



WHITE PAPER

A Comparison of Substance Use Disorders before and during the COVID-19 Pandemic

A Study of Private
Healthcare Claims

A FAIR Health White Paper, September 27, 2022



Summary

During the COVID-19 pandemic, drug overdose deaths have increased. At the same time, access to and utilization of substance use disorder treatment services have decreased. In this report, drawing on the nation's largest repository of private healthcare claims, FAIR Health analyzes substance use disorders and overdoses prior to the COVID-19 pandemic as compared to during the pandemic. Trends in the percentage of patients with a substance use disorder or overdose diagnosis are analyzed, as well as such aspects as age, gender, incidence, relevant substances, states, preexisting mental health conditions, venues of care and provider specialties. Among the key findings:

- In every year of the period 2016-2021, males accounted for 62 to 63 percent of the gender distribution of patients with a **substance use disorder** diagnosis, while females made up 37 to 38 percent. In every year of the same period, females accounted for 60 to 61 percent of the gender distribution of patients with an **overdose** diagnosis, while males made up 39 to 40 percent.
- From 2019 to 2021, 42 states saw an increase in the proportion of patients with opioid and opioid-like drug overdoses compared to the total number of patients using medical services by state. The increases ranged from 148.4 percent in Pennsylvania to 0.7 percent in Minnesota.
- During the pandemic, the percentage of patients with a substance use disorder diagnosis decreased by 4.4 percent, from 3.5 percent of all patients in 2019 (pre-pandemic) to 3.4 percent in 2021 (during the pandemic). But in one age group, those 65 and older, the percentage of patients with a substance use disorder diagnosis increased 5.3 percent, from 3.3 percent of all patients in that age group in 2019 to 3.5 percent in 2021.
- The percentage of patients with an overdose diagnosis increased 4.3 percent, from 0.56 percent of all patients in 2019 to 0.59 percent in 2021.
- Alcohol and opioids were the top two substances associated with substance use disorders throughout the 2019-2021 time frame. Substance use disorders involving alcohol, however, increased over that period from 47 percent to 52 percent of the distribution, while opioids fell from 25 percent of the distribution to 21 percent.

Summary

- From 2016 to 2021, the share of patients with substance use disorders involving the use of stimulants (e.g., amphetamines, methamphetamines) rose 36.4 percent, from 0.046 percent of all patients to 0.063 percent; this percentage increase exceeded those of alcohol, opioids and cannabis.
- In 2021, the percentage of patients with an initial diagnosis of substance use disorder or overdose increased month over month compared to the two prior years.
- In 2019 and 2021, New Mexico was the state with **the highest proportion** of patients with a substance use disorder or overdose diagnosis.
- From 2019 to 2021, Nebraska was the state with **the greatest increase in the proportion** of patients with a **substance use disorder** diagnosis. Maryland was the state with the greatest increase in the proportion of patients with an **overdose** diagnosis.
- Sixty-five percent of patients who had a substance use disorder or overdose diagnosis in 2021 had a preexisting mental health condition. Generalized anxiety disorder and major depressive disorder, in that order, were the two most common mental health diagnoses in this population in 2021.
- The percentage of substance use disorder services rendered via telehealth rose from 0.3 percent in 2019 to 11.3 percent in 2020, then dropped to 9.3 percent in 2021.
- Psychiatrists' share of substance use disorder claim lines increased 112.4 percent, from 3.9 percent in 2016 to 8.3 percent in 2021.

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In 2021, the percentage of patients with an initial diagnosis of substance use disorder or overdose increased month over month compared to the two prior years.

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Background

During the COVID-19 pandemic, drug overdose deaths have increased. The Centers for Disease Control and Prevention (CDC) found that reported deaths due to drug overdose rose from 71,130 in 2019, before the pandemic, to 92,478 in the pandemic's first year, 2020, and 107,270 in its second year, 2021.¹ Another study stated that from 2019 to 2020, there was a 27 percent increase in the rate of alcohol-induced deaths, comparable to the 30 percent increase in drug-induced deaths.² The increase in drug overdose deaths from 2019 to 2020 was particularly high in non-Hispanic Blacks (44 percent) and non-Hispanic American Indians or Alaska Natives (39 percent).³ In addition, there is evidence of an increase in nonfatal overdoses as well as fatal ones. For example, in a study of six US healthcare systems, the rates of nonfatal opioid overdose visits to the emergency department (ED) per 100 all-cause ED visits increased by 28.5 percent from 2018 and 2019 to 2020.⁴

The rise in overdoses, including fatal ones, may be connected to an increase in substance use due to pandemic-related stress. Surveys of US adults in June 2020 found that 13.3 percent of respondents had started or increased substance use to cope with stress or emotions related to COVID-19.⁵ Social disruption associated with restrictions implemented to curb COVID-19 transmission was identified as a risk factor for new and recurrent substance use disorders, even as risk factors associated with substance use disorders increased the risk of exposure to, and complications from, COVID-19.⁶ A national study found a 17.6 percent increase in suspected overdoses when comparing the weeks before and after the inception of state-mandated stay-at-home orders in 2020.⁷

¹ "Provisional Drug Overdose Death Counts," Centers for Disease Control and Prevention (CDC), National Center for Health Statistics, page last reviewed July 13, 2022, <https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm>.

² Trust for America's Health and Well Being Trust, *Pain in the Nation: The Epidemics of Alcohol, Drug, and Suicide Deaths 2022*, issue report, May 2022, https://www.tfah.org/wp-content/uploads/2022/05/TFAH_2022_PainIntheNation_Fnl.pdf?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter_axiosvitals&stream=top.

³ Mbabazi Kariisa et al., "Vital Signs: Drug Overdose Deaths, by Selected Sociodemographic and Social Determinants of Health Characteristics – 25 States and the District of Columbia, 2019–2020," *Morbidity and Mortality Weekly Report* 71, no. 29 (July 22, 2022): 940-47, https://www.cdc.gov/mmwr/volumes/71/wr/mm7129e2.htm?s_cid=mm7129e2_w.

⁴ William E. Soares III et al., "Emergency Department Visits for Nonfatal Opioid Overdose during the COVID-19 Pandemic across Six US Health Care Systems," *Annals of Emergency Medicine* 79, no. 2 (February 1, 2022): P158-67, <https://doi.org/10.1016/j.annemergmed.2021.03.013>.

⁵ Mark É. Czeisler et al., "Mental Health, Substance Use, and Suicidal Ideation during the COVID-19 Pandemic – United States, June 24–30, 2020," *Morbidity and Mortality Weekly Report* 69, no. 32 (August 14, 2020): 1049-57, <https://www.cdc.gov/mmwr/volumes/69/wr/mm6932a1.htm>.

⁶ Christina Marel, Katherine L. Mills and Maree Teesson, "Substance Use, Mental Disorders and COVID-19: A Volatile Mix," *Current Opinion in Psychiatry* 34, no. 4 (July 2021): 351-56, <https://doi.org/10.1097/YCO.0000000000000707>.

⁷ Aliese Alter and Christopher Yeager, "COVID-19 Impact on US National Overdose Crisis," Overdose Detection Mapping Application Program (ODMAP), June 2020, <https://www.odmap.org:4443/Content/docs/news/2020/ODMAP-Report-June-2020.pdf>.

Background

Even as substance use disorder issues increased during the pandemic, access to and utilization of substance use disorder treatment services decreased.⁸ Early in the pandemic, many substance use disorder treatment programs stopped or reduced in-person services as a way of preventing transmission of COVID-19.⁹ Telehealth visits provided an alternative way of receiving treatment, but impediments have been reported to such care, such as patients lacking the technology to engage in telehealth visits; such impediments particularly have affected lower socioeconomic, lower-functioning, older and rural patient populations.¹⁰

Research on substance use disorders during the pandemic has been limited by the pandemic itself. COVID-19 has diminished researchers' access to patient populations, making it harder to monitor changes in substance use and overdose trends.¹¹

To help meet the research need, FAIR Health has turned to the longitudinal dataset in its repository of over 38 billion private healthcare claim records, the largest such repository in the country. In this study, FAIR Health analyzes substance use disorders and overdoses prior to the COVID-19 pandemic as compared to during the pandemic. Trends in the percentage of patients with a substance use disorder or overdose diagnosis are analyzed, as well as such aspects as age, gender, incidence, relevant substances, states, preexisting mental health conditions, venues of care and provider specialties.

⁸ Nirmita Panchal et al., "Substance Use Issues Are Worsening alongside Access to Care," KFF, August 12, 2021, <https://www.kff.org/policy-watch/substance-use-issues-are-worsening-alongside-access-to-care/>.

⁹ Brendan Saloner et al., "Experiences with Substance Use Disorder Treatment during the COVID-19 Pandemic: Findings from a Multistate Survey," *International Journal of Drug Policy* 101 (March 2022): 103537, <https://doi.org/10.1016/j.drugpo.2021.103537>.

¹⁰ American Psychiatric Association, *Substance Use Disorder Treatment and Telehealth Practices during the COVID-19 Pandemic: Barriers and Opportunities Ahead*, accessed July 12, 2022, <https://www.psychiatry.org/File%20Library/Psychiatrists/APA-Substance-Use-Disorder-Treatment-and-Telehealth-Practices-during-the-COVID-19-Pandemic.pdf>.

¹¹ Nora D. Volkow and Carlos Blanco, "Research on Substance Use Disorders during the COVID-19 Pandemic," *Journal of Substance Abuse Treatment* 129 (October 1, 2021): 108385, <https://doi.org/10.1016/j.jsat.2021.108385>.

Background

This study is the latest in a series of FAIR Health studies on various aspects of the COVID-19 pandemic. Previous entries in the series have:

- Projected the costs of inpatient services for COVID-19 patients¹² and reported on treatment and hospitalization costs;¹³
- Analyzed the impact of COVID-19 on hospitals and health systems,¹⁴ healthcare professionals,¹⁵ dental services¹⁶ and pediatric mental health;¹⁷



¹² FAIR Health, *COVID-19: The Projected Economic Impact of the COVID-19 Pandemic on the US Healthcare System*, A FAIR Health Brief, March 25, 2020, <https://s3.amazonaws.com/media2.fairhealth.org/brief/asset/COVID-19%20-%20The%20Projected%20Economic%20Impact%20of%20the%20COVID-19%20Pandemic%20on%20the%20US%20Healthcare%20System.pdf>.

¹³ FAIR Health, *COVID-19 Treatment and Hospitalization Costs: A Descriptive Analysis of the FAIR Health COVID-19 Cost Tracker*, A FAIR Health Brief, December 15, 2021, <https://s3.amazonaws.com/media2.fairhealth.org/brief/asset/COVID-19+Cost+Tracker+Brief.pdf>.

¹⁴ FAIR Health, *Illuminating the Impact of COVID-19 on Hospitals and Health Systems: A Comparative Study of Revenue and Utilization*, A FAIR Health Brief, May 12, 2020, <https://s3.amazonaws.com/media2.fairhealth.org/brief/asset/Illuminating%20the%20Impact%20of%20COVID-19%20on%20Hospitals%20and%20Health%20Systems%20-%20A%20Comparative%20Study%20of%20Revenue%20and%20Utilization%20-%20A%20FAIR%20Health%20Brief.pdf>.

¹⁵ FAIR Health, *Healthcare Professionals and the Impact of COVID-19: A Comparative Study of Revenue and Utilization*, A FAIR Health Brief, June 10, 2020, <https://s3.amazonaws.com/media2.fairhealth.org/brief/asset/Healthcare%20Professionals%20and%20the%20Impact%20of%20COVID-19%20-%20A%20Comparative%20Study%20of%20Revenue%20and%20Utilization%20-%20A%20FAIR%20Health%20Brief.pdf>.

¹⁶ FAIR Health, *Dental Services and the Impact of COVID-19: An Analysis of Private Claims*, A FAIR Health Brief, September 16, 2020, <https://s3.amazonaws.com/media2.fairhealth.org/brief/asset/Dental%20Services%20and%20the%20Impact%20of%20COVID-19%20-%20An%20Analysis%20of%20Private%20Claims%20-%20A%20FAIR%20Health%20Brief.pdf>.

¹⁷ FAIR Health, *The Impact of COVID-19 on Pediatric Mental Health: A Study of Private Healthcare Claims*, A FAIR Health White Paper, March 2, 2021, <https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/The%20Impact%20of%20COVID-19%20on%20Pediatric%20Mental%20Health%20-%20A%20Study%20of%20Private%20Healthcare%20Claims%20-%20A%20FAIR%20Health%20White%20Paper.pdf>.

Background

- Profiled COVID-19 patients;¹⁸
- Reported on risk factors for COVID-19 mortality;¹⁹
- Studied post-COVID conditions;^{20, 21} and
- Reviewed the evolution of telehealth during the pandemic.²²



¹⁸ FAIR Health, *Key Characteristics of COVID-19 Patients: Profiles Based on Analysis of Private Healthcare Claims*, A FAIR Health Brief, July 14, 2020, <https://s3.amazonaws.com/media2.fairhealth.org/brief/asset/Key%20Characteristics%20of%20COVID-19%20Patients%20-%20Profiles%20Based%20on%20Analysis%20of%20Private%20Healthcare%20Claims%20-%20FAIR%20Health%20Brief.pdf>.

¹⁹ FAIR Health, *Risk Factors for COVID-19 Mortality among Privately Insured Patients: A Claims Data Analysis*, A FAIR Health White Paper in Collaboration with the West Health Institute and Marty Makary, MD, MPH, from Johns Hopkins University School of Medicine, November 11, 2020, <https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/Risk%20Factors%20for%20COVID-19%20Mortality%20among%20Privately%20Insured%20Patients%20-%20A%20Claims%20Data%20Analysis%20-%20FAIR%20Health%20White%20Paper.pdf>.

²⁰ FAIR Health, *A Detailed Study of Patients with Long-Haul COVID: An Analysis of Private Healthcare Claims*, A FAIR Health White Paper, June 15, 2021, <https://s3.us-east-1.amazonaws.com/media2.fairhealth.org/whitepaper/asset/A%20Detailed%20Study%20of%20Patients%20with%20Long-Haul%20COVID--An%20Analysis%20of%20Private%20Healthcare%20Claims--A%20FAIR%20Health%20White%20Paper.pdf>.

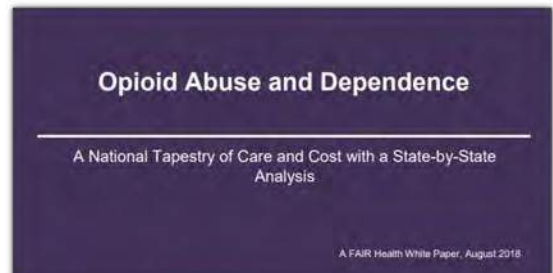
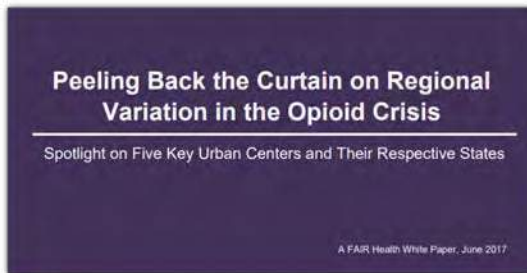
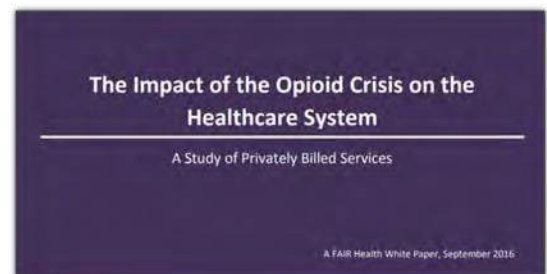
²¹ FAIR Health, *Patients Diagnosed with Post-COVID Conditions: An Analysis of Private Healthcare Claims Using the Official ICD-10 Diagnostic Code*, A FAIR Health White Paper, May 18, 2022, <https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/Patients%20Diagnosed%20with%20Post-COVID%20Conditions%20-%20A%20FAIR%20Health%20White%20Paper.pdf>.

²² FAIR Health, *The Evolution of Telehealth during the COVID-19 Pandemic: A Multiyear Retrospective of FAIR Health's Monthly Telehealth Regional Tracker*, A FAIR Health Brief, June 14, 2022, <https://s3.amazonaws.com/media2.fairhealth.org/brief/asset/The%20Evolution%20of%20Telehealth%20during%20the%20COVID-19%20Pandemic-A%20FAIR%20Health%20Brief.pdf>.

Background

This study also builds upon a series of white papers released by FAIR Health involving substance use disorders, specifically opioid abuse and dependence. Previous entries in that series include:

- *The Opioid Crisis among the Privately Insured*;²³
- *The Impact of the Opioid Crisis on the Healthcare System*;²⁴
- *Peeling Back the Curtain on Regional Variation in the Opioid Crisis*;²⁵ and
- *Opioid Abuse and Dependence*.²⁶



²³ FAIR Health, *The Opioid Crisis among the Privately Insured: The Opioid Abuse Epidemic as Documented in Private Claims Data*, A FAIR Health White Paper, July 2016, <https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/FH%20White%20Paper%20-%20The%20Opioid%20Crisis%20among%20the%20Privately%20Insured%20-%20July%202016-5972409963cf3.pdf>.

