Medicaid Section 1115 Substance Use Disorder (SUD) Demonstrations: An In-Depth Look Into Pre-demonstration Measures of SUD Need, Treatment Use, Availability, and Outcomes Across States

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Introduction

Drug overdose is the leading cause of accidental death in America, and opioids were involved in 75 percent of overdose deaths in 2020.[1] Factors contributing to the high number of overdose deaths include low rates of treatment for substance use disorder (SUD),[2] the stigma associated with seeking treatment,[3] and a shortage of health care professionals to treat SUD.[4] Medicaid beneficiaries face additional barriers to finding a treatment setting that meets their needs because of low participation in Medicaid by SUD treatment facilities.[5] Moreover, many SUD services are an optional benefit in Medicaid, and most states historically have not covered the full continuum of SUD services. Through section 1115 demonstrations, the Centers for Medicare & Medicaid Services (CMS) is partnering with states to test means of increasing access to the full continuum of care for SUD, including medication assisted treatment (MAT) and residential treatment, as advocated by leading treatment addiction experts.[6,7,8]

This report is part of a series of rapid cycle reports intended to share findings and insights about section 1115 SUD demonstrations. This report focuses on the pre-demonstration measures of SUD treatment need, treatment use, treatment availability, and health outcomes for Medicaid section 1115 SUD demonstration states that had demonstrations approved by June 1, 2020. The report also provides analogous findings for states without an approved section 1115 SUD demonstration by June 1, 2020.

Understanding the pre-demonstration levels of SUD treatment need, treatment use, treatment availability, and SUD-related health and mortality outcomes among Medicaid beneficiaries in section 1115 SUD demonstration states, and how these differ from measures in states that did not have an approved section 1115 SUD demonstration by June 2020, will help ensure estimates of the impact of SUD demonstrations are valid. Rigorous impact estimates for the section 1115 SUD demonstration states support CMS's goal of improving beneficiary outcomes and reducing mortality rates among the Medicaid SUD population.

The report addresses four main questions for the pre-demonstration period:

1. What was the prevalence of SUD among Medicaid beneficiaries in each state?
2. To what extent were Medicaid beneficiaries in each state receiving SUD treatment?
3. What was the availability of SUD treatment for Medicaid beneficiaries in each state?
4. What were the SUD-related health outcomes in each state (opioid use disorder [OUD]-related inpatient and emergency department [ED] use among Medicaid beneficiaries, and overdose death rates among the general population)?

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[1] Centers for Disease Control and Prevention (CDC). (2022). *Drug overdose deaths remain high.* https://www.cdc.gov/drugoverdose/deaths/

[2] Substance Abuse and Mental Health Services Administration (SAMHSA). (2020). *Key substance use and mental health indicators in the United States: Results from the 2019 National Survey on Drug Use and Health*. HHS Publication No. PEP20-07-01-001, NSDUH Series H-55. Rockville, MD: SAMHSA, Center for Behavioral Health Statistics and Quality. https://www.samhsa.gov/data/sites/default/files/reports/rpt29393/2019NSDUHFFRPDFWHTML/2019NSDUHFFR1PDFW090120.pdf

[3] Cheetham A., Picco L., Barnett A., Lubman D.I., & Nielsen S. (2022). The impact of stigma on people with opioid use disorder, opioid treatment, and policy. *Substance Abuse Rehabilitation, 13,* 1-12. doi: 10.2147/SAR.S304566.

[4] Jones, C. M., Campopiano, M., Baldwin, G., & McCance-Katz, E. (2015). National and state treatment need and capacity for opioid agonist medication-assisted treatment. *American Journal of Public Health, 105*(8), e55–e63.

[5] MACPAC. (2018). *Access to substance use disorder treatment in Medicaid.* Chapter 4 in 2017 Report to Congress (June). MACPAC: Washington, DC.

[6] Centers for Medicare and Medicaid Services (CMS). (2015). *SMD # 15-003: New service delivery opportunities for individuals with a substance use disorder.* https://www.medicaid.gov/federal-policy-guidance/downloads/smd15003.pdf

[7] CMS. (2017). *SMD # 17-003: Strategies to address the opioid epidemic.* https://www.medicaid.gov/federal-policy-guidance/downloads/smd17003.pdf

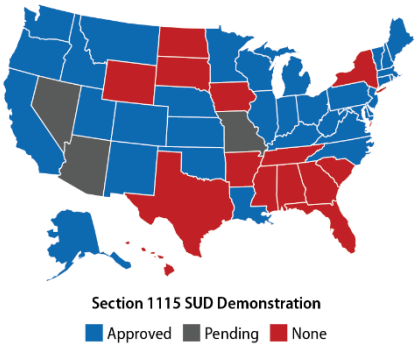
[8] CMS, SAMHSA, National Institutes of Health. (2014). *Medication assisted treatment for substance use disorders.* https://www.medicaid.gov/federal-policy-guidance/downloads/cib-07-11-2014.pdf

About Section 1115 SUD Demonstrations

The goals of section 1115 SUD demonstrations include increasing access to SUD treatment and raising rates of identification, initiation, and engagement in treatment; increasing treatment adherence and retention; reducing overdose mortality; decreasing preventable or inappropriate emergency department and inpatient hospital utilization; reducing preventable or inappropriate readmissions to the same or higher level of care; and improving access to care for physical health conditions.

As of October 2022, 33 states and the District of Columbia had received approval for section 1115 SUD demonstrations; 3 other states had pending applications (**Figure 1**).

Figure 1. Section 1115 SUD demonstration status as of October 2022



Generally, to receive approval for a section 1115 SUD demonstration, states must outline their plans for expanding access to multiple levels of evidence-based care and explain how inpatient and residential SUD services will coordinate with community-based recovery services. States with approved section 1115 SUD demonstrations can receive federal financial participation (FFP) for SUD treatment services provided in residential and inpatient facilities that qualify as institutions for mental diseases (IMDs). These demonstrations generally require the state to submit and carry out implementation plans that set forth how the state will reach the following six milestones:

1. Access to critical levels of care for OUD and other SUDs.
2. Widespread use of evidence-based, SUD-specific patient placement criteria.
3. Use of nationally recognized, evidence-based SUD program standards to set residential treatment provider qualifications, including implementation of a requirement that residential treatment facilities offer MAT on-site or facilitate access off-site.
4. Sufficient provider capacity at each level of care.
5. Implementation of comprehensive treatment and prevention strategies to address opioid abuse and OUD.
6. Improved care coordination and transitions between levels of care.

Overview of Findings

- Prior to the demonstration, SUD prevalence and treatment rates among Medicaid beneficiaries were higher in states that had an approved or pending section 1115 SUD demonstration by June 2020 than in states that did not have an approved or pending section 1115 SUD demonstration. However, prevalence and utilization rates varied considerably among the demonstration states.
- Prior to the demonstration, most demonstration states had opportunity for improvement in the availability of medication for opioid use disorder (MOUD) for beneficiaries receiving treatment in facilities. Overall, one-third of SUD treatment facilities in these states did not accept Medicaid in 2016, and less than half of treatment facilities that accepted Medicaid offered MOUD in 2016.
- Many states that had not applied for a demonstration by June 2020 had lower rates of and slower increases in SUD prevalence, drug overdose death rates, and opioid-related hospitalization rates than demonstration states. Urban areas had higher rates of substance-related, and specifically opioid, overdose deaths than rural areas during the pre-demonstration period.
- Future analyses will examine the impact of the section 1115 SUD demonstration on SUD treatment access, utilization, and health outcomes across states. Impacts are likely to vary depending on states' pre-demonstration SUD treatment needs, treatment use, and treatment availability. States that had high levels of unmet SUD treatment need among Medicaid beneficiaries and high rates of opioid-related hospitalization and substance-related overdose deaths prior to the demonstration have the potential to see large improvements in SUD treatment and health and mortality outcomes.

