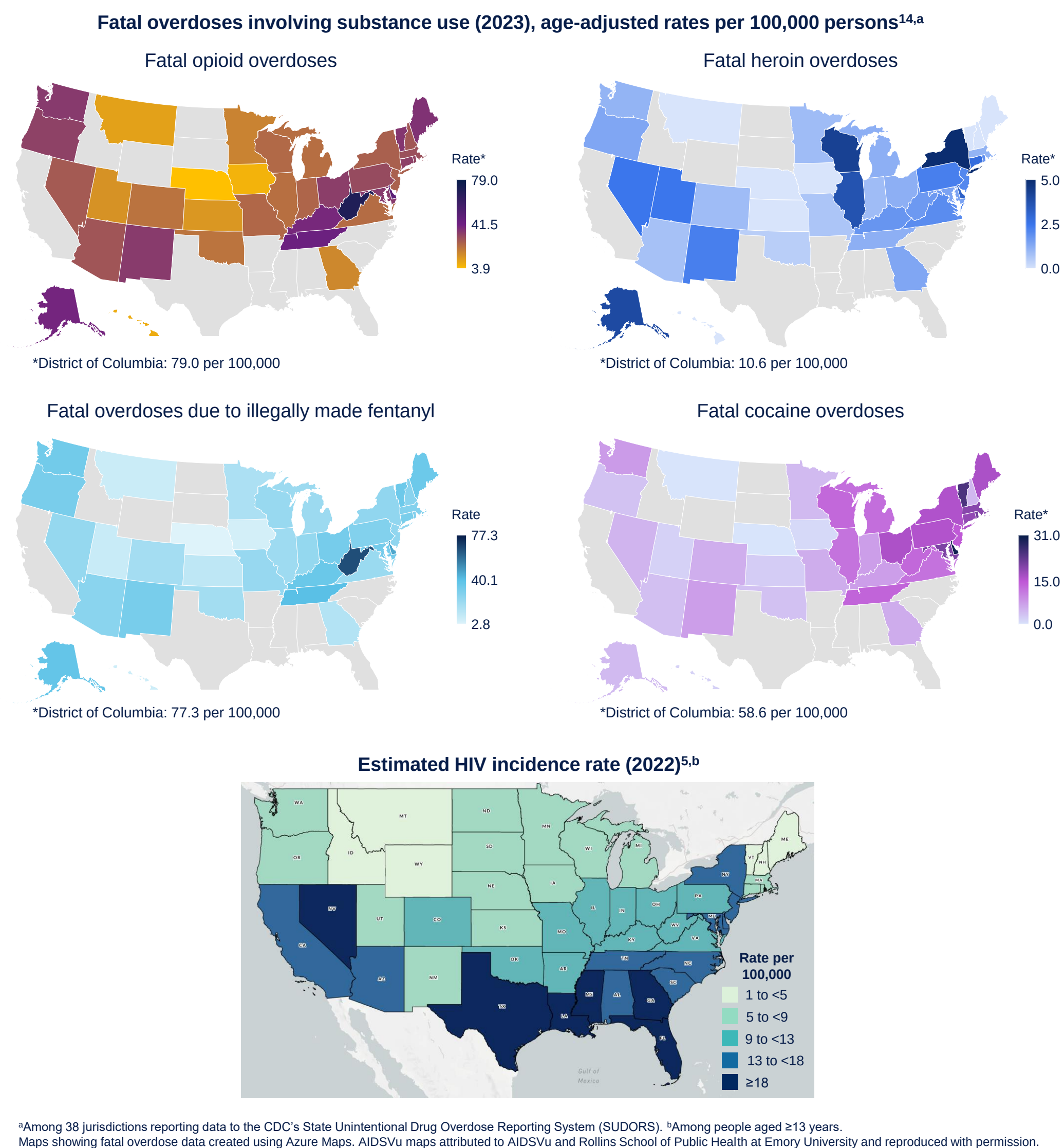
- At the state level, self-reported illicit drug use in the past month was higher among people aged 18 to 25 years compared with those aged ≥26 years (Figure 3),¹³ but HIV incidence rates were generally higher in the latter population⁹; similar results were observed for cocaine use in the past year¹³
- Overlap between high HIV incidence and high proportions of adults aged ≥26 years self-reporting opioid misuse or heroin use within the past year primarily occurred in the South (Alabama, Delaware, District of Columbia, Florida, Georgia, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, and Texas)^{5,13}
- High fatality rates due to opioid-, fentanyl-, and cocaine-related overdoses primarily occurred in the South, and the highest fatality rates due to heroin-related overdoses occurred in the Northeast and Midwest (Figure 4)¹⁴

Figure 3. Model-Based Prevalence Estimates of People Self-reporting Illicit Drug Use by State and Age Group, Inclusive of the District of Columbia, From the NSDUH (2021-2022)¹³



NSDUH, National Survey on Drug Use and Health. ^aIncludes marijuana (including vaping), cocaine, heroin, hallucinogens, inhalants, and methamphetamines as well as misuse of prescription psychotherapeutics (excluding over-the-counter drugs).

Figure 4. Rates (per 100,000) of Fatal Substance Overdoses and HIV Incidence by State



Limitations

- Methodology varied across data sources, and comparisons were not always between data collected at the same time points, as the most recent data per topic were prioritized (range, 2021-2023)
- Particularly at the county level, some data stratified by demographics were either suppressed due to high levels of uncertainty or not reported, which may disproportionately represent states in which more counties reported stratified data

Conclusions

- In the US, high HIV incidence and indicators of substance use overlap most often among adults aged 25 to 50 years, male individuals, people of Black or African American race, and people who reside in the South
- Indicators of substance use also overlapped with high unmet PrEP need at the county level among people who reside in the South
- Clinical implications of potential substance use, including adherence, should be accounted for when selecting optimal PrEP regimens in these populations due to the potential for DDIs and pharmacokinetic considerations

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