²⁴ FAIR Health, *The Impact of the Opioid Crisis on the Healthcare System: A Study of Privately Billed Services*, A FAIR Health White Paper, September 2016, <https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/FH%20White%20Paper%20-%20The%20Impact%20of%20the%20Opioid%20Crisis%20on%20the%20Healthcare%20System%20-%20Sept%202016-5972407510d1f.pdf>.

²⁵ FAIR Health, *Peeling Back the Curtain on Regional Variation in the Opioid Crisis: Spotlight on Five Key Urban Centers and Their Respective States*, A FAIR Health White Paper, June 2017, https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/FH%20White%20Paper%20-%20Peeling%20Back%20the%20Curtain%20on%20Regional_Variation%20in%20the%20Opioid%20Crisis%20-%20June%202017-5972405d4efee.pdf.

²⁶ FAIR Health, *Opioid Abuse and Dependence: A National Tapestry of Care and Cost with a State-by-State Analysis*, A FAIR Health White Paper, August 2018, <https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/Opioid%20Abuse%20and%20Dependence%20-%20A%20FAIR%20Health%20White%20Paper%20August%202018.pdf>.

Methodology

FAIR Health used data from its longitudinal dataset from 2016 to 2021. All the patients who had a substance use disorder were aggregated, i.e., those with any diagnosis code indicative of a substance use disorder, specifically abuse or dependence. Included were the diagnosis codes ICD-10 F10* (alcohol-related disorders) through F19* (other psychoactive substance-related disorders). Excluded were F17* (nicotine dependence) and any diagnosis that indicated use only rather than abuse or dependence (e.g., F11.90, opioid use, unspecified, uncomplicated). The total number of patients with a substance use disorder diagnosis as defined was 7,349,129.

All patients who had an overdose diagnosis also were aggregated. This included all ICD-10 diagnoses from T36* through T50* (poisoning by, adverse effects of and underdosing of drugs, medicaments and biological substances). Excluded were all underdose diagnoses, such as T43.8X6A (underdosing of other psychotropic drugs, initial encounter). Overdoses were not necessarily fatal. The total number of patients with an overdose diagnosis as defined was 1,673,091.

Once these two populations were aggregated, FAIR Health collected all the claims for the patients. This included claims associated with the substance use disorder or overdose (which were then analyzed for such aspects as trends in treatments, states, venues of care and provider specialties treating). It also included claims that were not directly associated with the substance use disorder or overdose (which were analyzed for co-occurring mental health conditions, such as major depressive disorder and generalized anxiety disorder).

FAIR Health identified incident patients (patients receiving a diagnosis for the first time) as those patients who were in the dataset at least 365 days prior to their first diagnosis of a substance use disorder or overdose.

Limitations

The data used in this report comprise claims data for privately insured patients who are covered by insurers and third-party administrators who voluntarily participate in FAIR Health's data contribution program. Medicare Advantage (Medicare Part C) enrollees from contributing insurers are included, but not participants in Medicare Parts A, B and D.²⁷ In addition, data from Medicaid, CHIP and other state and local government insurance programs are not included, nor are data collected regarding uninsured patients.

This is an observational report based on the data FAIR Health receives from private payors regarding care rendered to covered patients.

The report was not subject to peer review.



²⁷ FAIR Health also receives the entire collection of claims for traditional Medicare Parts A, B and D under the Centers for Medicare & Medicaid Services Qualified Entity Program, but those data are not a source for this report.

Results

Overall Trends

Across all age groups, the percentage of patients with a substance use disorder diagnosis increased 5.7 percent from 2016 to 2021, but all the growth occurred from 2016 to 2019 (figure 1). From 2019 to 2021, during the COVID-19 pandemic, the share of patients with a substance use disorder diagnosis decreased 4.4 percent, from 3.5 percent of all patients in 2019 to 3.4 percent in 2021. The decrease from 2019 to 2021 reversed the trend from 2016 to 2019, which is consistent with evidence of more limited access to substance use disorder treatment during the pandemic.^{28, 29}

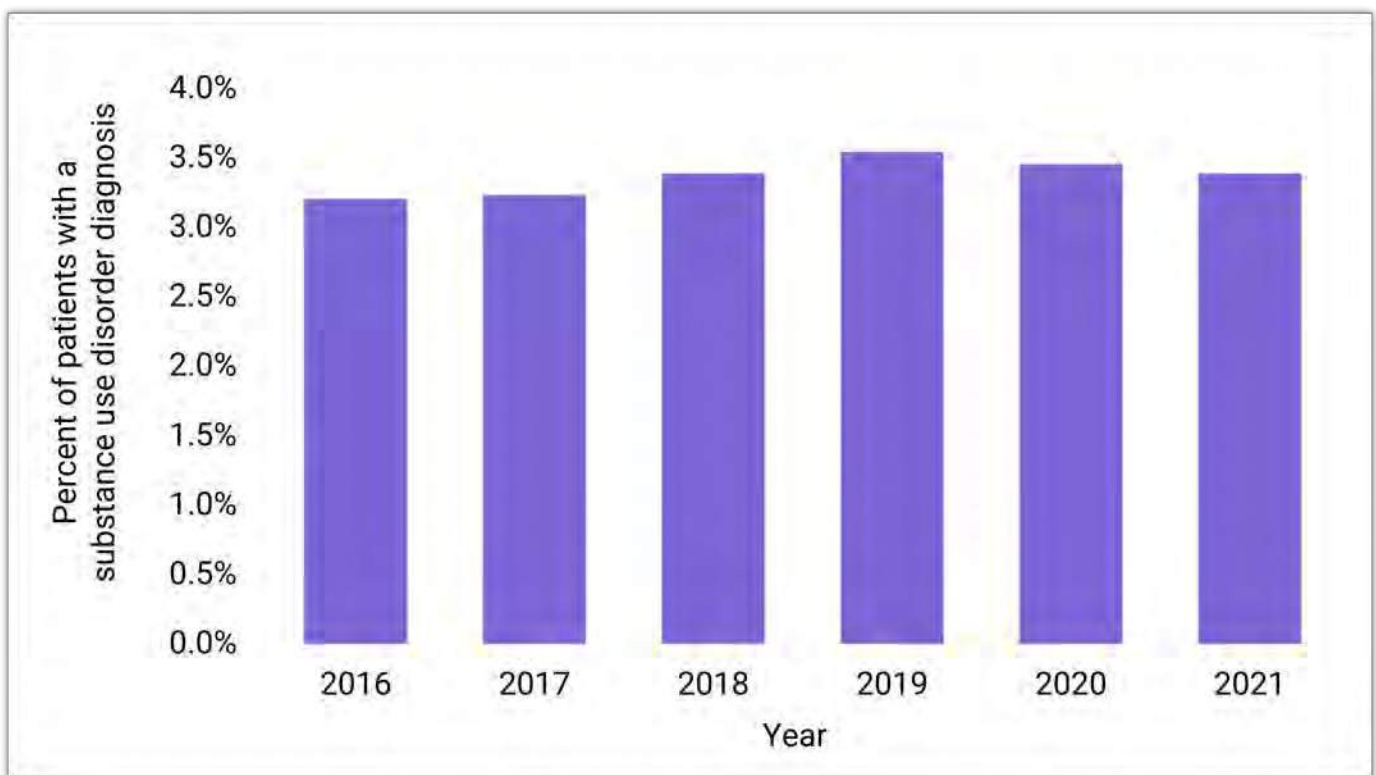


Figure 1. Percent of patients with a substance use disorder diagnosis, 2016-2021

²⁸ Panchal et al., "Substance Use Issues Are Worsening alongside Access to Care."

²⁹ Saloner et al., "Experiences with Substance Use Disorder Treatment during the COVID-19 Pandemic."

Results

Over the period 2016-2021, increases in the percentage of patients with a substance use disorder diagnosis were found only in older age groups: 36-50, 51-64 and 65 and older (figure 2). Decreases were found in younger age groups: 0-18 and 19-35. Those 65 and older had the largest increase in substance use disorder diagnoses (39.4 percent) of any age group.

All age groups other than 65 and older showed a decrease in substance use disorder diagnoses during the pandemic years from 2019 to 2021. Among those 65 and older, the percentage of patients with a substance use disorder diagnosis increased 5.3 percent during the pandemic, from 3.3 percent of all patients in that age group in 2019 to 3.5 percent in 2021.

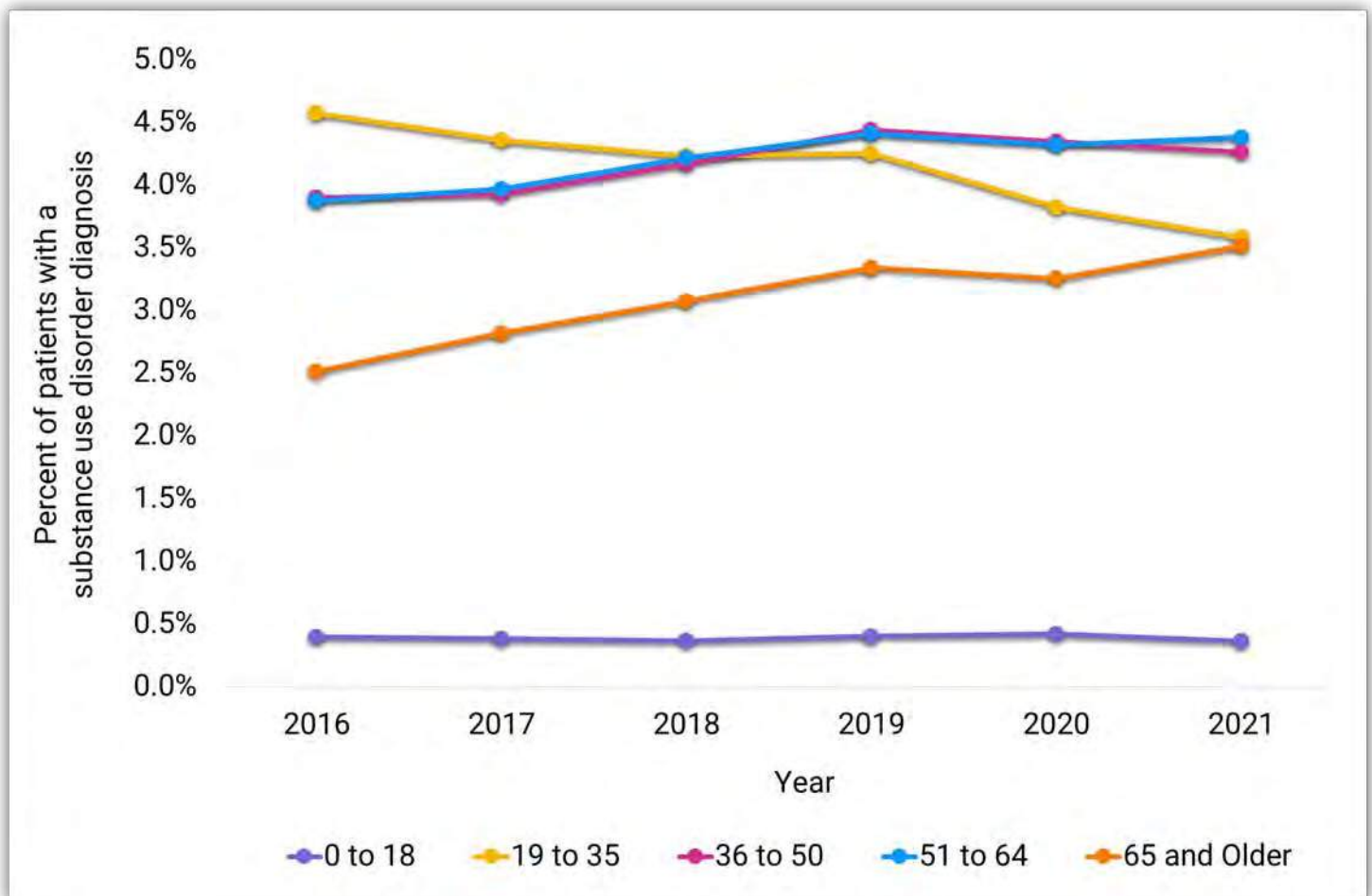


Figure 2. Percent of patients with a substance use disorder diagnosis by age, 2016-2021

Results

Across all age groups, the percentage of patients with an overdose diagnosis increased 4.3 percent during the pandemic years, from 0.56 percent of all patients in 2019 to 0.59 percent in 2021 (figure 3). This was part of a longer-term trend of increase in overdose diagnoses of 10.2 percent from 2016 to 2021. It is consistent with evidence from other researchers of a rise in overdoses during the pandemic.^{30, 31, 32}

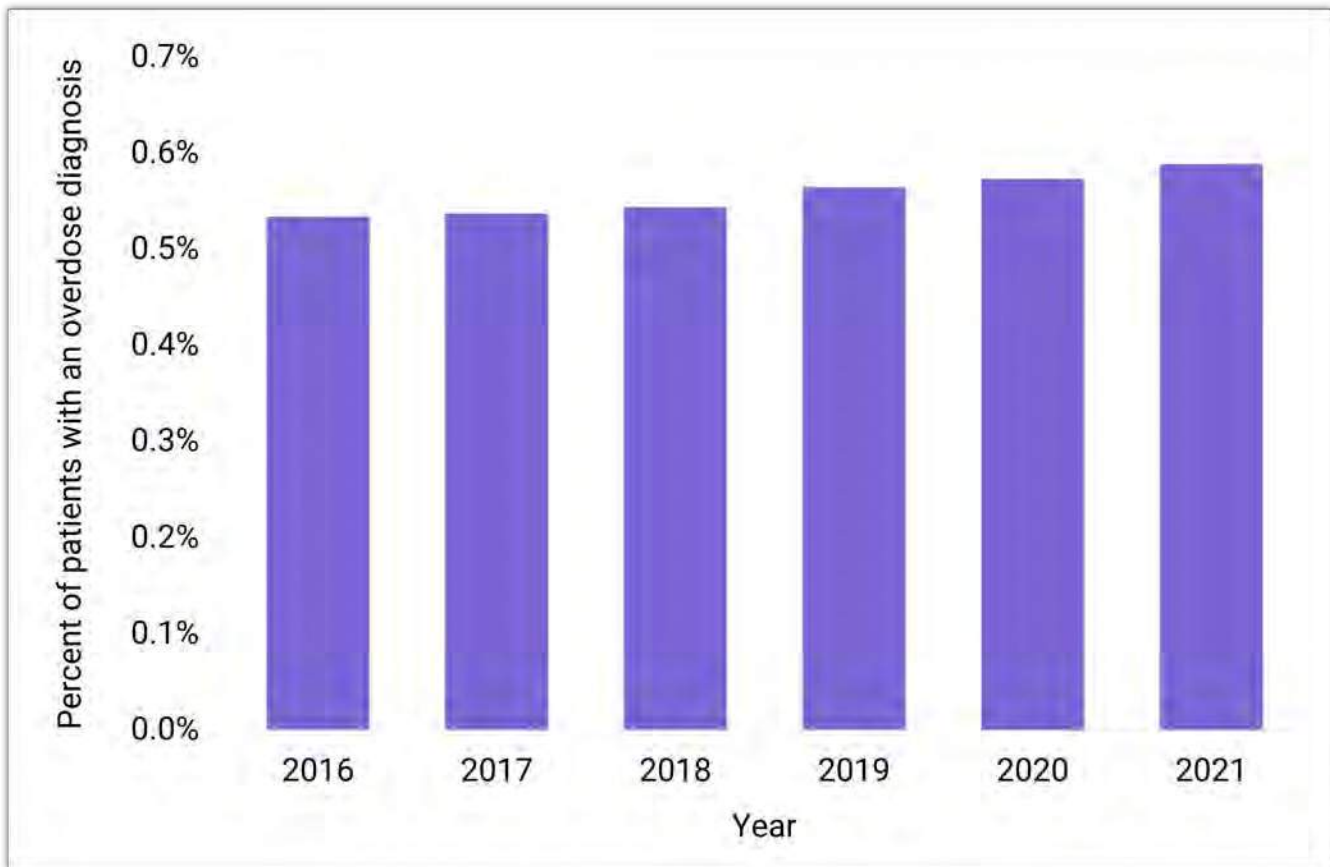


Figure 3. Percent of patients with an overdose diagnosis, 2016-2021

³⁰ "Provisional Drug Overdose Death Counts," CDC.

³¹ Soares III et al., "Emergency Department Visits for Nonfatal Opioid Overdose during the COVID-19 Pandemic across Six US Health Care Systems."

³² Alter and Yeager, "COVID-19 Impact on US National Overdose Crisis."

Results

The percentage of patients with an overdose diagnosis increased in all age groups but one from 2019 to 2021 (figure 4). The exception was the age group 19-35, which rose from 0.49 percent in 2019 to 0.5 percent in 2020 before falling back to 0.49 percent in 2021. Over the longer term from 2016 to 2021, the age group 19-35 decreased in overdose diagnoses 4.1 percent.

In the other age groups, the percentage of patients with an overdose diagnosis rose from 2016 to 2021 by the following amounts: the age group 0-18, 26.9 percent; the age group 65 and older, 24.5 percent; the age group 51-64, 19 percent; and the age group 36-50, 14.1 percent.