Approach

This report uses data from publicly available sources to focus on measures of SUD treatment need, treatment use, treatment availability, and SUD-related health outcomes among Medicaid beneficiaries to reflect each state's status before section 1115 SUD demonstrations were implemented. **Table 1** lists the measures examined in this report and for each measure indicates the milestone or goal assessed and the data source used. Depending on the data source, measures are reported from 2010 through 2017. Although states implemented their demonstrations at different times, the analyses use a common pre-demonstration period for all states.

Results are shown by state and for three demonstration groups based on states' demonstration status as of June 2020: (1) states with approved section 1115 SUD demonstrations, (2) states with section 1115 SUD demonstration applications pending, and (3) states without a section 1115 SUD demonstration.[9] Meta-analysis of section 1115 SUD demonstration impacts will evaluate changes in the **Table 1** measures brought about by the demonstration and explore which demonstration features had the greatest impacts. The meta-analysis will also examine how demonstrations affected disparities in SUD treatment availability, utilization, and outcomes, including disparities between urban and rural areas.

Methodological details are in **Appendix A**, and additional findings are provided in **Appendix B**. **Appendix C** supplements the analysis of overdose deaths by examining differences between urban and rural areas for both demonstration and non-demonstration states.

Table 1. Measures of SUD need, treatment use, treatment availability, and health outcomes

Measure	Demonstration Milestone/Goal	Data Source, Year
SUD and OUD prevalence among Medicaid beneficiaries	Goal #1: Increase rates of identification of need for, initiation of, and engagement in SUD treatment	National Survey on Drug Use and Health (NSDUH), 2016–2017
SUD and OUD treatment use among Medicaid beneficiaries	Milestone #1: Access to critical levels of care for OUD and other SUDs	SUD Data Book, 2017
SUD treatment availability for Medicaid beneficiaries, including MOUD	Milestone #4: Sufficient provider capacity at critical levels of care	National Survey of Substance Abuse Treatment Services (N-SSATS), 2010–2016
Alcohol and drug overdose death rates	Goal #3: Reduce overdose deaths, particularly those due to opioids	CDC WONDER, 2010–2016
Opioid-related hospital ED visit and inpatient discharge rates among Medicaid beneficiaries	Goal #4: Reduce preventable or medically inappropriate SUD-related ED and inpatient hospital utilization	Healthcare Cost and Utilization Project (HCUP), 2010–2014; 2016

Results

SUD and OUD Prevalence

The first goal of the section 1115 SUD demonstrations is to increase identification of the need for, initiation of, and engagement in SUD treatment among Medicaid beneficiaries. The need for treatment is reflected in the prevalence of SUD and OUD. **Figure 2** shows state prevalence rates of SUD and OUD per 100,000 Medicaid beneficiaries in 2016–2017, ranked from those with the highest SUD prevalence rates to those with the lowest.[10] States shown with blue in the bar chart had an approved section 1115 SUD demonstration as of June 2020, states shown with gray in the bar chart had a pending section 1115 SUD demonstration application, and states in red in the bar chart did not have a section 1115 SUD demonstration. SUD prevalence rates are shown with lighter shading, and OUD prevalence rates, a subset of SUD, are shown with darker shading, except in states with suppressed OUD data. The most common non-OUD SUD was alcohol use disorder, followed by cannabis use disorder.

SUD and OUD Treatment Utilization

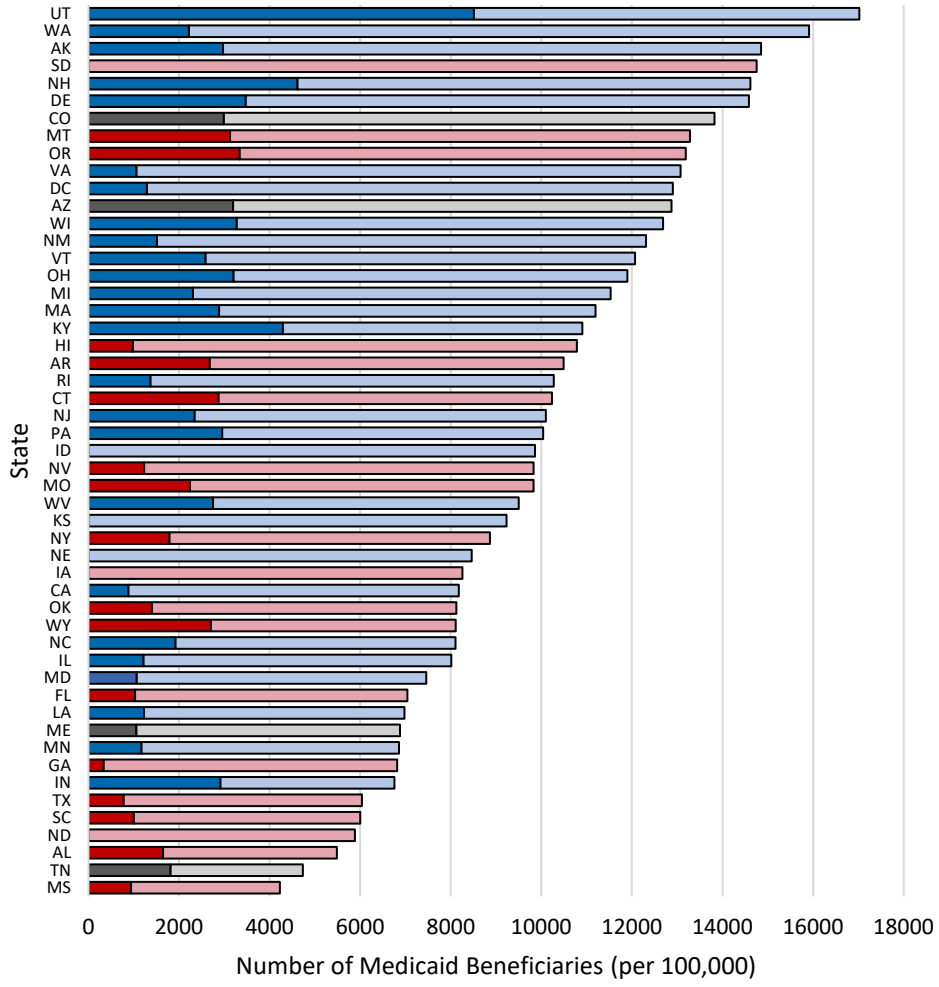
After identifying the need for SUD, including OUD, treatment among Medicaid beneficiaries, it is important to assess the extent to which beneficiaries with an SUD are accessing and using treatment services. **Figure 3** illustrates the use of SUD and OUD treatment services by Medicaid beneficiaries prior to or early in the section 1115 SUD demonstration.[11] We examined treatment utilization per 100,000 Medicaid beneficiaries in 2017. Medicaid beneficiaries were considered to have utilized SUD treatment if, in 2017, they had at least one qualifying inpatient claim for a SUD, two outpatient or long-term care claims for SUD treatment on different dates, or one pharmacy claim for medication to treat SUD. Section 1115 SUD demonstration states are shown in blue, states with pending section 1115 demonstration applications are in gray, and states without a section 1115 SUD demonstration are in red. All states are ranked from the highest SUD treatment utilization rate to the lowest. Total SUD treatment utilization rates are shown with the lighter shading, and OUD treatment utilization rates are shown with darker shading. Averages were weighted based on the number of Medicaid beneficiaries per state.

[9] For brevity, we refer to states and the District of Columbia as "states."

[10] Although California, Massachusetts, and Virginia received section 1115 SUD demonstration approvals in early 2016, the earliest date of section 1115 SUD demonstration implementation was January 1, 2017, for Maryland and for selected counties in California. Hence, 2016–2017 NSDUH data largely reflects a pre-demonstration time period for all states.

[11] Seven states had section 1115 SUD demonstrations approved prior to or during the 2017 calendar year: California (December 2015), Massachusetts (November 2016), Virginia (December 2016), Maryland (January 2017), West Virginia (October 2017), New Jersey (October 2017), and Utah (October 2017). Only California, Maryland, and Virginia had section 1115 SUD demonstrations approved and implemented before the first half of 2017. For California and Maryland, the implementation date was Jan. 1, 2017; for Virginia, it was Apr. 1, 2017.