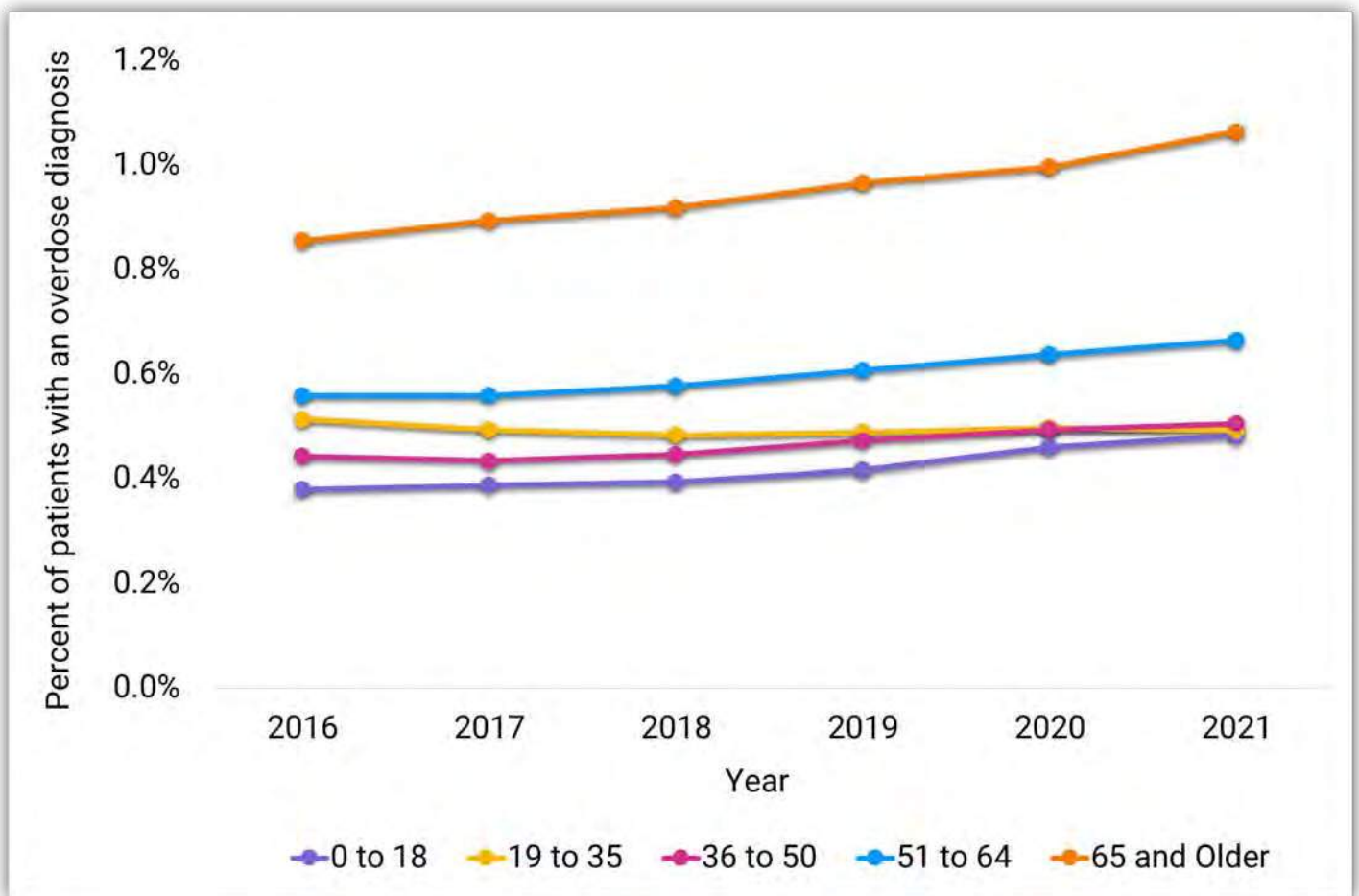


Figure 4. Percent of patients with an overdose diagnosis by age, 2016-2021

Results

Substances

In 2019, before the COVID-19 pandemic, alcohol was the dominant substance associated with substance use disorders, accounting for nearly half (47 percent) of the distribution (figure 5).

Opioids were in second place, at 25 percent, and cannabis in third place, at 10 percent.

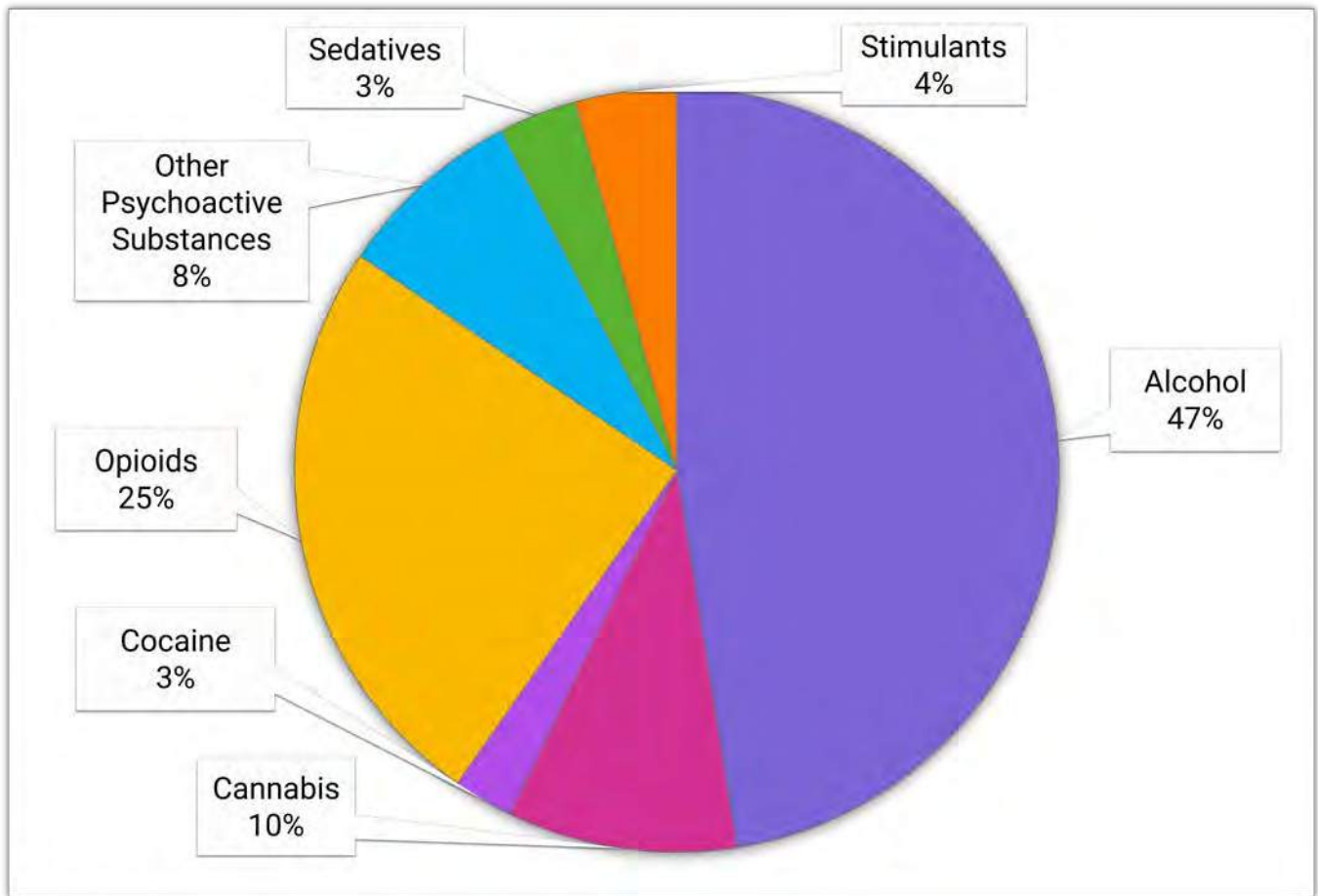


Figure 5. Substance use disorders by substance, 2019

Results

In 2021, during the pandemic, the order of the top three substances was unchanged, but their percentages had changed (figure 6). In 2021, alcohol accounted for more than half (52 percent) of the distribution instead of less than half (47 percent) in 2019, and opioids accounted for 21 percent instead of 25 percent. The cannabis share of the distribution grew from 10 percent in 2019 to 11 percent in 2021.

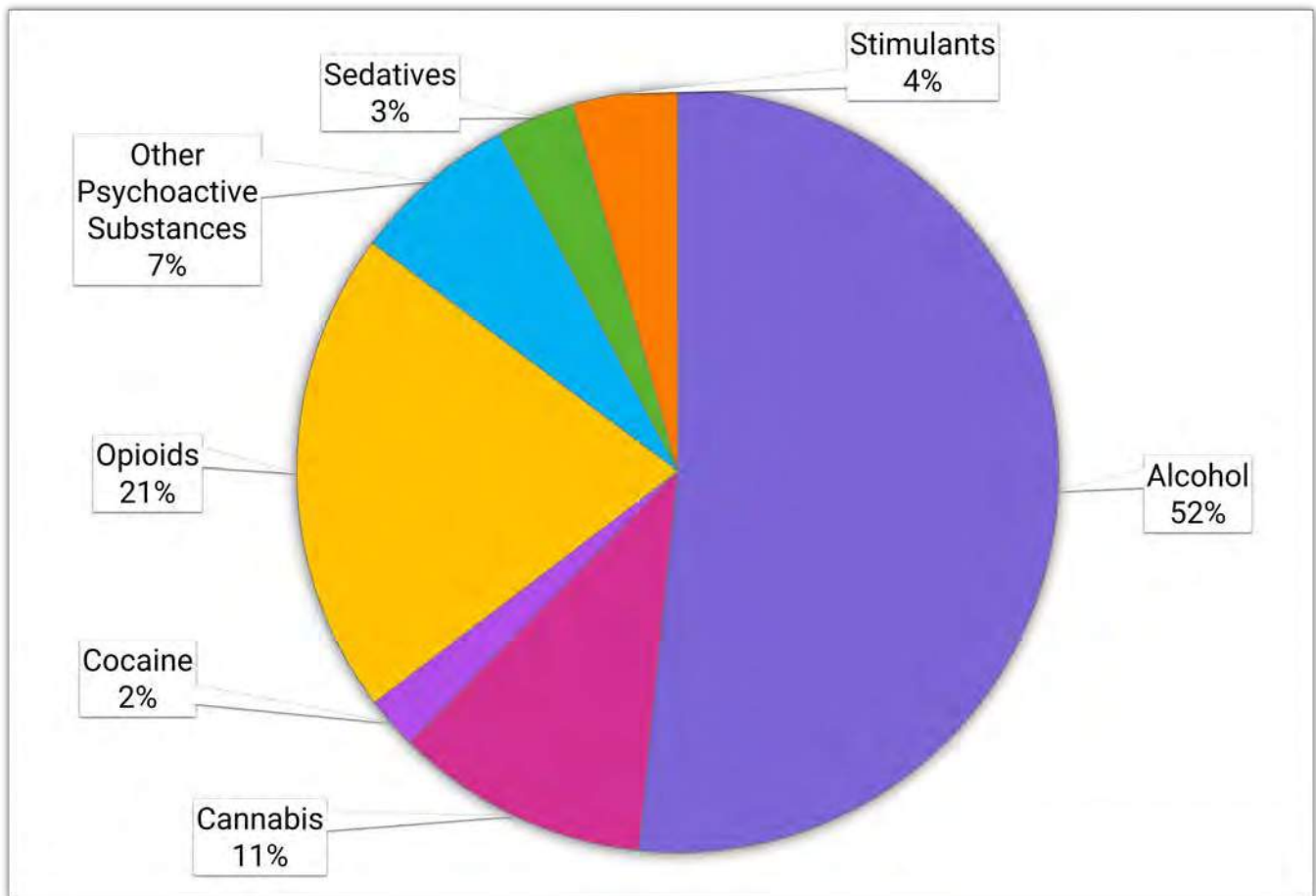


Figure 6. Substance use disorders by substance, 2021

Results

Figure 7 shows the distribution of drug overdoses by substance in 2021. The distribution of overdoses by substance remained fairly steady from 2019 to 2021. The largest change occurred in prescribed medications (e.g., cardiac drugs, antirheumatics), which increased from 44 percent of the distribution in 2019 to 48 percent in 2021.

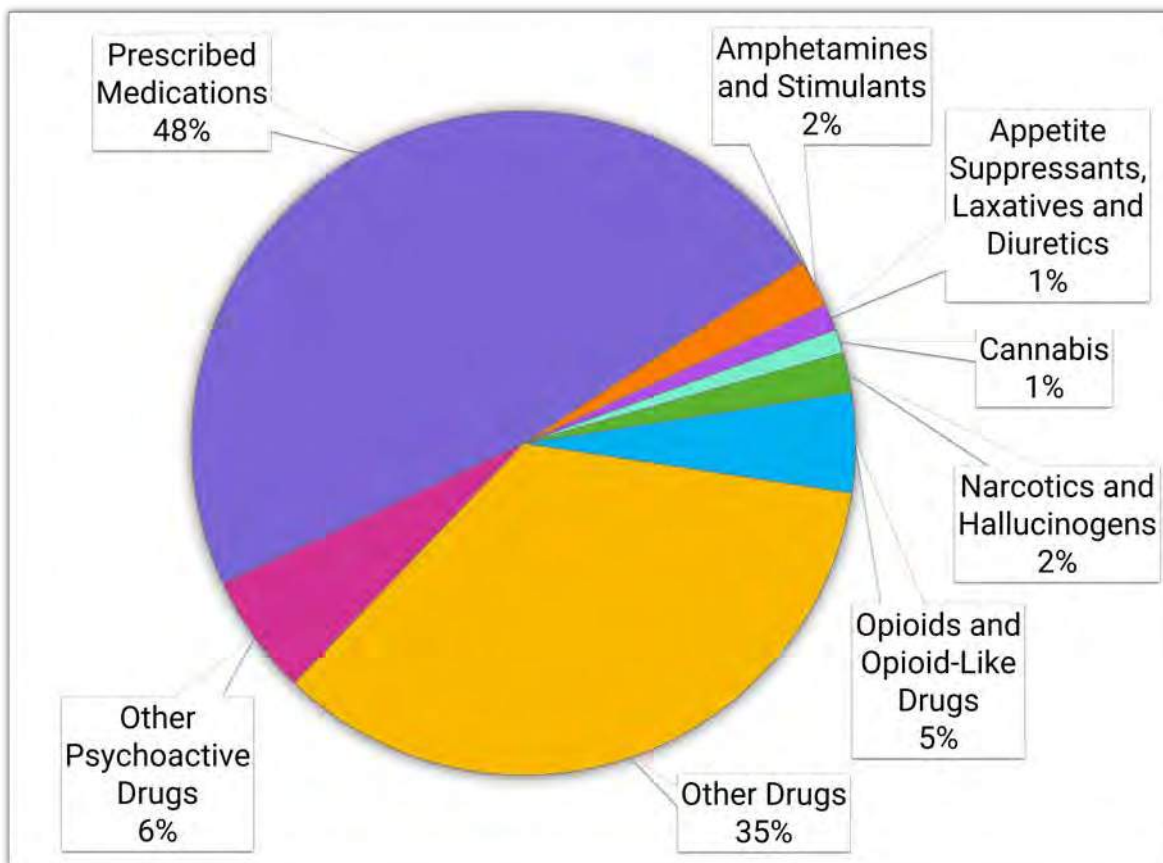


Figure 7. Overdoses by substance, 2021

Results

The percentage of patients with a prescribed medication overdose increased in all age groups from 2016 to 2021 (figure 8). The largest increases were in the two oldest age groups. In those aged 65 and older, there was a 38.3 percent increase, from 0.42 percent of patients in 2016 to 0.58 percent in 2021, and in those aged 51 to 64, there was a 37.6 percent increase, from 0.28 percent of patients in 2016 to 0.38 percent in 2021.