Figure 2. SUD and OUD prevalence rates per 100,000 Medicaid beneficiaries, 2016–2017*

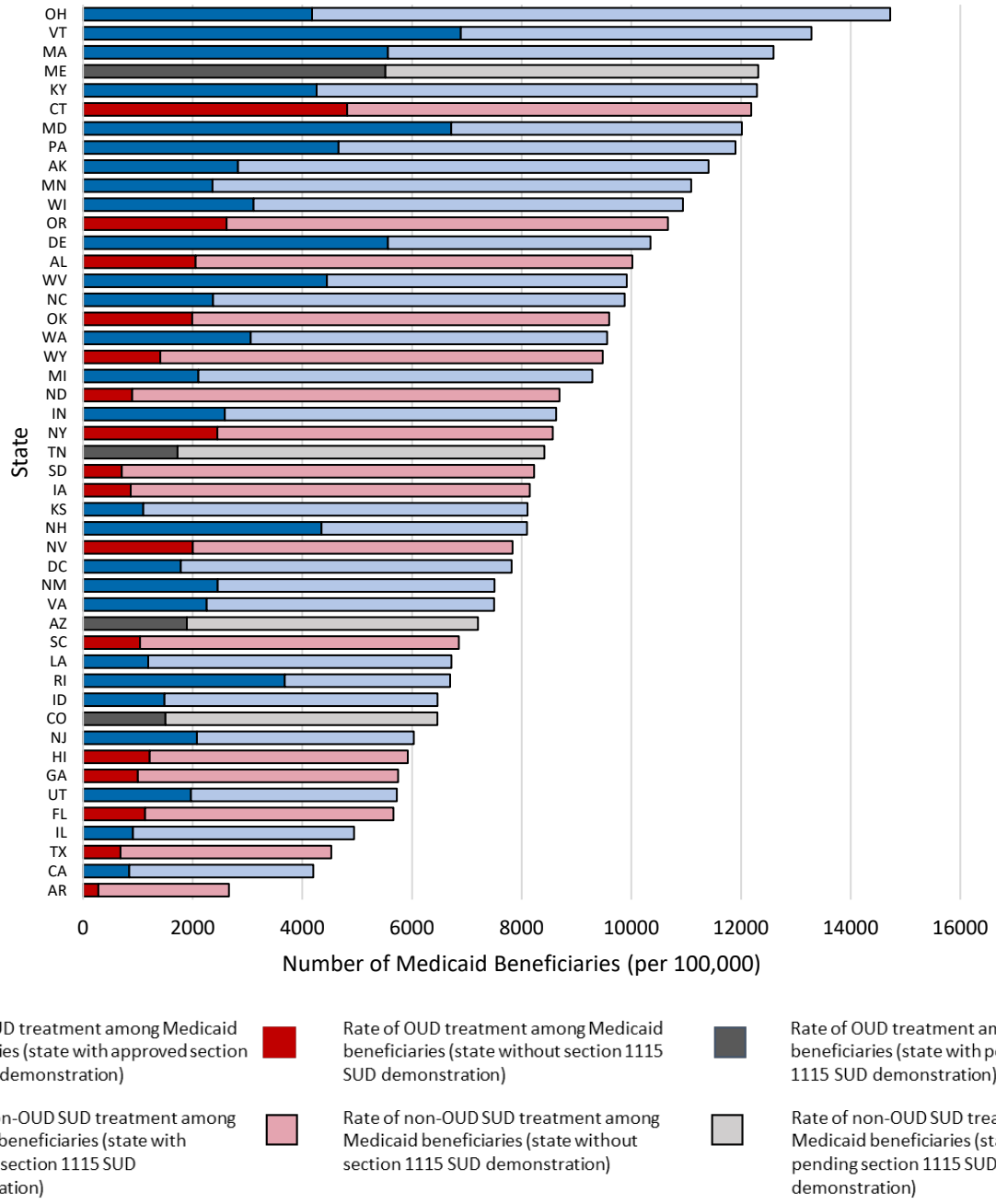


* Data source: State prevalence data from the NSDUH, 2016–2017. Data on OUD prevalence for Medicaid beneficiaries are unavailable for six states—Idaho, Iowa, Kansas, Nebraska, North Dakota, and South Dakota—due to data suppression rules; only non-OUD SUD prevalence among Medicaid beneficiaries is shown for these states. Estimates have wide confidence intervals, with the confidence range for Utah being ±16,000 per 100,000.

Note: The demonstration status of all states is as of June 1, 2020.

- The average SUD prevalence rate across approved or pending section 1115 SUD demonstration states was 9,765 per 100,000 Medicaid beneficiaries; average OUD prevalence was 1,940 per 100,000 beneficiaries. Averages were weighted by the number of Medicaid beneficiaries in each state. With a few exceptions, states with the highest SUD prevalence rates had approved or pending section 1115 SUD demonstrations.
- The SUD prevalence rate in approved or pending section 1115 SUD demonstration states ranged from approximately 6,755 per 100,000 Medicaid beneficiaries in Indiana to 17,021 per 100,000 beneficiaries in Utah. California had the lowest OUD prevalence rate among Medicaid beneficiaries (883 per 100,000), and Utah had the highest OUD prevalence rate (8,511 per 100,000).
- Among states without a section 1115 SUD demonstration, the average SUD prevalence rate was 8,010 per 100,000 Medicaid beneficiaries, and the average OUD prevalence rate was 1,472 per 100,000 beneficiaries. States without a section 1115 SUD demonstration also had considerable variability in prevalence, with SUD prevalence ranging from 4,225 per 100,000 Medicaid beneficiaries in Mississippi to 14,754 per 100,000 beneficiaries in South Dakota.

Figure 3. Rates of SUD and OUD treatment utilization among Medicaid beneficiaries, 2017



Data source: 2017 SUD Data Book (2019). SUD treatment includes tobacco cessation treatment.

Note: The demonstration status of all states is as of June 1, 2020.

- On average across states with an approved or pending section 1115 SUD demonstration, the total SUD treatment utilization rate in 2017 was 8,388 per 100,000 Medicaid beneficiaries and the OUD treatment utilization rate was 2,604 per 100,000 beneficiaries. States with the highest rates of OUD treatment in 2017 had approved or pending section 1115 SUD demonstrations as of June 1, 2020, including Vermont, Maryland, Massachusetts, Delaware, Maine, Pennsylvania, West Virginia, and New Hampshire.
- Among approved or pending section 1115 SUD demonstration states, SUD treatment utilization rates ranged from 4,200 per 100,000 Medicaid beneficiaries in California to 14,721 per 100,000 beneficiaries in Ohio. The range of OUD treatment utilization rates among Medicaid beneficiaries spanned from 843 per 100,000 in California to 6,890 per 100,000 in Vermont.
- The SUD treatment utilization rate across states without a section 1115 SUD demonstration averaged 7,326 per 100,000 Medicaid beneficiaries; the OUD treatment utilization rate in these states was 1,734 per 100,000 beneficiaries. Treatment utilization rates for SUD ranged from 2,661 in Arkansas to 12,187 in Connecticut.

In 2017, SUD prevalence and treatment rates among Medicaid beneficiaries were higher in states that had an approved or pending section 1115 SUD demonstration by June 2020 than in states that had not applied for a section 1115 SUD demonstration by June 2020 (**Figures 2** and **3**). However, prevalence and utilization rates varied considerably among the section 1115 SUD demonstration states. Many had relatively low rates of SUD prevalence and treatment utilization among Medicaid beneficiaries before demonstration implementation. This has several implications for the meta-evaluation:

- In states with low prevalence or treatment rates, the section 1115 SUD demonstration could increase identification of SUD need and increase service use for individuals who previously lacked access to SUD treatment services through Medicaid.
- In states with high prevalence or treatment rates, the section 1115 SUD demonstration could change the types of SUD services available to individuals through Medicaid, thus leading to improved health outcomes among beneficiaries with an SUD.
- Because OUD is not always the most prevalent type of SUD in section 1115 SUD demonstration states, for demonstration efforts that primarily address OUD (e.g., access to MOUD), it might be hard to observe improvements in health outcomes among beneficiaries with an SUD.

For some states, the rate of treatment utilization was higher than the SUD prevalence rate. For example, estimated SUD prevalence in Maine was 7,000 per 100,000 Medicaid beneficiaries, while the rate of treatment exceeded 12,000 per 100,000 beneficiaries. For Ohio, SUD prevalence was 12,000 per 100,000 beneficiaries, but the treatment rate was almost 14,000 per 100,000 beneficiaries.

There are two main reasons for the discrepancies between state SUD prevalence and SUD treatment rates. First, prevalence rate estimates do not include tobacco use, while SUD treatment rates include tobacco cessation treatment. Second, recent evidence suggests that NSDUH may underestimate SUD prevalence, particularly OUD.[12] These data discrepancies prevent direct comparison of prevalence and treatment rates in this report. However, a recent Substance Abuse and Mental Health Services Administration (SAMHSA) report found that 12.5 percent of individuals who needed SUD treatment in 2017 were receiving it, suggesting considerable unmet need for treatment for all SUD across the United States.[13]

SUD Treatment Availability

Section 1115 SUD demonstration states may need to increase provider capacity, including increasing the availability of SUD treatment services for Medicaid beneficiaries. Having sufficient availability of SUD and OUD treatment services for Medicaid beneficiaries who need them will ensure that section 1115 SUD demonstration goals around increasing engagement and retention in services can be met.

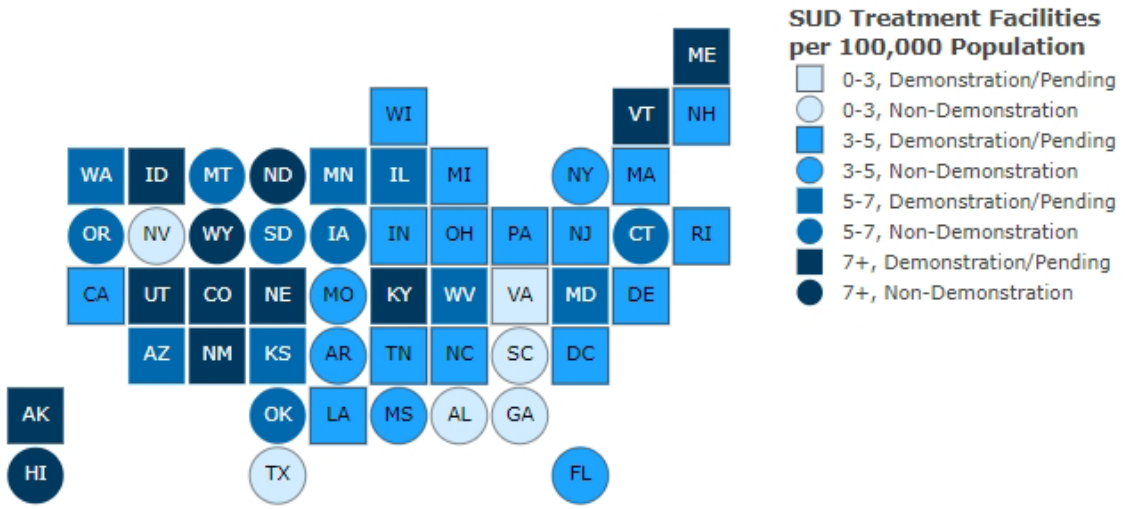
To achieve milestone 4 (sufficient provider capacity), section 1115 SUD demonstration states will need to increase the number and proportion of providers that accept Medicaid, and among those providers, increase the proportion that offers MOUD. **Figure 4** presents 2016 data on SUD treatment facilities per 100,000 population and **Figure 5** presents 2016 data on SUD treatment facilities that accepted Medicaid per 100,000 Medicaid beneficiaries. Treatment facilities are defined as physical locations where specialty SUD treatment is provided. Individual practitioners and establishments, such as halfway houses that do not provide treatment, are excluded.

The figures show states with approved or pending section 1115 SUD demonstrations as of June 2020 as squares and states without a section 1115 SUD demonstration as circles.

[12] Bharel, M. (2019). The true prevalence of opioid use disorder nationally is likely underestimated. *American Journal of Public Health, 109*(2), 214-215. doi:10.2105/AJPH.2018.304865

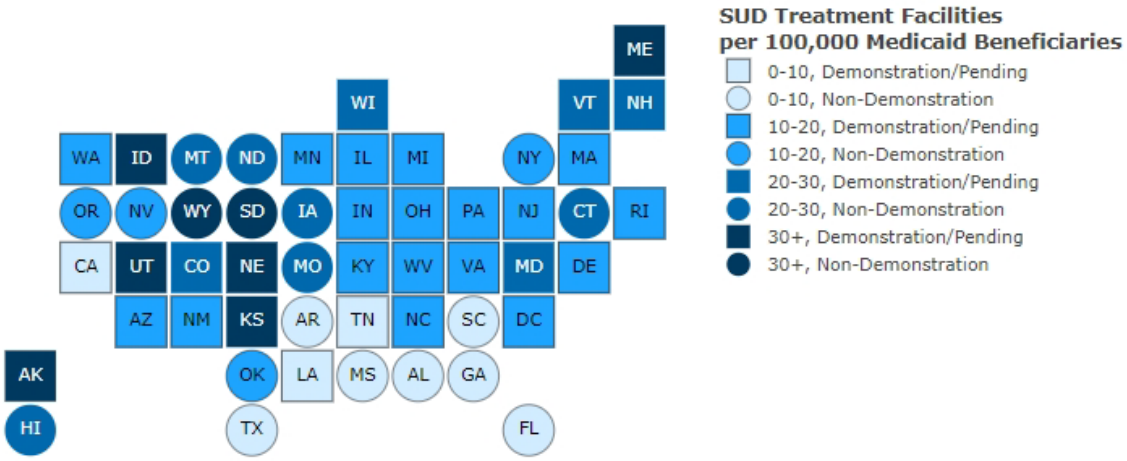
[13] Substance Abuse and Mental Health Services Administration. (2018). *Key substance use and mental health indicators in the United States: Results from the 2017 National Survey on Drug Use and Health*. (HHS Publication No. SMA 18-5068, NSDUH Series H-53). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data/sites/default/files/cbhsq-reports/NSDUHFFR2017/NSDUHFFR2017.pdf

Figure 4. SUD treatment facilities per 100,000 population, 2016



Data source: National Survey of Substance Abuse Treatment Services (N-SSATS). Notes: The demonstration status of all states is as of June 1, 2020. States with pending section 1115 SUD demonstration applications at that time are represented using circles.