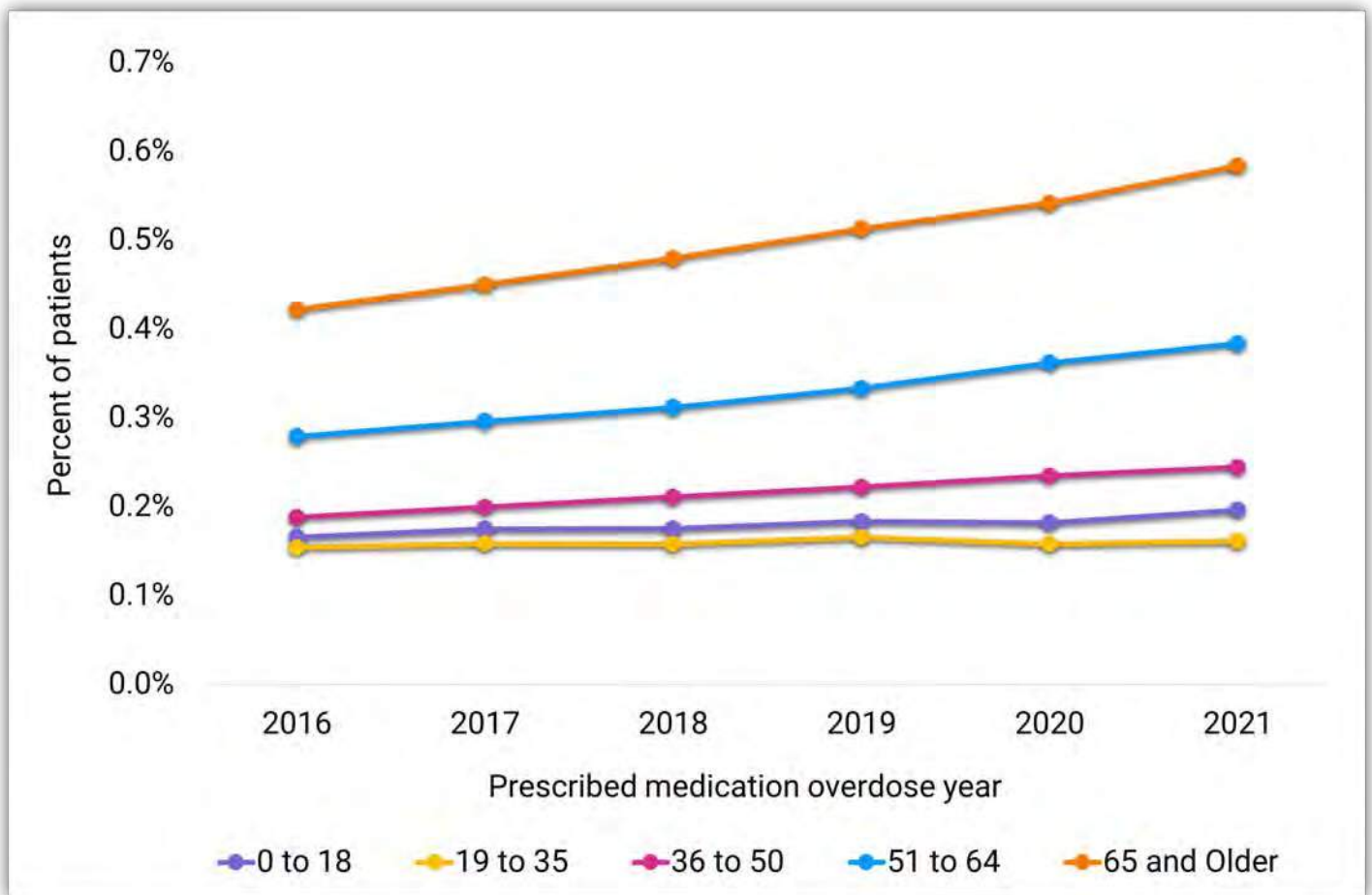


Figure 8. Percent of patients with a prescribed medication overdose, 2016-2021

Results

Throughout the period 2016-2021, of the four substances shown in figure 9, alcohol accounted for the greatest share of patients diagnosed with a substance use disorder, followed by opioids, cannabis and stimulants, in that order.³³ All but opioids increased in their percentage share of patients. Stimulants increased the most, rising 36.4 percent, from 0.046 percent of patients in 2016 to 0.063 percent in 2021. Cannabis increased 21.8 percent in this period, from 0.12 percent of patients to 0.15 percent, and alcohol increased 18.5 percent, from 0.61 percent of patients to 0.73 percent.

Opioids decreased 15 percent overall from 2016 to 2021. This included a 2.9 percent increase before the pandemic, from 0.34 percent of patients in 2016 to 0.35 percent in 2019, and an 18.3 percent decrease during the pandemic, from 0.35 percent in 2019 to 0.29 percent in 2021.

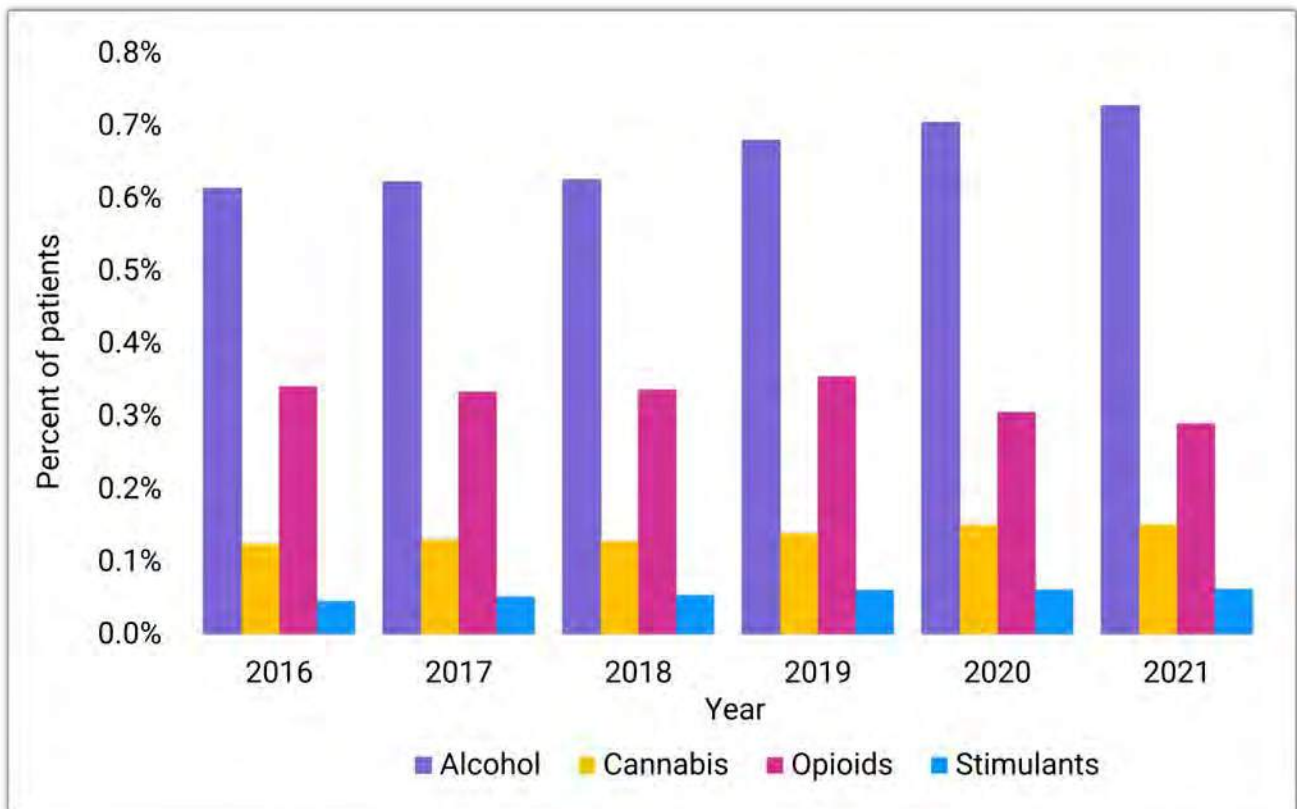


Figure 9. Percent of patients with a substance use disorder by substance, 2016-2021

³³ Unlike figures 5 and 6, which show the distribution of substance use disorders by substance, figure 9 shows percent of patients with a substance use disorder by substance.

Results

Gender

In the period 2016-2021, substance use disorders were much more prevalent in males than females, and overdoses were more prevalent in females than males (figure 10). In 2016, 1.93 percent of male patients had a substance use disorder diagnosis compared to 0.92 percent of female patients; in 2021, the corresponding percentages were 1.96 percent for males and 0.98 percent for females. The increase in percent of patients with substance use disorder diagnoses from 2016 to 2021 was 1.5 percent for males and 6.3 percent for females.

In 2016, however, 0.57 percent of female patients had an overdose diagnosis compared to 0.49 percent of male patients; in 2021, the corresponding percentages were 0.65 percent for females and 0.52 percent for males. The increase in percent of patients with overdose diagnoses from 2016 to 2021 was 13.3 percent for females and 5.7 percent for males.

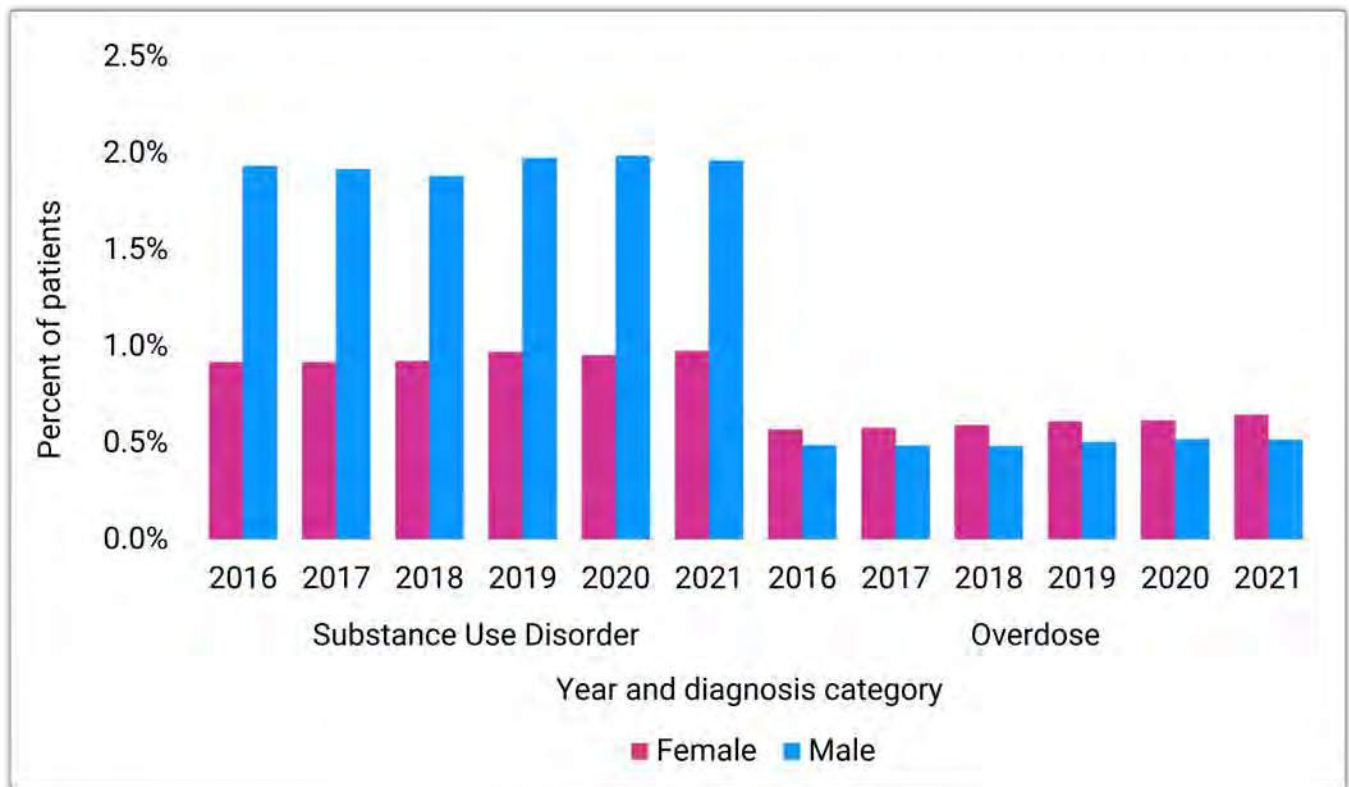


Figure 10. Percent of patients with a substance use disorder or overdose diagnosis by gender, 2016-2021

Results

In every year of the period from 2016 to 2021, males accounted for 62 to 63 percent of the gender distribution of patients with a substance use disorder diagnosis, while females made up 37 to 38 percent (figure 11). This is the opposite of the gender distribution for most other conditions seen in FAIR Health data and of the findings of other researchers that women are more likely than men to visit physicians³⁴ and make use of healthcare services.³⁵ The FAIR Health finding on gender and substance use disorder diagnoses is consistent with other researchers' findings that men are more likely than women to use illicit drugs and, in most age groups, to have higher rates of use or dependence on illicit drugs and alcohol.³⁶

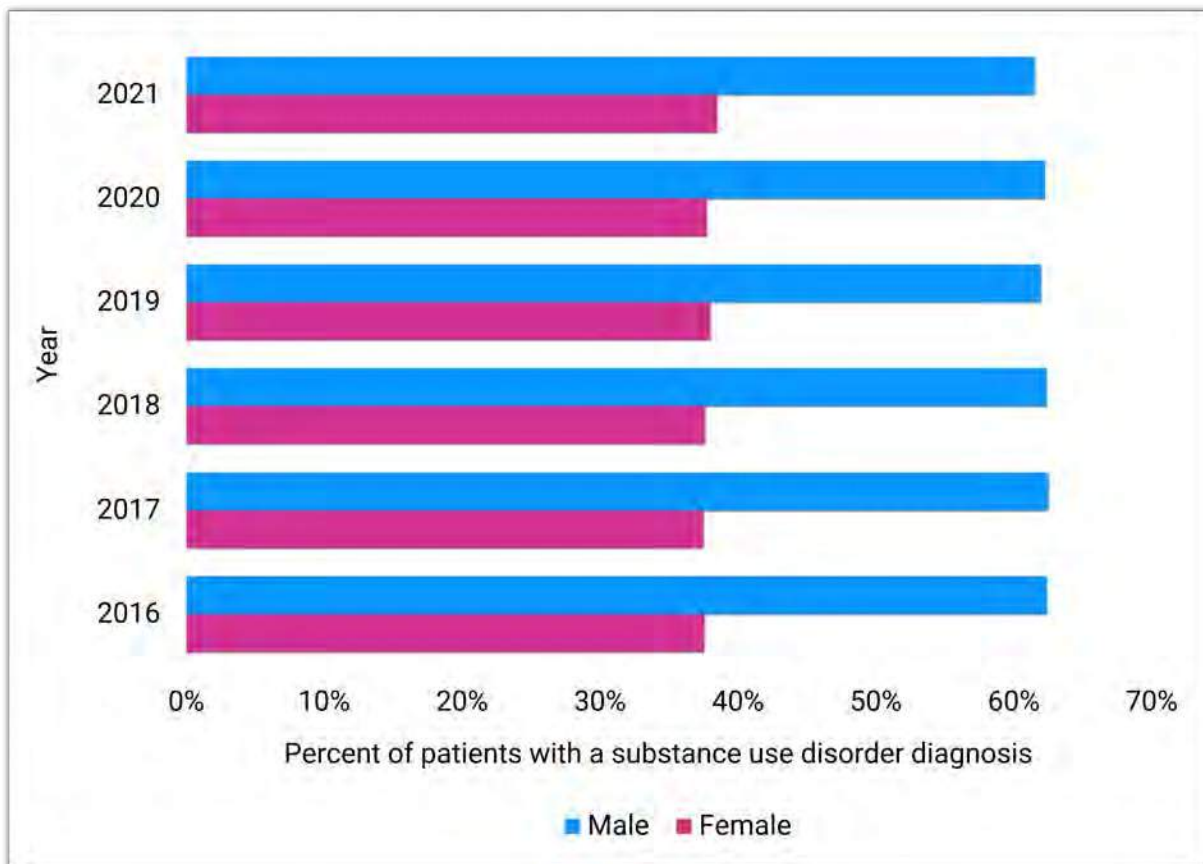


Figure 11. Percent of patients with a substance use disorder diagnosis by gender, 2016-2021

³⁴ Jill J. Ashman, Esther Hing and Anjali Talwalkar, *Variation in Physician Office Visit Rates by Patient Characteristics and State, 2012*, NCHS Data Brief, no. 212 (Hyattsville, MD: National Center for Health Statistics, 2015), <https://www.cdc.gov/nchs/data/databriefs/db212.pdf>.

³⁵ Klea D. Bertakis et al., "Gender Differences in the Utilization of Health Care Services," *Journal of Family Practice* 49, no. 2 (February 2000):147-52, <https://www.ncbi.nlm.nih.gov/pubmed/10718692>.

³⁶ National Institute on Drug Abuse, *Substance Use in Women Research Report*, revised April 2020, <https://nida.nih.gov/download/18910/substance-use-in-women-research-report.pdf?v=b802679e27577e5e5365092466ac42e8>.

Results

In every year of the period from 2016 to 2021, females accounted for 60 to 61 percent of the gender distribution of patients with an overdose diagnosis, while males made up 39 to 40 percent (figure 12). The female share of the distribution increased slightly, from 59.7 percent in 2016 to 61.2 percent in 2021. According to the CDC, the age-adjusted rate of drug overdose deaths was higher for males than females throughout the period 1999-2019;³⁷ however, the FAIR Health data include nonfatal as well as fatal overdoses.

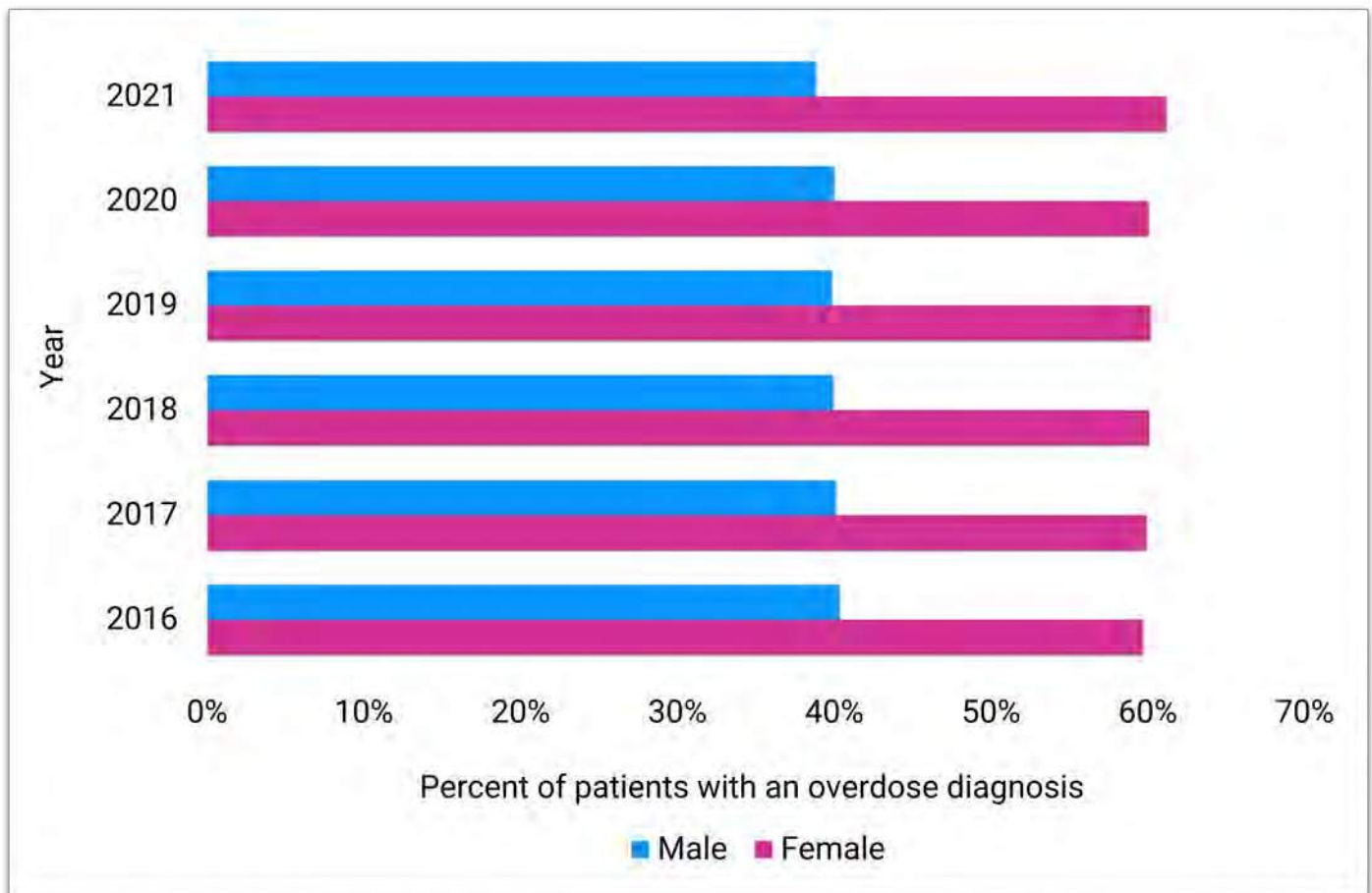


Figure 12. Percent of patients with an overdose diagnosis by gender, 2016-2021

³⁷ Holly Hedegaard, Arialdi M. Miniño and Margaret Warner, *Drug Overdose Deaths in the United States, 1999–2019*, NCHS Data Brief, no. 394 (Hyattsville, MD: National Center for Health Statistics. 2020), <https://www.cdc.gov/nchs/data/databriefs/db394-H.pdf>.

Results

Incidence

Figures 13 and 14 show the incidence of, respectively, substance use disorder diagnoses and overdose diagnoses. Each figure identifies all patients who had one of those diagnoses for the first time in each month from 2019 to 2021. For patients to be included, they needed to have at least one claim of any kind at least one year prior to the first date of substance use disorder or overdose diagnosis. The percentage shown is the number of incident patients for the month divided by the total number of patients who had a medical claim in the year. For example, in January 2019, 0.05 percent of all patients with a medical claim that year had a first-time substance use disorder diagnosis.

For most of 2020, the percentage of incident patients with a substance use disorder diagnosis month over month was below that in 2019, but in 2021 the percentage of incident patients month over month was greater than in the two prior years (figure 13).

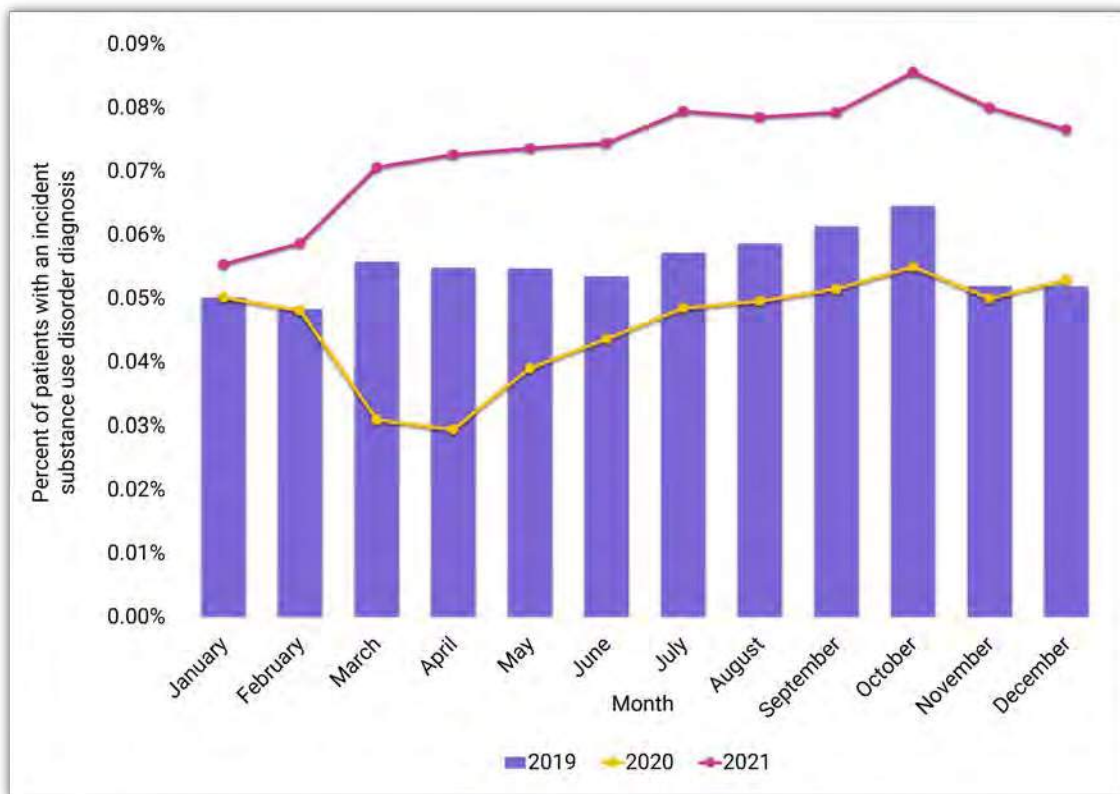


Figure 13. Percent of patients with an incident substance use disorder diagnosis, 2019-2021

Results

For most of 2020, the percentage of incident patients with an overdose diagnosis and no prior overdose or substance use disorder diagnosis month over month was below that in 2019, but in December 2020 there was a marked increase compared to December 2019, from 0.02 percent in December 2019 to 0.03 percent in December 2020 (figure 14). In 2021, there was a month-over-month increase in percentage of incident patients in every month compared to the two prior years. This suggests that there were more newly diagnosed overdoses during the pandemic in patients who did not have previous experience with that diagnosis or a substance use disorder diagnosis.

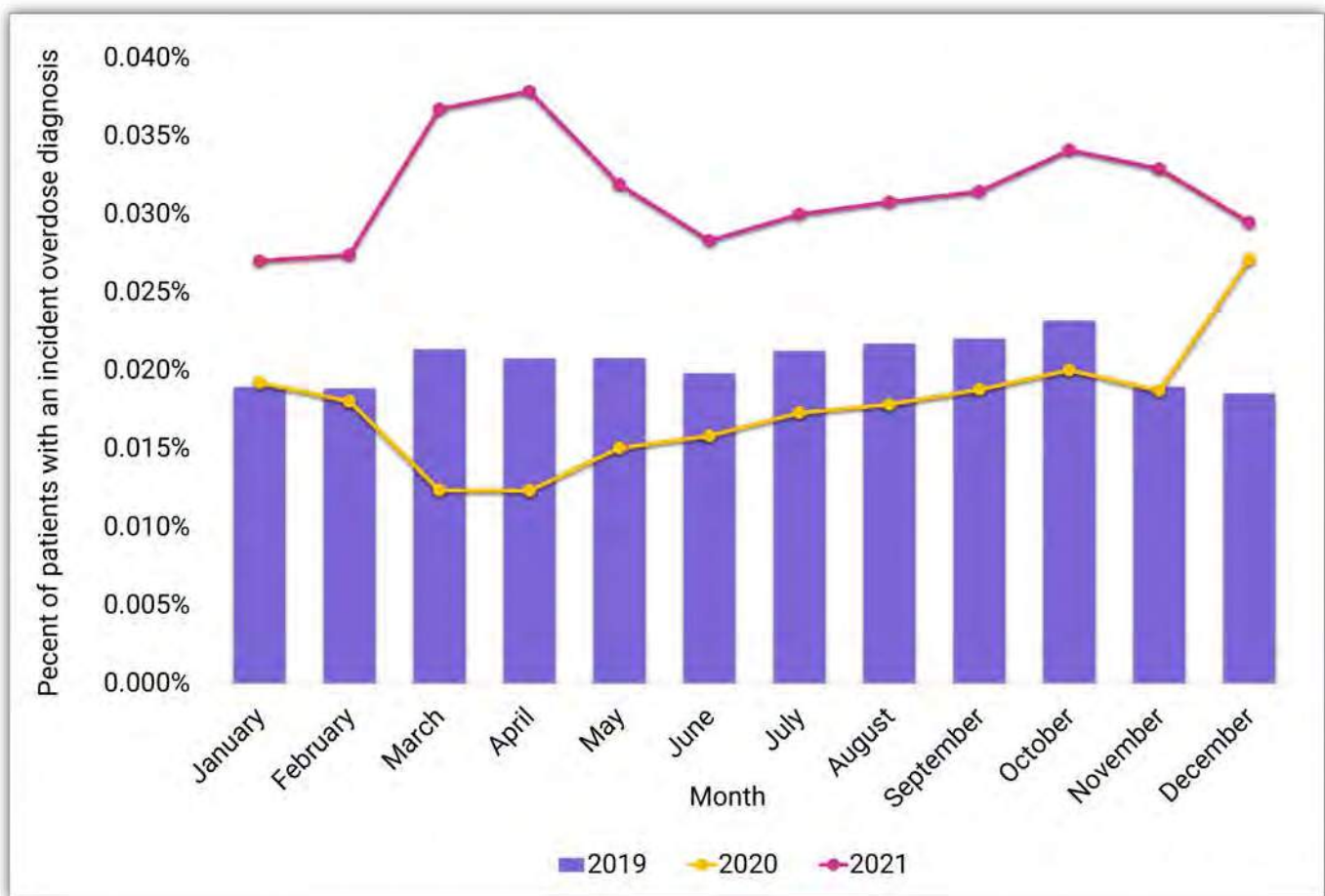


Figure 14. Percent of patients with an incident overdose diagnosis, 2019-2021

Results

States

Substance Use Disorders

The proportion of privately insured patients diagnosed with a substance use disorder compared to the total number of patients who used medical services in 2019 varied from one jurisdiction to another, with a low of 0.68 percent in the District of Columbia and a high of 2.58 percent in New Mexico (figure 15). In 2019, the five states with the highest proportion of patients who had a substance use disorder diagnosis were (from highest to lowest) New Mexico, Rhode Island, Florida, Alaska and Massachusetts. The five jurisdictions with the lowest proportion of patients with a substance use disorder diagnosis were (from lowest to highest) the District of Columbia, Hawaii, Illinois, Nebraska and South Carolina.

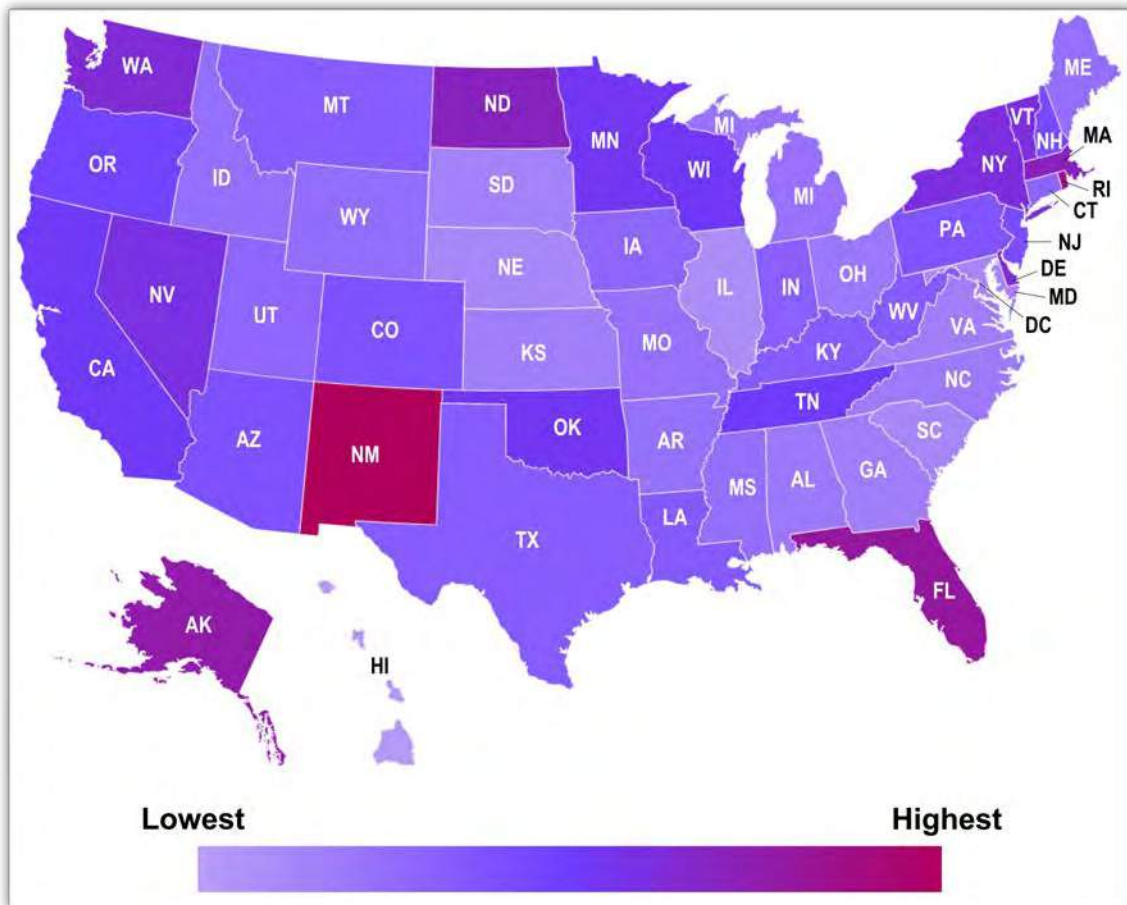


Figure 15. Percent of patients with a substance use disorder diagnosis compared to total patients using medical services by state,³⁸ 2019

³⁸ "States" in heat maps in this paper include the District of Columbia.

Results

Two years later, in 2021, the geography of substance use disorders was similar to that seen in 2019, with some differences (figure 16). Again, the proportion of privately insured patients diagnosed with a substance use disorder compared to the total number of patients who used medical services varied from one jurisdiction to another, with a low of 0.37 percent in the District of Columbia and a high of 1.9 percent in New Mexico. New Mexico still had the highest proportion of patients with a substance use disorder diagnosis, and Alaska and Massachusetts were still among the top five states. But North Dakota rose from sixth place in 2019 to second place in 2021; Massachusetts, Alaska and Wisconsin rounded out the top five in 2021.

Among the five jurisdictions with the lowest proportion of patients with a substance use disorder diagnosis, the District of Columbia, Hawaii and South Carolina remained from 2019, but they were joined in 2021 by Maine and Virginia. In 2021, in order from lowest to highest, they were the District of Columbia, Maine, Virginia, Hawaii and South Carolina.