Figure 5. SUD treatment facilities that accept Medicaid per 100,000 Medicaid beneficiaries, 2016



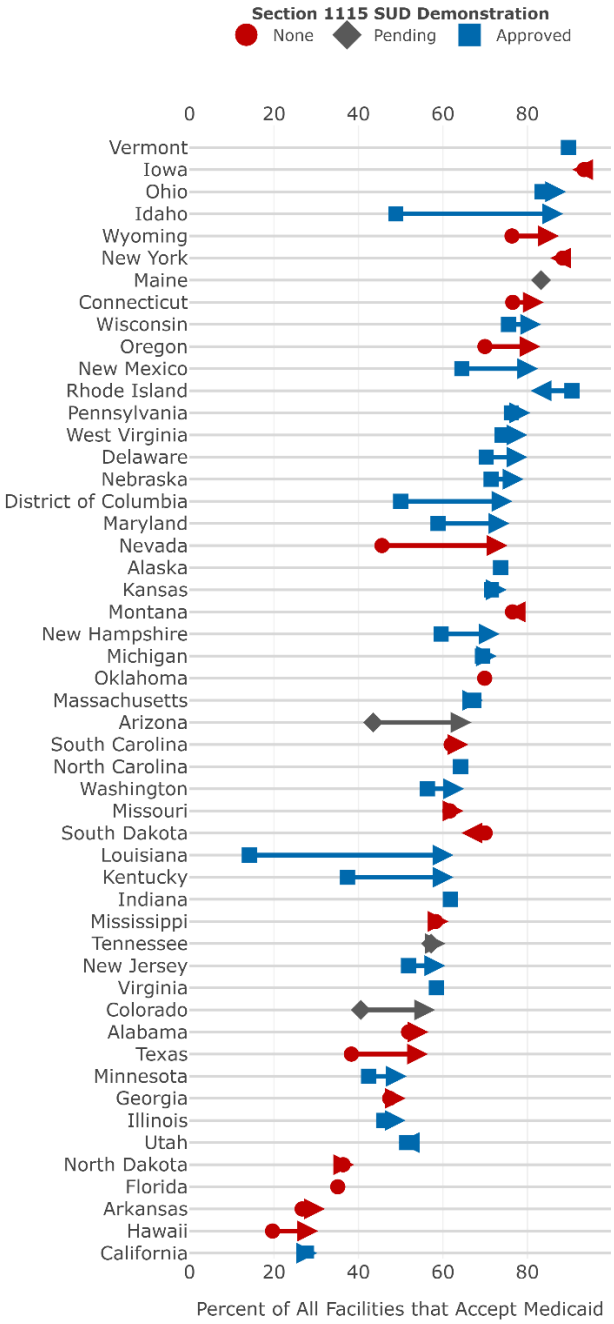
Data source: National Survey of Substance Abuse Treatment Services (N-SSATS). Notes: The demonstration status of all states is as of June 1, 2020. States with pending section 1115 SUD demonstration applications at that time are represented using circles.

- Across all approved section 1115 SUD demonstration states, the average number of facilities was 5.6 per 100,000 population in 2016. The facility rate per 100,000 population in 2016 ranged from 3 in Virginia to 13 in Alaska. Maine, which had a pending section 1115 SUD demonstration application in June 2020, had 17 facilities per 100,000 population in 2016.
- Across all states without a section 1115 SUD demonstration, the average number of facilities was 5.0 per 100,000 population in 2016. The facility rate per 100,000 population in 2016 ranged from 2 in Texas to 12 in Hawaii.
- Across all approved section 1115 SUD demonstration states, an average of 20.4 facilities accepted Medicaid per 100,000 Medicaid beneficiaries in 2016. The number of Medicaid facilities per 100,000 beneficiaries in 2016 ranged from 4 for California to 48 for Alaska. Maine, which had a pending section 1115 SUD demonstration application, had 70 facilities per 100,000 beneficiaries in 2016.
- Across all states without a section 1115 SUD demonstration, on average 17.8 facilities per 100,000 Medicaid beneficiaries accepted Medicaid in 2016. The number of Medicaid facilities per 100,000 beneficiaries in 2016 ranged from 4 in Arkansas to 64 in Wyoming.

Figure 6 presents data on the percentage of treatment facilities that accepted Medicaid and **Figure 7** presents data on the percentage of treatment facilities that offered MOUD among those that accepted Medicaid. The figures show states with approved section 1115 SUD demonstrations as of June 2020 in blue (square), states with pending section 1115 SUD demonstration applications in gray (diamond), and states without a section 1115 SUD demonstration in red (dot). The value for each state in 2010 is shown with a solid shape, and the arrow shows the direction of change between 2010 and 2016, with the arrowhead indicating the 2016 value. In **Figures 6** and **7**, states are sorted by those with the highest values in 2016 to those with the lowest values. Annual averages were weighted based on the number of facilities in each state.

- Across all approved or pending section 1115 SUD demonstration states, 62 percent of treatment facilities accepted Medicaid in 2016. Percentages of facilities that accepted Medicaid in 2016 ranged from 30 percent in California to 91 percent in Vermont.
- Several states with relatively low population levels, such as Maine, Wyoming, Alaska, Hawaii, and Idaho, had higher rates of available SUD treatment facilities than other states. Yet, among these states only Wyoming and Maine had correspondingly high percentages of SUD treatment facilities that accepted Medicaid (above 80 percent).
- Some states for which more than 80 percent of SUD treatment facilities accepted Medicaid in 2016 had relatively low rates of SUD treatment facility availability. For example, although about 82 percent of New York treatment facilities accepted Medicaid, statewide there were fewer than 20 facilities per 100,000 Medicaid beneficiaries, suggesting that despite high percentages of facilities accepting Medicaid, the total number of facilities available to Medicaid beneficiaries may be insufficient to meet need.
- Section 1115 SUD demonstration states that saw the largest increase between 2010 and 2016 were Louisiana, which increased from 14 percent to 62 percent, and Idaho, which increased from 49 percent to 88 percent. Across all section 1115 SUD demonstration states, 54 percent of facilities accepted Medicaid in 2010.
- Percentages accepting Medicaid increased between 2010 and 2016 for all except six states (two section 1115 SUD demonstration states and four states without a section 1115 SUD demonstration). States with and without section 1115 SUD demonstrations were observed across the full range of Medicaid acceptance percentages in 2016.
- Among states without section 1115 SUD demonstrations, 63 percent of treatment facilities accepted Medicaid in 2016, up two points from the 2010 value. These states also had considerable variability in Medicaid acceptance in 2016, ranging from 30 percent in Hawaii to 91 percent in Iowa.

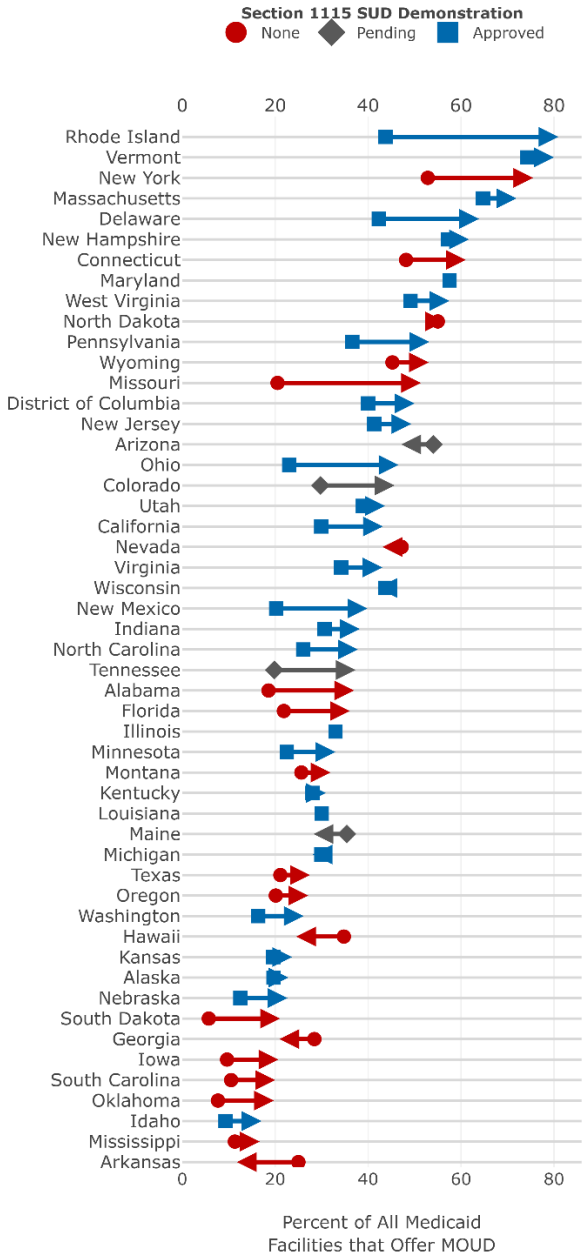
Figure 6. Percentage of SUD treatment facilities that accepted Medicaid, 2010–2016



Data source: National Survey of Substance Abuse Treatment Services (N-SSATS). Because Vermont, Maine, and Indiana all had increases of less than one percentage point, the arrow showing this increase is not visible in the figure. Note: The demonstration status of all states is as of June 1, 2020.

- In 2016, 42 percent of facilities in approved or pending section 1115 SUD demonstration states that accepted Medicaid offered MOUD. Section 1115 SUD demonstration state Medicaid acceptance percentages ranged from a low of 17 percent in Idaho to a high of 81 percent in Rhode Island.
- Although Maine, Wyoming, Alaska, Hawaii, and Idaho had higher rates of available SUD treatment facilities for Medicaid beneficiaries than other states, among these states, only Wyoming had more than half of Medicaid facilities offering MOUD. This finding suggests that despite the relatively large number of treatment facilities available for Medicaid beneficiaries in these states the services most needed by beneficiaries with OUD are not offered in most of these facilities.
- Between 2010 and 2016, Rhode Island had the largest increase among section 1115 SUD demonstration states in the percentage of Medicaid facilities offering MOUD (from 44 percent to 81 percent). Ohio and Delaware both saw greater than 20-point increases in the percentages of facilities offering MOUD over the 2010 to 2016 period (23 percent to 47 percent in Ohio and 42 percent to 64 percent in Delaware).
- The percentage of Medicaid facilities offering MOUD increased in most states. Four states with a section 1115 SUD demonstration and four states without a section 1115 SUD demonstration saw decreases in the percentages of Medicaid facilities that offered MOUD.
- Across states without a section 1115 SUD demonstration, 44 percent of Medicaid facilities offered MOUD in 2016, ranging from 12 percent in Arkansas to 76 percent in New York. Arkansas was one of the eight states that experienced a decline from their 2010 values.

Figure 7. MOUD availability among facilities that accepted Medicaid, 2010–2016



Data source: National Survey of Substance Abuse Treatment Services (N-SSATS). No arrow is shown for Louisiana and Maryland because there was no change between 2010 and 2016. Note: The demonstration status of all states is as of June 1, 2020.

Figures 6 and **7** indicate that treatment facilities may have existing capacity that could be tapped as part of the section 1115 SUD demonstration. Implications for the section 1115 SUD demonstration are as follows:

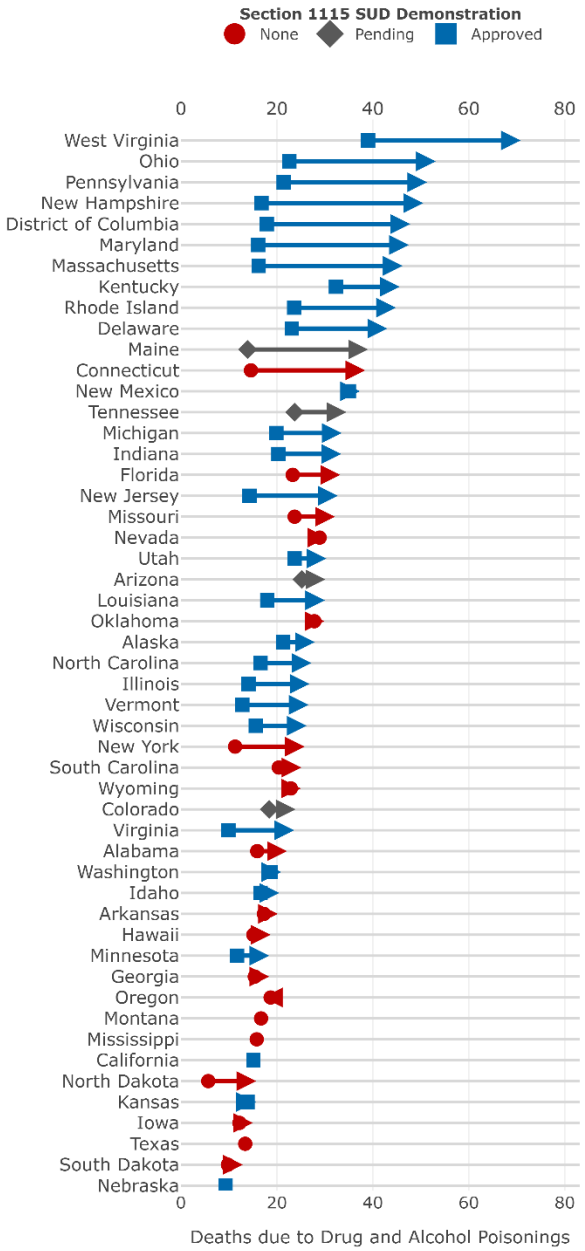
- One-third of SUD treatment providers did not accept Medicaid in 2016; hence, section 1115 SUD demonstration efforts to increase provider enrollment and capacity may increase access to services and improve health outcomes for beneficiaries with SUD.
- Less than half of treatment facilities that accepted Medicaid offered MOUD in 2016. Improving MOUD access in section 1115 SUD demonstration states, especially those with high rates of OUD among Medicaid beneficiaries, has high potential to affect SUD-related health outcomes.

SUD and OUD Overdose Death Rates

Once milestones for increasing Medicaid beneficiaries' access to SUD treatment and providers' capacity to provide treatment are achieved, SUD- and OUD-related health impacts, such as overdose deaths, are expected to decline. **Figure 8** shows SUD overdose death rates per 100,000 population age 12 to 64 by state for 2010 through 2016. States with an approved section 1115 SUD demonstration as of June 2020 are shown in blue (square), states with a pending section 1115 SUD demonstration application are in gray (diamond), and states without a section 1115 SUD demonstration are in red (dot). The solid shape represents the 2010 SUD overdose death rate; the arrowhead shows the 2016 value and the direction of change from 2010. States are shown in descending order based on their 2016 values. **Figure 9** provides analogous information for OUD overdose death rates, a component of SUD death rates. Annual averages for groups of states were weighted by state population aged 12 to 64 years.

- Across approved or pending section 1115 SUD demonstration states, the average 2016 death rate from overdose was 30.7 per 100,000 population. Rates varied substantially across section 1115 SUD demonstration states, from 9.6 per 100,000 in Nebraska to 70.8 per 100,000 in West Virginia.
- The average overdose death rate across section 1115 SUD demonstration states increased 75 percent between 2010 and 2016, up from a 2010 average of 17.5 per 100,000 population. Overdose death rates more than doubled over this period for nine states with an approved demonstration (New Hampshire, Maryland, Pennsylvania, Ohio, Massachusetts, Washington, DC, New Jersey, Vermont, and Virginia).
- The average overdose death rate across states without a section 1115 SUD demonstration was 23.2 per 100,000 population in 2016, 24 percent lower than the average rate in section 1115 SUD demonstration states. The range of SUD overdose death rates in 2016 was narrower for states without a section 1115 SUD demonstration than for section 1115 SUD demonstration states. Connecticut's overdose death rate of 38.4 per 100,000 was the highest among states without a section 1115 SUD demonstration. South Dakota had the lowest overdose death rate among these states at 12.9 per 100,000.