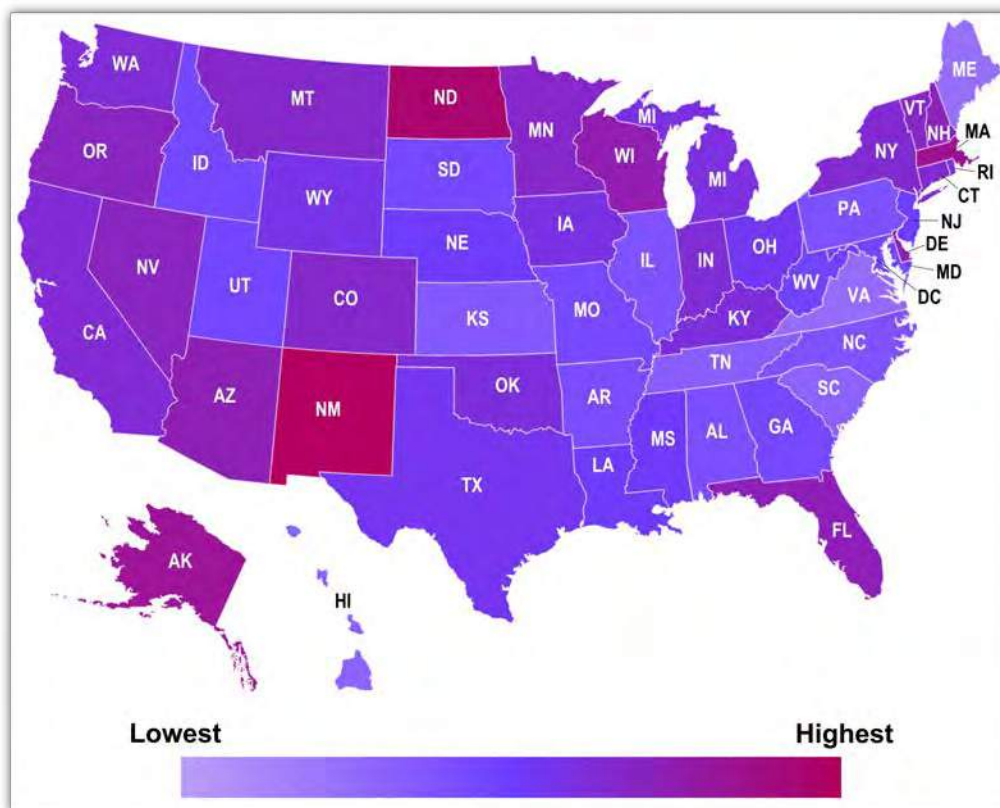


Figure 16. Percent of patients with a substance use disorder diagnosis compared to total patients using medical services by state, 2021

Results

Figure 17 shows the states with the greatest increase from 2019 to 2021 in the proportion of patients who had a substance use disorder diagnosis compared to the total number of patients using medical services by state. The five states with the greatest increase were Nebraska (15.7 percent increase, from 0.86 percent to 0.99 percent), Michigan (13.2 percent increase, from 1.02 percent to 1.15 percent), Arizona (9.8 percent increase, from 1.27 percent to 1.40 percent), Connecticut (9.7 percent increase, from 1.12 percent to 1.23 percent) and Montana (7.1 percent, from 1.19 percent to 1.28 percent).

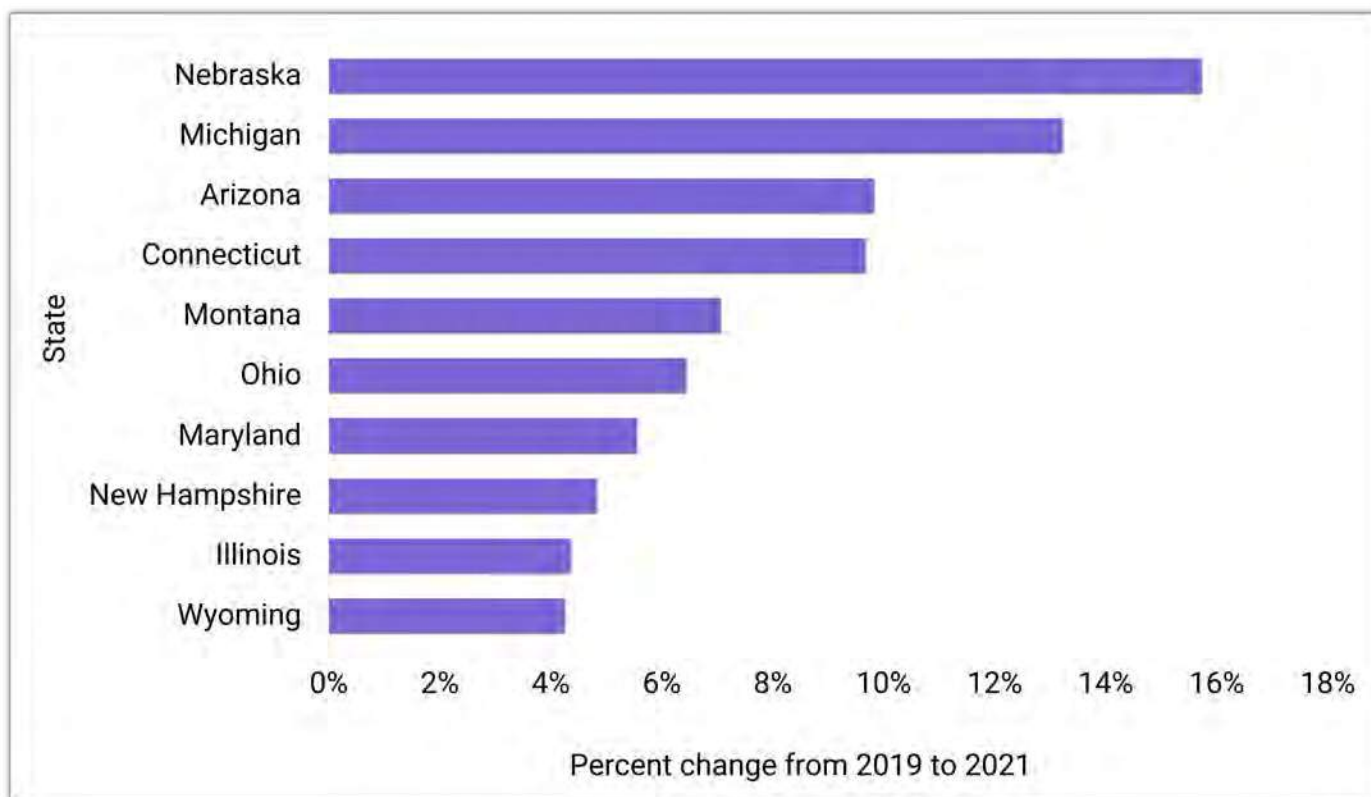


Figure 17. States with the greatest increase in percent of patients with a substance use disorder diagnosis compared to total patients using medical services by state, 2019-2021

Results

Figure 18 shows the states with the greatest increase from 2019 to 2021 in the proportion of patients who had an alcohol use disorder diagnosis compared to the total number of patients using medical services by state. Kentucky was at the top of the list, increasing 35.8 percent, from 0.35 percent to 0.47 percent. Nebraska, South Dakota, Michigan and Maryland rounded out the top five. Nebraska and Michigan were in the top five for greatest increases in both substance use disorder and alcohol use disorder diagnoses.

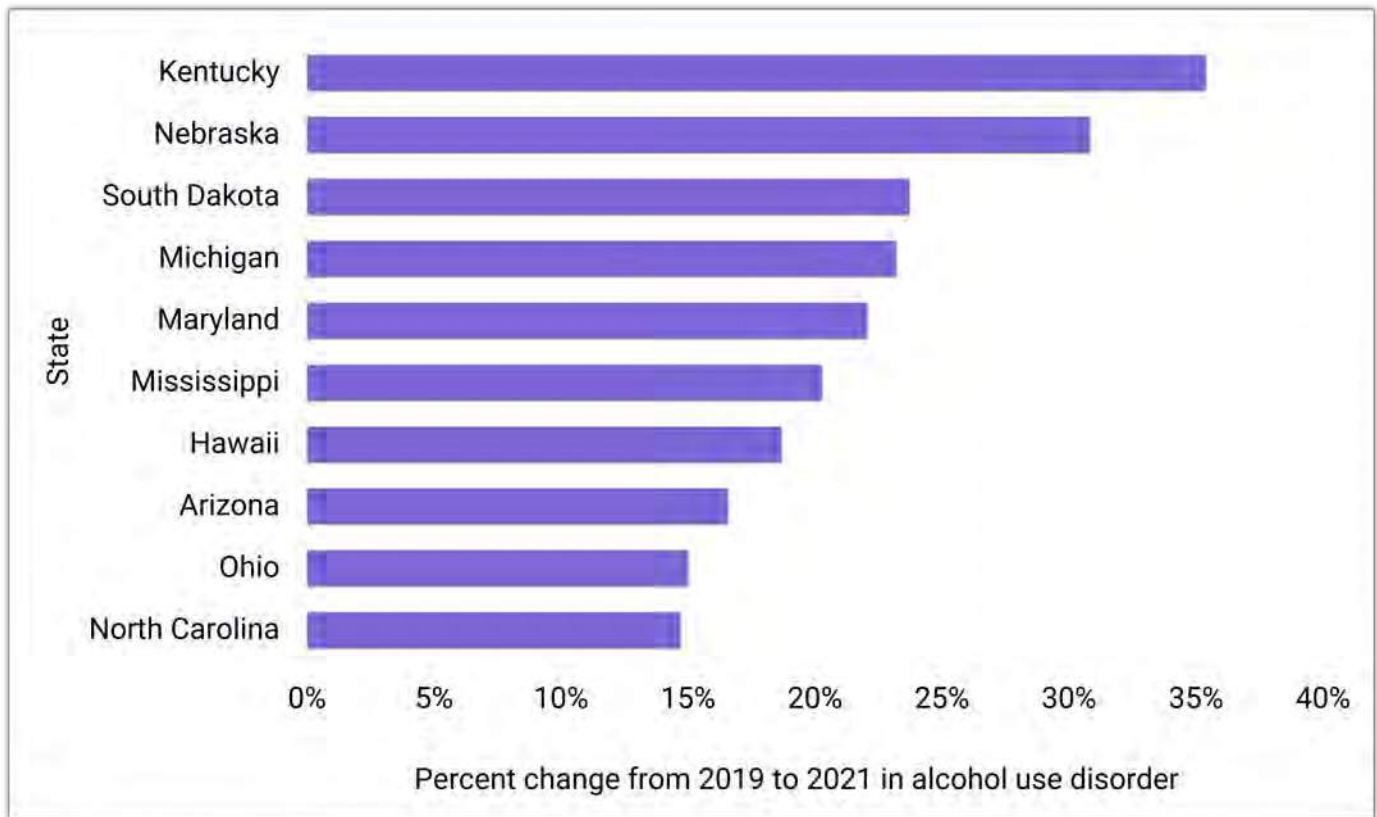


Figure 18. States with the greatest increase in percent of patients with an alcohol use disorder diagnosis compared to total patients using medical services by state, 2019-2021

Results

Overdoses

In 2019, the proportion of privately insured patients diagnosed with an overdose compared to the total number of patients who used medical services varied from state to state, with a low of 0.264 percent in Connecticut and a high of 0.772 percent in New Mexico (figure 19). In 2019, the five states with the highest proportion of patients who had an overdose diagnosis were New Mexico, Oklahoma, Massachusetts, West Virginia and Arizona. New Mexico and Massachusetts were also among the top five states for substance use disorder diagnoses in 2019 (figure 15), with New Mexico topping both lists.

The five jurisdictions with the lowest proportion of patients with an overdose diagnosis in 2019 were Connecticut, North Carolina, Maryland, Maine and the District of Columbia (figure 19). The District of Columbia was also among the five jurisdictions for lowest proportion of patients with a substance use disorder diagnosis in 2019 (figure 15).

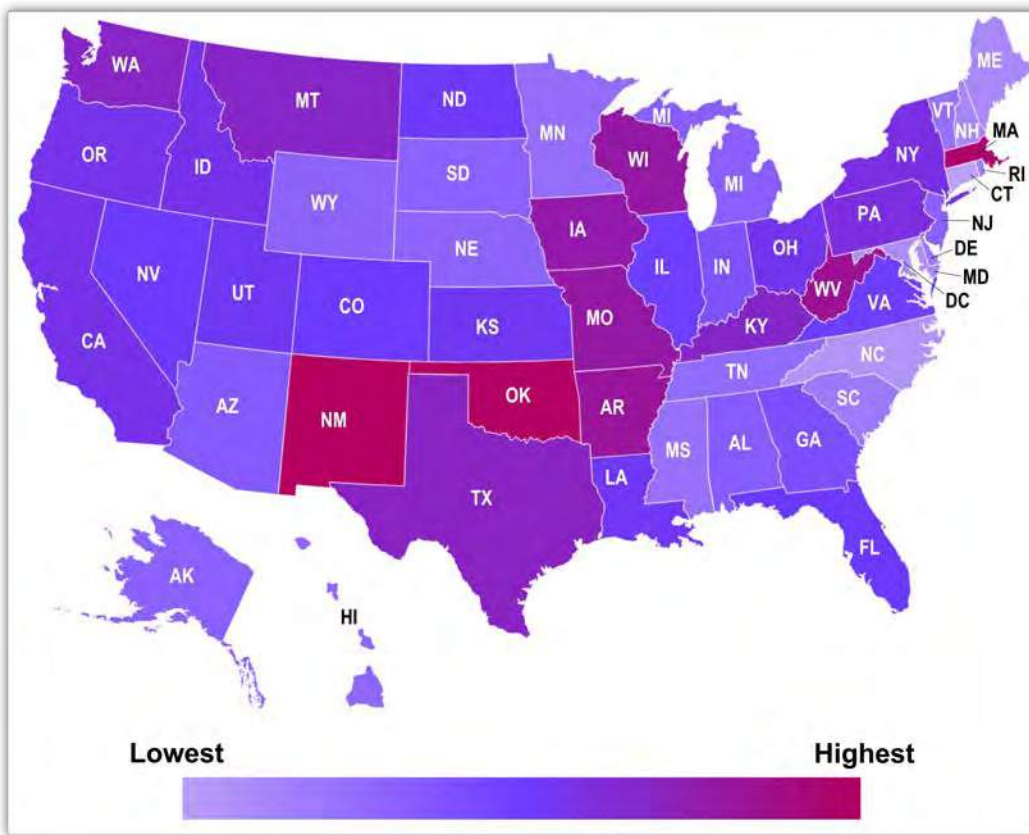


Figure 19. Percent of patients with an overdose diagnosis compared to total patients using medical services by state, 2019

Results

In 2021, as with substance use disorder diagnoses, the geography of overdoses was similar to that seen in 2019, with some differences (figure 20). In 2021, the proportion of privately insured patients diagnosed with an overdose compared to the total number of patients who used medical services again varied from one jurisdiction to another, with a low of 0.158 percent in the District of Columbia and a high of 0.67 percent in New Mexico. Among the five states that had the highest proportion of patients with an overdose diagnosis, New Mexico and Oklahoma remained in the top two spots; however, Wisconsin became third, Massachusetts dropped from third to fourth, and Montana became fifth.

The five jurisdictions with the lowest proportion of overdose patients were also somewhat similar. The District of Columbia rose from fifth to first place; Rhode Island entered the list in second place; Maine rose from fourth to third place; Tennessee entered the list in fourth place; and Connecticut dropped from the lowest percentage of overdoses to the fifth lowest.

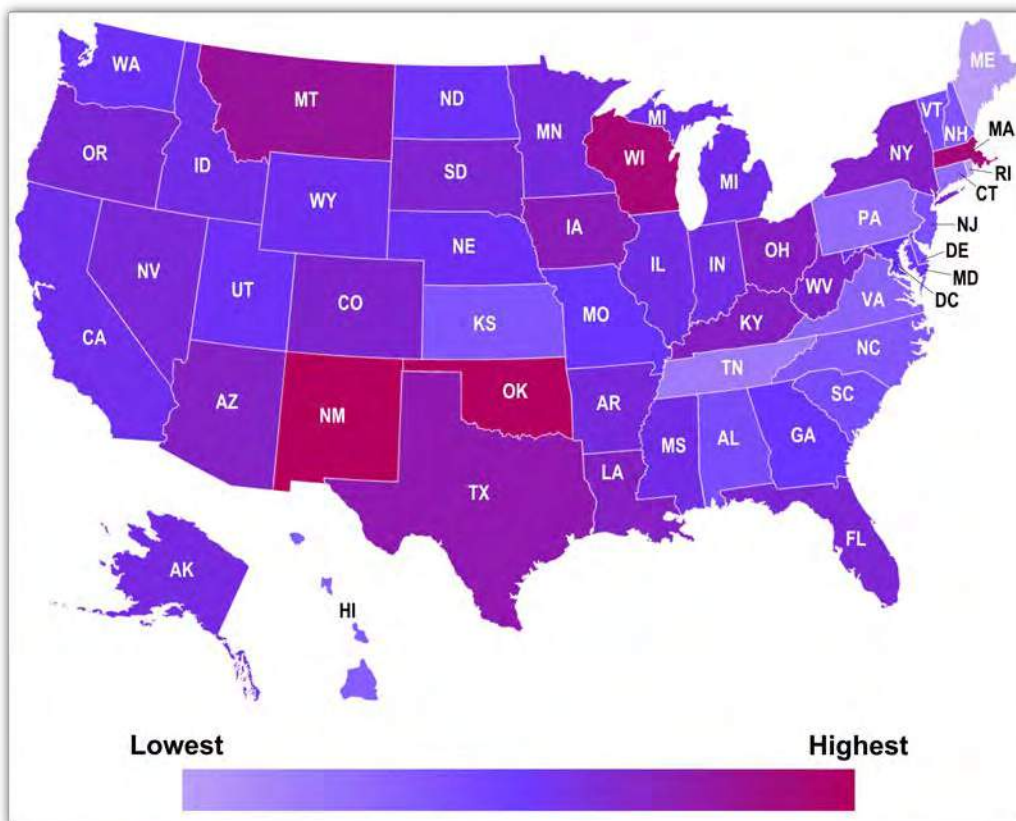


Figure 20. Percent of patients with an overdose diagnosis compared to total patients using medical services by state, 2021

Results

Figure 21 shows the states with the greatest increase from 2019 to 2021 in the proportion of patients who had an overdose diagnosis compared to the total number of patients using medical services by state. Maryland was at the top of the list with a 25.4 percent increase in overdoses, rising from 0.31 percent of the population to 0.38 percent. Minnesota was in second place with a 19.5 percent increase in overdoses, rising from 0.37 percent of the population to 0.44 percent. Arizona, South Dakota and Mississippi rose 18.1 percent, 17.0 percent and 16.1 percent, respectively, to round out the top five.

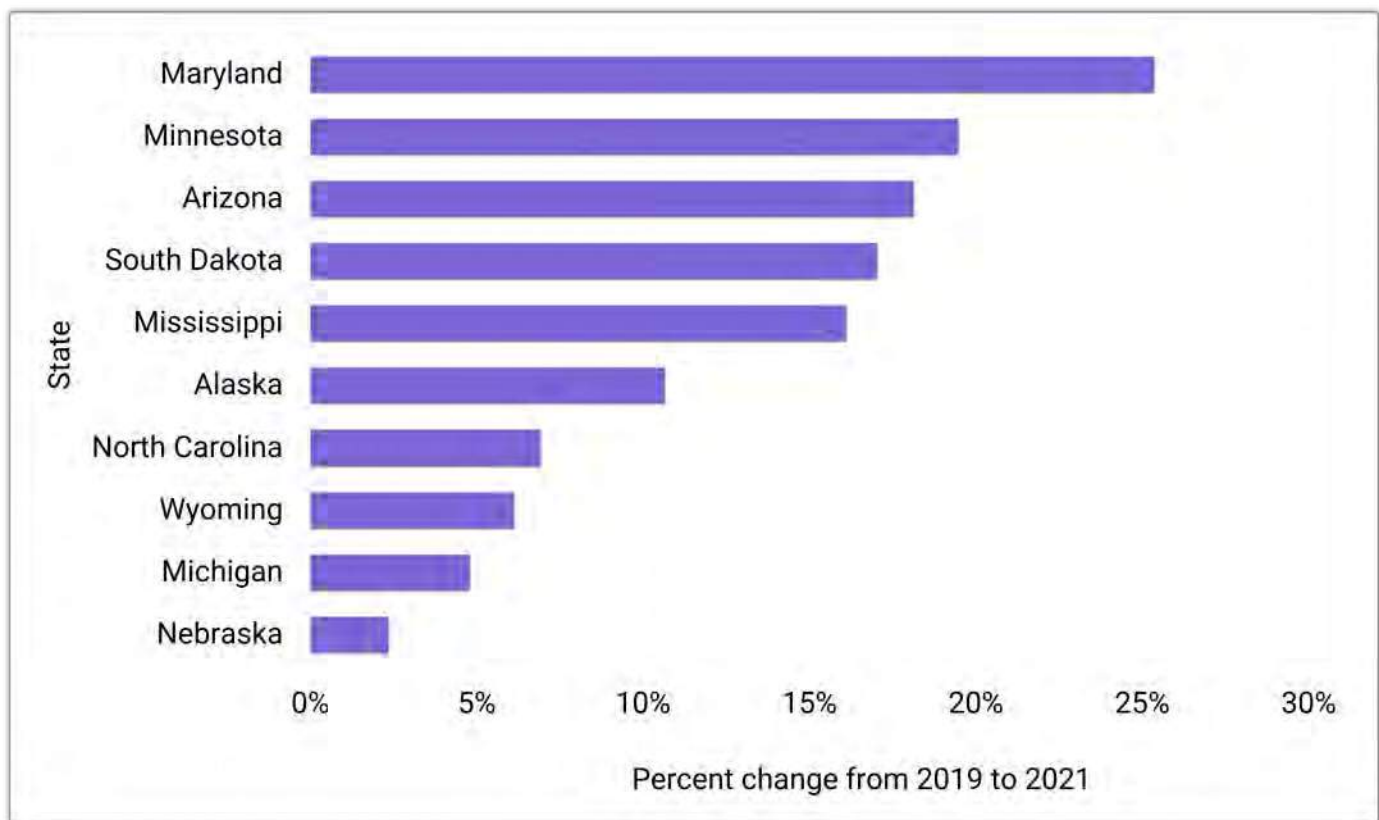


Figure 21. States with the greatest increase in percent of patients with an overdose diagnosis compared to total patients using medical services by state, 2019-2021

Results

From 2019 to 2021, during the pandemic, the proportion of patients with opioid and opioid-like drug overdoses (including heroin and fentanyl) compared to the total number of patients using medical services by state increased in 42 states (figure 22). The increases ranged from 148.4 percent in Pennsylvania to 0.7 percent in Minnesota. The mean increase was 32.1 percent, and the median increase was 17.2 percent. A few jurisdictions had decreases in this period, with the largest, 29.6 percent, in the District of Columbia. New Mexico had a 24.8 percent decrease in this period, despite being the state with the highest proportion of patients with an overdose diagnosis compared to total patients using medical services in both 2019 and 2021.

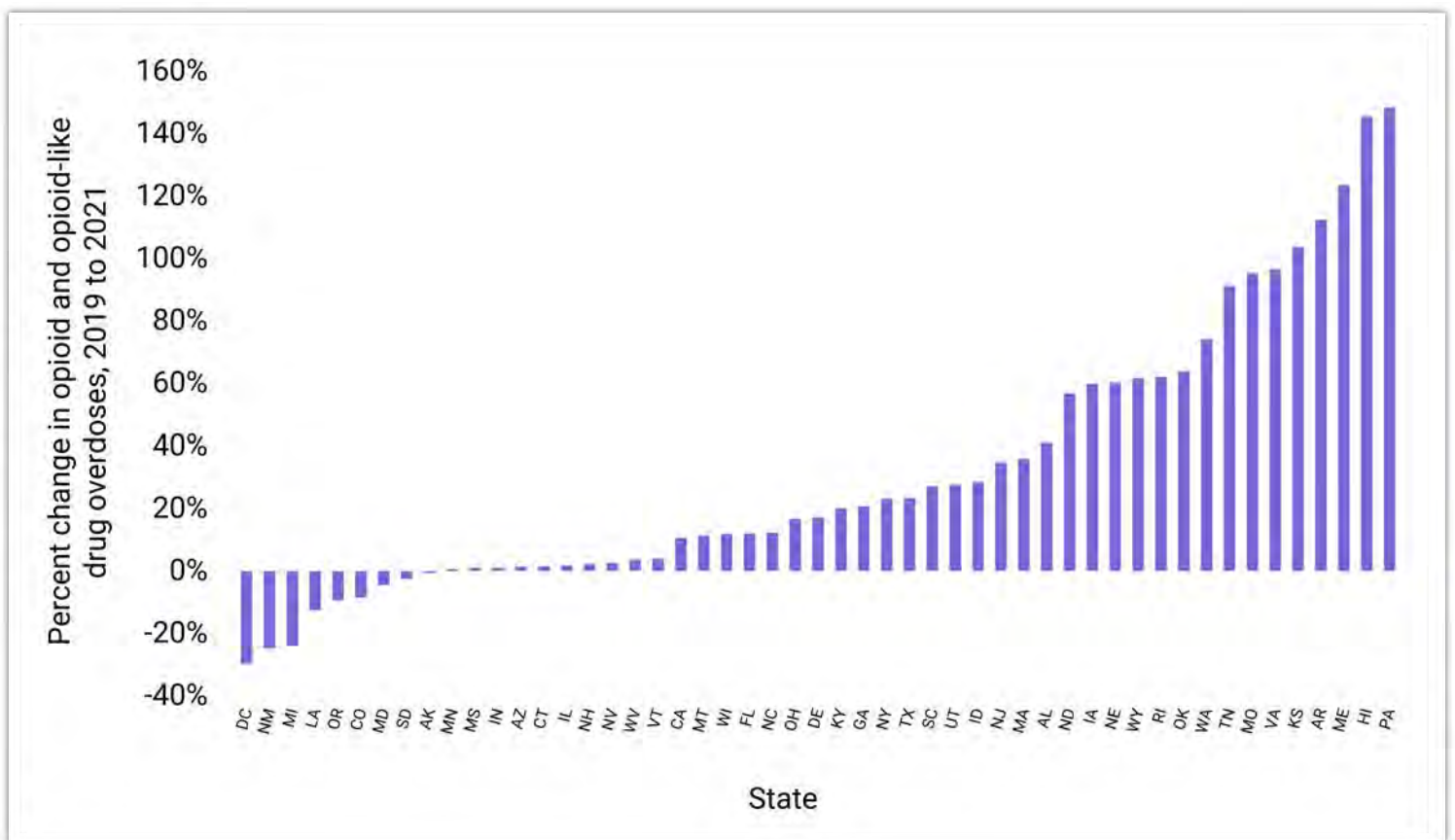


Figure 22. Percent change in patients with opioid and opioid-like drug overdoses compared to the total number of patients using medical services by state, 2019-2021

Results

Preexisting Mental Health Conditions

Of all patients who had a substance use disorder or overdose diagnosis in 2021, 65 percent had a preexisting mental health condition. This is consistent with other researchers' findings that the co-occurrence of substance use disorders with mental health conditions is common.³⁹ The distribution of mental health conditions in the **substance use disorder** population in the FAIR Health data in 2021 is shown in figure 23. Generalized anxiety disorder and major depressive disorder, in that order, were the two most common mental health diagnoses, each appearing in over a quarter of the distribution.

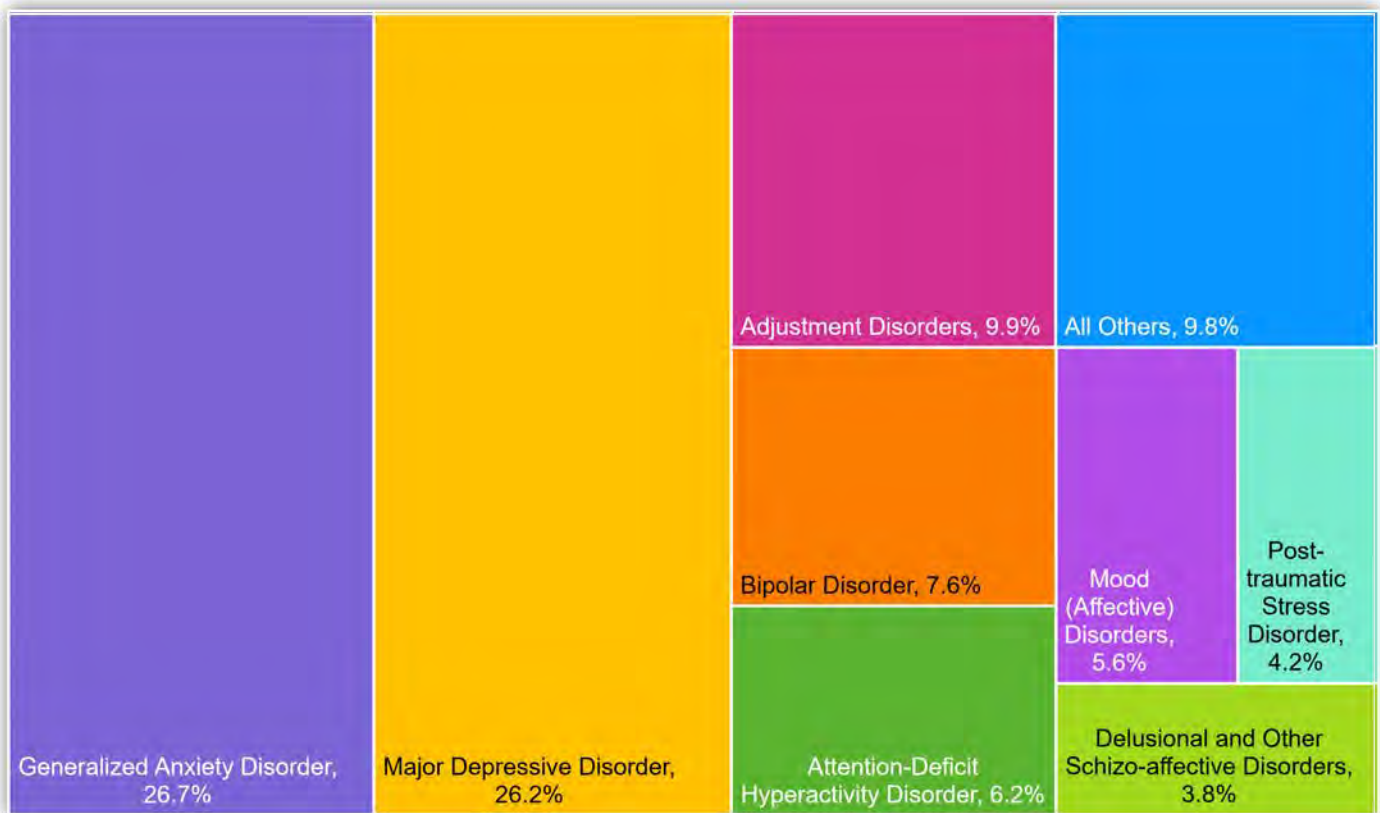


Figure 23. Distribution of preexisting mental health diagnoses in patients with a substance use disorder diagnosis, 2021

³⁹ "Spotlight on... Comorbid Substance Use and Mental Health Problems," European Monitoring Centre for Drugs and Drug Addiction, last updated October 18, 2021, https://www.emcdda.europa.eu/spotlights/comorbid-substance-use-and-mental-health-problems_en.

Results

The distribution of preexisting mental health diagnoses in patients with an **overdose diagnosis** in 2021 (figure 24) was similar to that in patients with a substance use disorder diagnosis (figure 23). In patients with an overdose diagnosis, generalized anxiety disorder (at 27.1 percent of the distribution) and major depressive disorder (at 24.8 percent) were again the two most common mental health diagnoses. There were some differences. Bipolar disorder accounted for a smaller share of overdose diagnoses (5.9 percent) than of substance use disorder diagnoses (7.6 percent). Among overdose diagnoses, post-traumatic stress disorder had a smaller share than delusional and other schizo-affective disorders, whereas among substance use disorder diagnoses, the opposite was true.

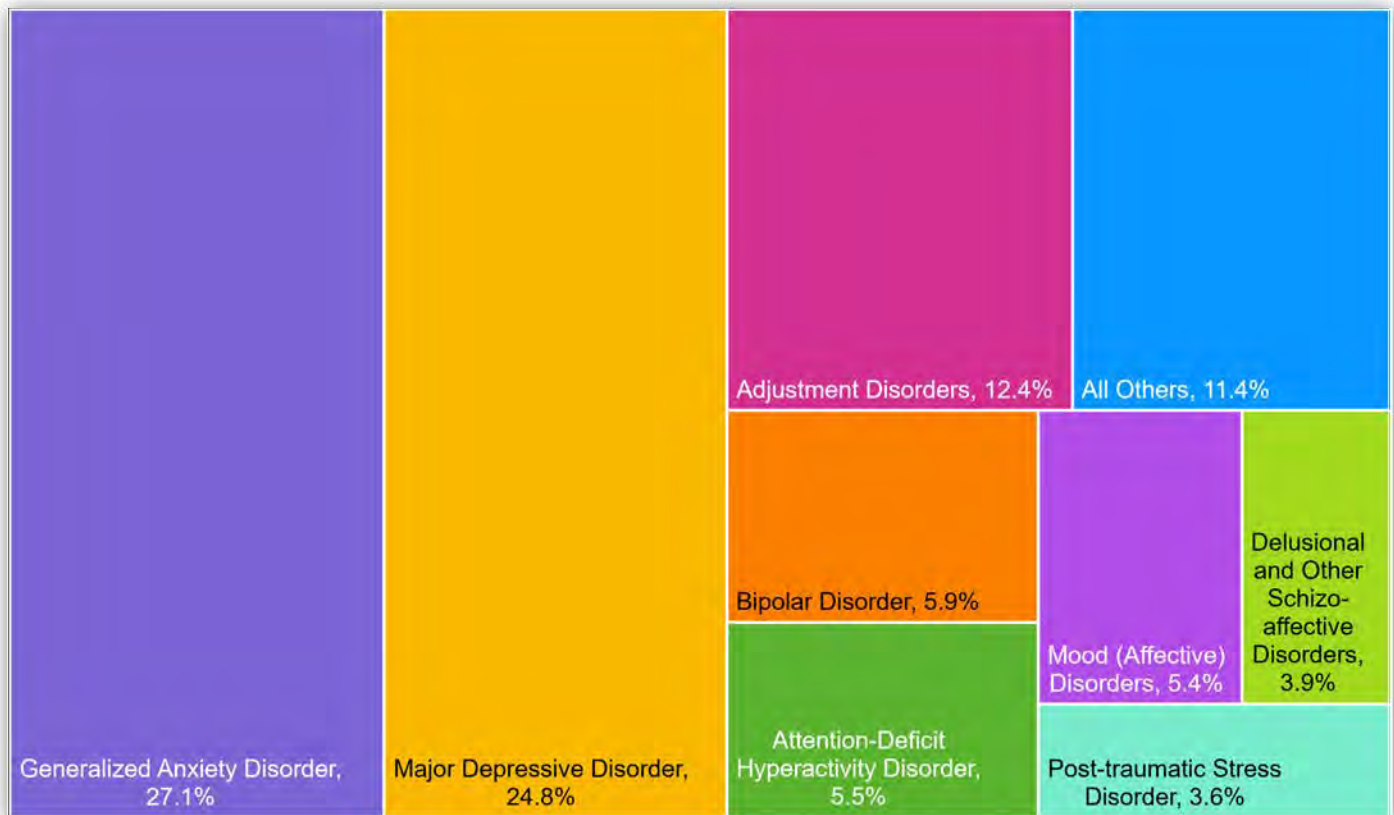


Figure 24. Distribution of preexisting mental health diagnoses in patients with an overdose diagnosis, 2021

Results

Venues of Care

During the pandemic, the percentage of substance use disorder services rendered via telehealth rose from 0.3 percent in 2019 to 11.3 percent in 2020, then dropped to 9.3 percent in 2021 (figure 25). This is consistent with telehealth usage trends observed throughout the pandemic via FAIR Health’s Monthly Telehealth Regional Tracker.⁴⁰ The percentage of substance use disorder services rendered in offices, outpatient facilities, inpatient facilities and emergency rooms fell from 2019 to 2020, though offices and outpatient facilities regained some of their share of the distribution in 2021.