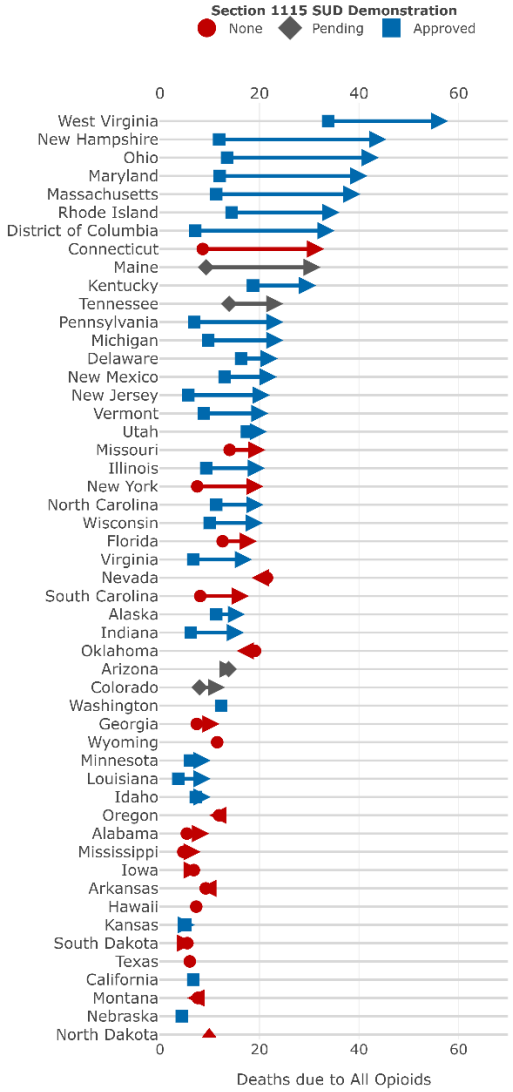
Figure 8. Alcohol and drug overdose deaths per 100,000 population, 2010–2016



Data source: CDC WONDER for crude death rates per 100,000 population for ages 12 to 64 years by state. Note: The demonstration status of all states is as of June 1, 2020.

- The 2016 opioid overdose death rate was 20.5 per 100,000 population across states with approved or pending section 1115 SUD demonstrations, indicating that opioid overdoses accounted for two-thirds of substance-related overdose deaths in those states.
- Section 1115 SUD demonstration states' 2016 opioid death rates ranged from 3.3 per 100,000 in Nebraska to 57.9 per 100,000 in West Virginia. Nine approved or pending section 1115 SUD demonstration states had opioid overdose death rates in excess of 30 per 100,000 (West Virginia, New Hampshire, Ohio, Maryland, Massachusetts, Rhode Island, Washington, DC, Maine, and Kentucky).
- The opioid overdose death rate more than doubled across approved or pending section 1115 SUD demonstration states between 2010 and 2016, up from a 2010 value of 9.2 per 100,000. New Hampshire had the largest increase (from 11.9 per 100,000 to 45.5 per 100,000); Nebraska had a small decline (from 4.4 per 100,000 to 3.3 per 100,000).
- For states without a section 1115 SUD demonstration, the average opioid overdose death rate was 14.4 in 2016, 30 percent lower than the average rate for section 1115 SUD demonstration states. Among states without a section 1115 SUD demonstration, only Connecticut had a 2016 opioid overdose death rate above 30 per 100,000 (33.0 per 100,000). Although opioid overdose death rates varied across states without a section 1115 SUD demonstration, there was less variability in 2016 death rates and in changes between 2010 and 2016 than was observed in section 1115 SUD demonstration states. Five states without a section 1115 SUD demonstration had declines in substance-related overdose death rates.

Figure 9. Opioid overdose deaths per 100,000 population, 2010–2016



Data source: CDC WONDER for crude death rates per 100,000 population for ages 12–64 years by state. North Dakota's 2016 death rate is shown with a triangle because the state's data were suppressed in 2010. States with a shape and no arrow had no change in SUD death rates between 2010 and 2016.Note: The demonstration status of all states is as of June 1, 2020.

Figures 8 and **9** highlight the high and growing overdose death rates from substance use, and specifically from use of opioids, in section 1115 SUD demonstration states before implementation of the demonstration. These findings have the following implications:

- Section 1115 SUD demonstrations have the potential to reduce overdose death rates in states that successfully expand treatment use and availability among Medicaid beneficiaries.
- Substance -related overdose death rates in states without a section 1115 SUD demonstration were generally lower and increased by a smaller amount between 2010 and 2016 than in section 1115 SUD demonstration states. Consequently, only a few states without a section 1115 SUD demonstration as of June 2020 (e.g., Connecticut, New York) may provide valid comparisons for evaluating the impact of the section 1115 SUD demonstration on death rates.

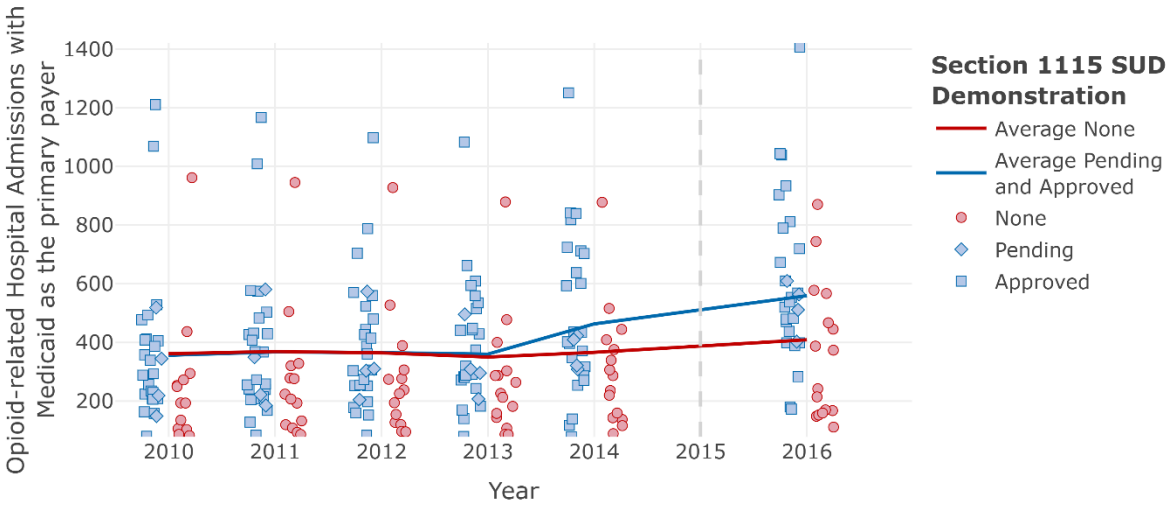
We also examined disparities in urban and rural overdose death rates during the 2010–2016 pre-demonstration period for states that had an approved section 1115 SUD demonstration as of June 2020 and for states without an approved or pending section 1115 SUD demonstration by that date. Results from this analysis are provided in **Appendix C**. Although our analysis is preliminary and observational, we saw that by 2016 opioid overdose death rates were higher in urban areas than in rural areas. Rates for urban areas were about 30 percent higher in demonstration than in non-demonstration states. Rates in rural areas, although lower than urban overdose death rates, were about 60 percent higher in demonstration states than in non-demonstration states. These observations suggest that rural versus urban status is an important factor to consider when evaluating the impact of the section 1115 SUD demonstration.

Hospital ED Visit and Inpatient Discharge Rates for OUD

One goal of the section 1115 SUD demonstration is to reduce preventable or medically inappropriate inpatient admissions and ED visits for SUD, especially OUD. If section 1115 SUD demonstration milestones to increase treatment access and provider capacity are achieved, then Medicaid beneficiaries should have less need to seek treatment for SUD in hospitals.

Figure 10 shows opioid-related inpatient discharge rates per 100,000 Medicaid beneficiaries for 2010 through 2014 and for 2016. Because of a change in diagnosis coding in 2015, data for 2010–2014 are not directly comparable with 2016, but comparisons across states are valid within each period. In the figure, states with an approved section 1115 SUD demonstration as of June 2020 are shown with lightly shaded blue squares, states with a pending section 1115 SUD demonstration are shown with blue diamonds, and states without a section 1115 SUD demonstration are shown with lightly shaded red dots. Averages across groups of states are shown for 2010–2014 with lines using the same color coding. The dashed vertical line represents the change in diagnosis coding in 2015. Values for 2016 are shown using the same color coding as used for the 2010–2014 period. **Figure 11** provides similar findings for opioid-related ED visit rates. Annual averages for groups of states were weighted by the number of Medicaid beneficiaries in each state.