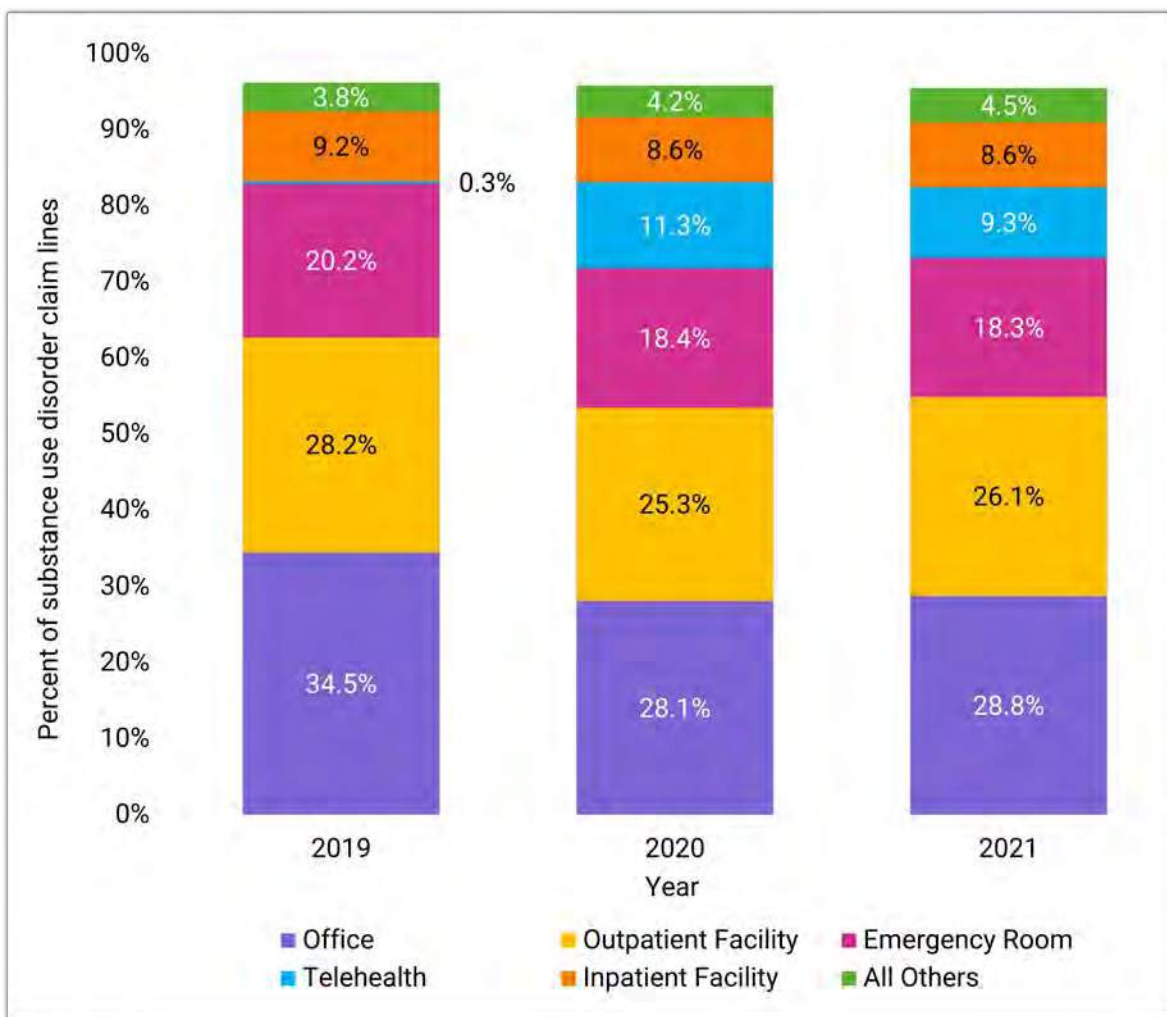


Figure 25. Distribution of substance use disorder claim lines by venue of care, 2019-2021

⁴⁰ "Monthly Telehealth Regional Tracker," FAIR Health, accessed July 25, 2022, <https://www.fairhealth.org/states-by-the-numbers/telehealth>.

Results

Provider Specialties

The mix of provider specialties treating patients for substance use disorders was already changing before the pandemic and continued to change during it (figure 26). Psychologists, social workers and other typical behavioral health providers declined by nearly 27 percent, from 40.9 percent of substance use disorder claim lines in 2016 to 29.9 percent in 2021. Primary care physicians remained fairly stable as providers of substance use disorder services, at about 37 to 39 percent each year.

Alternative providers, such as physician assistants, nurse practitioners, registered nurses and psychiatric nurses, increased each year in their share of the distribution, rising 32.1 percent from 9.7 percent in 2016 to 12.8 percent in 2021. Psychiatrists also increased their share each year, rising 112.4 percent from 3.9 percent of substance use disorder claim lines in 2016 to 8.3 percent in 2021.

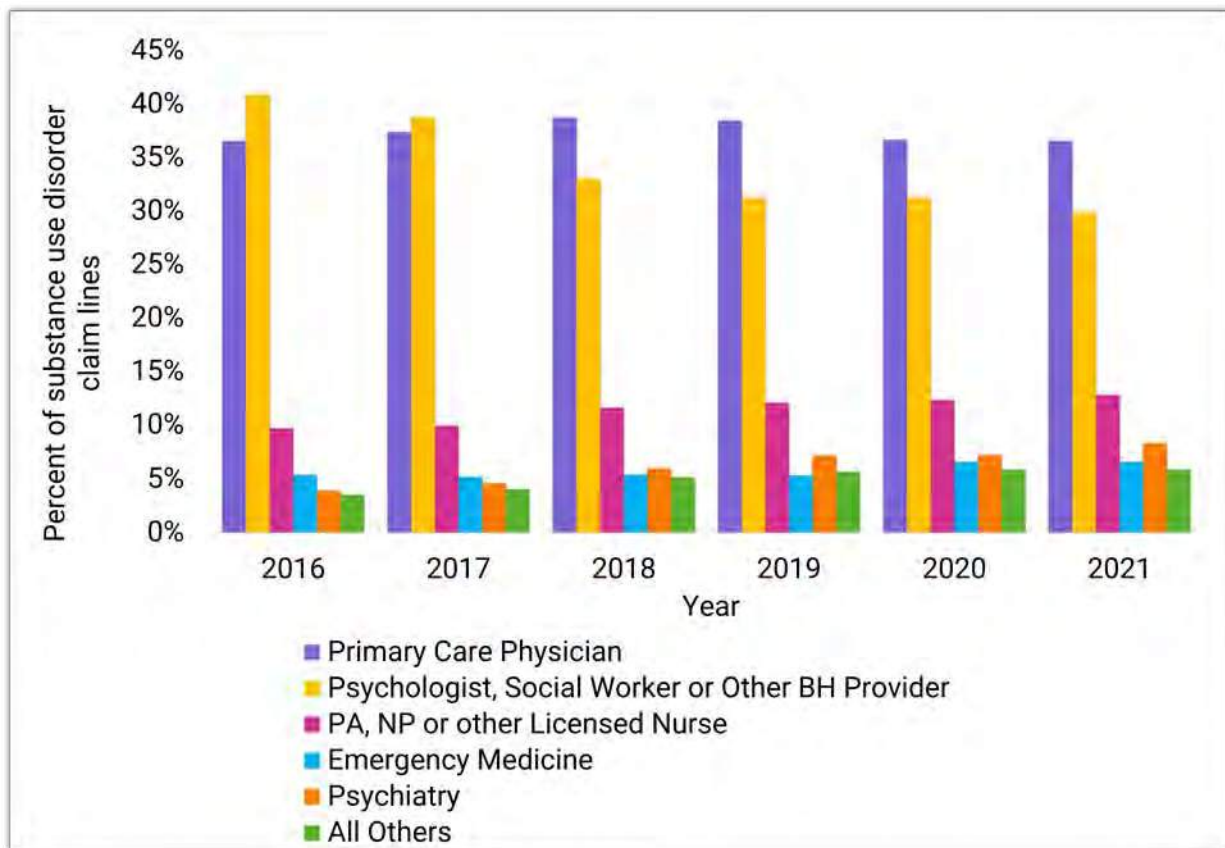


Figure 26. Distribution of substance use disorder claim lines by provider specialty, 2016-2021; BH means behavioral health; PA means physician assistant; NP means nurse practitioner

Results

During the pandemic, the percentage of substance use disorder services rendered by psychiatrists increased (figure 27). In 2019, before the pandemic, the percentage was relatively steady throughout the year at 7 to 7.3 percent. In 2020, when the pandemic began, the percentage rose as high as 9.4 percent in April and ended the year at 9 percent. In 2021, the percentage remained higher than in 2019 though in most months lower than in 2020, beginning the year at 9.1 percent in January and ending it at 8.5 percent in December. The growth in psychiatrists' share of substance use disorder services during the pandemic could be due in part to an increase in access to psychiatrists via telehealth.

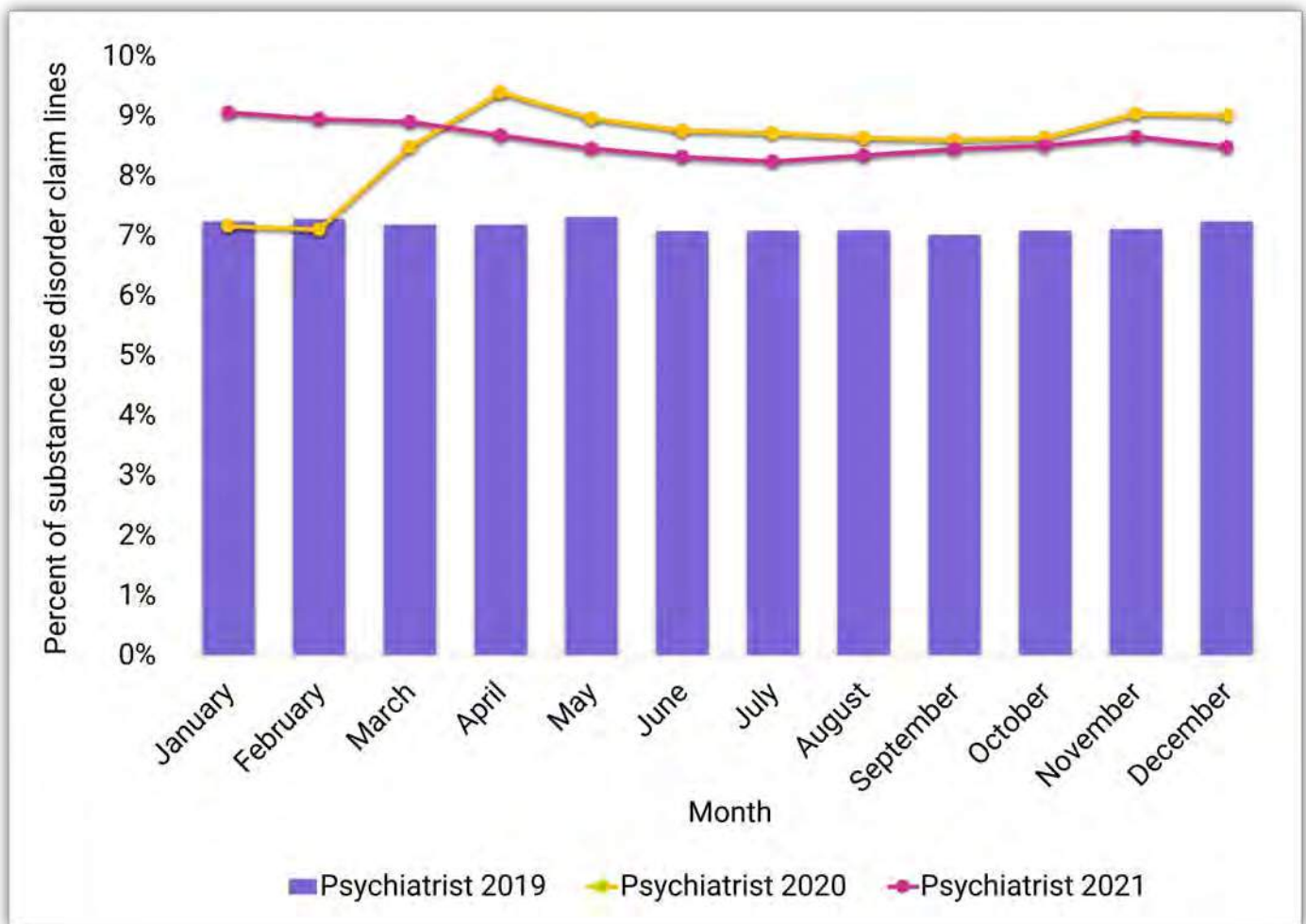


Figure 27. Percent of substance use disorder services rendered by psychiatrists by month and year, 2019-2021

Conclusion

This study of substance use disorders and overdoses before and during the COVID-19 pandemic makes several notable findings. From 2019 to 2021, the percentage of patients with a substance use disorder diagnosis decreased (except in one age group, those 65 and older) while the percentage of patients with an overdose diagnosis increased.

From 2019 to 2021, alcohol was the top substance associated with substance use disorders, with opioids in second place. In those years, alcohol's share of the distribution grew and opioids' share fell. From 2016 to 2021, the percentage share of patients with a substance use disorder involving stimulants increased 36.4 percent.

In every year of the period 2016-2021, males accounted for 62 to 63 percent of the gender distribution of patients with a substance use disorder diagnosis, while females made up 37 to 38 percent. In every year of the same period, females accounted for 60 to 61 percent of the gender distribution of patients with an overdose diagnosis, while males made up 39 to 40 percent.

“ ”

From 2019 to 2021, alcohol was the top substance associated with substance use disorders, with opioids in second place.

Conclusion

In 2021, the percentage of incident patients with a substance use disorder or overdose diagnosis increased month over month compared to the two prior years. Of all patients who had a substance use disorder or overdose diagnosis in 2021, 65 percent had a preexisting mental health condition.

In 2019 and 2021, New Mexico was the state with the highest proportion of patients with a substance use disorder or overdose diagnosis, and Nebraska was the state with the greatest increase in the proportion of patients with a substance use disorder diagnosis. Maryland was the state with the greatest increase in the proportion of patients with an overdose diagnosis. From 2019 to 2021, 42 states saw an increase in the proportion of patients with opioid and opioid-like drug overdoses.

The percentage of substance use disorder services rendered via telehealth rose from 0.3 percent in 2019 to 11.3 percent in 2020, then dropped to 9.3 percent in 2021. Psychiatrists' share of substance use disorder claim lines increased 112.4 percent from 2016 to 2021.

The findings in this report have implications for stakeholders across the healthcare spectrum, including patients, providers, payors and policy makers. FAIR Health hopes that these findings will also be starting points for further research on substance use disorders and overdoses before and during the COVID-19 pandemic.

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Of all patients who had a substance use disorder or overdose diagnosis in 2021, 65 percent had a preexisting mental health condition.

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About FAIR Health

FAIR Health is a national, independent nonprofit organization dedicated to bringing transparency to healthcare costs and health insurance information through data products, consumer resources and health systems research support. FAIR Health qualifies as a public charity under section 501(c)(3) of the federal tax code. FAIR Health possesses the nation's largest collection of private healthcare claims data, which includes over 38 billion claim records and is growing at a rate of over 2 billion claim records a year. FAIR Health licenses its privately billed data and data products—including benchmark modules, data visualizations, custom analytics and market indices—to commercial insurers and self-insurers, employers, providers, hospitals and healthcare systems, government agencies, researchers and others. Certified by the Centers for Medicare & Medicaid Services (CMS) as a national Qualified Entity, FAIR Health also receives data representing the experience of all individuals enrolled in traditional Medicare Parts A, B and D; FAIR Health includes among the private claims data in its database, data on Medicare Advantage enrollees. FAIR Health can produce insightful analytic reports and data products based on combined Medicare and commercial claims data for government, providers, payors and other authorized users. FAIR Health's free, award-winning, national consumer websites are fairhealthconsumer.org and fairhealthconsumidor.org. For more information on FAIR Health, visit fairhealth.org.

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