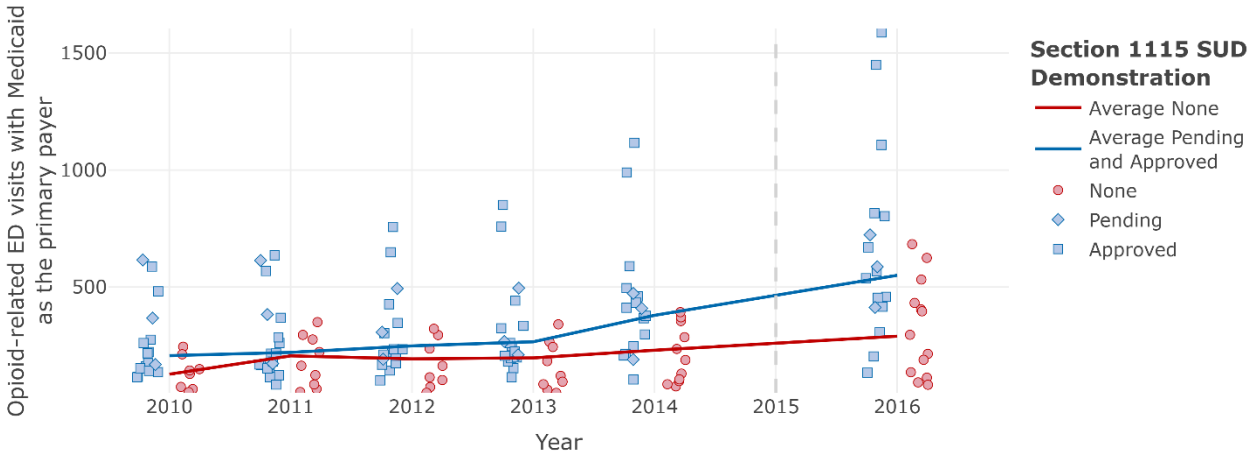
Figure 10. Opioid-related hospital inpatient discharges with Medicaid as the primary payer per 100,000 Medicaid beneficiaries, 2010–2014 and 2016



Data sources: HCUP data for rates of opioid-related discharges by state and American Community Survey (ACS) state population estimates (IPUMS USA). Prior to October 2015, ICD-9-CM codes used to identify opioid discharges; after October 2015, ICD-10-CM/PCS codes used. Thus, data for 2010–2014 are not directly comparable to those for 2016. Data from 2015 are not shown because it was a coding transition year. Data were not available in all years for all states. Note: The demonstration status of all states is as of June 1, 2020.

- The average 2016 opioid-related inpatient discharge rate among Medicaid beneficiaries in states with approved section 1115 SUD demonstrations was 562 per 100,000. Rates varied across approved section 1115 SUD demonstration states from 173 per 100,000 beneficiaries in Nebraska to 1,407 per 100,000 beneficiaries in Massachusetts, with the next highest states having rates of 1,044 (Rhode Island) and 1,039 (Ohio) per 100,000 beneficiaries.
- Other than Nebraska and Kansas, all states with approved section 1115 SUD demonstrations had 2016 rates of opioid-related inpatient discharges in excess of 280 per 100,000 beneficiaries.
- The 2016 average opioid-related inpatient discharge rate among Medicaid beneficiaries in states without a section 1115 SUD demonstration was 409 per 100,000, 27 percent lower than for beneficiaries in approved section 1115 SUD demonstration states. Rates varied from 111 per 100,000 beneficiaries in Texas to 871 per 100,000 beneficiaries in New York.

Figure 11. Opioid-related ED visits with Medicaid as the primary payer per 100,000 Medicaid beneficiaries, 2010–2014 and 2016



Data sources: HCUP data for rates of opioid-related ED visits by state and ACS sate population estimates (IPUMS USA). Prior to October 2015, ICD-9-CM codes used to identify opioid discharges; after Oct. 2015, ICD-10-CM/PCS codes used. Thus, data for 2010–2014 are not directly comparable to those from 2016. Data from 2015 are not shown because it was a coding transition year. Data were not available in all years for all states. Note: The demonstration status of all states is as of June 1, 2020.

- States with approved section 1115 SUD demonstration states had an average opioid-related ED visit rate in 2016 of 547 per 100,000 Medicaid beneficiaries. Rates varied across approved section 1115 SUD demonstration states from 134 per 100,000 beneficiaries in Nebraska to 1,588 per 100,000 beneficiaries in Maryland.
- Two other states with approved section 1115 SUD demonstrations had 2016 opioid-related ED visit rates above 1,000 per 100,000 beneficiaries: Massachusetts (1,449) and Rhode Island (1,108). On the low end of the spectrum, Nebraska, North Carolina, California, and Kansas had opioid-related ED visit rates below 400 per 100,000 beneficiaries (308, 306, and 204, respectively).
- Among Medicaid beneficiaries in states without a section 1115 SUD demonstration, the 2016 average opioid-related ED visit rate was 290 per 100,000, almost 50 percent lower than for approved section 1115 SUD demonstration states. Rates varied from 83 per 100,000 beneficiaries in Texas to 683 per 100,000 beneficiaries in Nevada.

Findings in **Figures 10** and **11** imply the following for the meta-analysis:

- The high rates of opioid-related inpatient and ED visits prior to the demonstration in several states that had approved section 1115 SUD demonstration states by June 2020 suggest strong potential for those states to experience reductions in unnecessary hospital utilization for opioids as a result of increased SUD treatment utilization and availability among Medicaid beneficiaries. Section 1115 SUD demonstration states that started from lower opioid-related hospitalization rates in 2016 may have little opportunity for improvement in this measure during the demonstration period.
- Although some states without a section 1115 SUD demonstration had high rates of opioid-related hospital utilization in 2016, most had inpatient and ED visit rates below the average for section 1115 SUD demonstration states. Because of this, it may be challenging to identify states without a section 1115 SUD demonstration that can provide valid comparisons for evaluating the impact of the SUD demonstration on the utilization outcomes.

Conclusions

Understanding the pre-demonstration levels of SUD need, SUD treatment use, SUD treatment availability, and SUD-related health and mortality outcomes among section 1115 SUD demonstration states is important for designing meta-analytic approaches. Careful design of these approaches will help ensure CMS receives valid estimates of the impact of section 1115 SUD demonstrations. CMS can use the meta-analytic findings to inform program design and support states' monitoring and evaluation needs.

The key implications for the meta-analysis are as follows:

- Findings point to opportunity for improvement in the availability of MOUD for beneficiaries receiving treatment in facilities that accept Medicaid.
- Impacts of the section 1115 SUD demonstration are likely to vary depending on states' pre-demonstration SUD treatment needs, treatment use, and treatment availability. Because some section 1115 SUD demonstration states had lower levels of SUD and OUD prevalence or higher levels of treatment availability prior to the demonstration, the demonstration may have limited impact on SUD and OUD outcomes in those states. However, for states that had high levels of unmet SUD treatment need among Medicaid beneficiaries and high rates of opioid-related hospitalization and substance-related overdose deaths, the section 1115 SUD demonstration may have substantial impacts on meeting SUD treatment needs and on resulting health outcomes.
- Many states without a section 1115 SUD demonstration by June 2020 had lower rates of SUD prevalence, drug overdose death rates, and opioid-related hospitalization rates than section 1115 SUD demonstration states. It is important to account for these differences in designing the meta-analytic approaches, specifically for identifying comparison states for assessing demonstration impacts in both the meta-evaluation and state evaluations.
- Urban areas had higher rates of substance-related, and specifically, opioid, overdose deaths than rural areas during the pre-demonstration period, largely owing to larger increases in deaths between 2014 and 2016 for urban than rural areas. In future reports, we will examine urban versus rural, racial and ethnic, and other social determinants of health in more detail. We will also assess the impact of the section 1115 SUD demonstration on disparities in SUD treatment access, utilization, and health outcomes.

Authors and Acknowledgments

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The Federal Meta-Analysis Support Contract

In 2018, the Centers for Medicare & Medicaid Services (CMS) commissioned the Federal Meta-Analysis Support contract (HHSM-500-2014-00037I) to learn from each Medicaid section 1115 demonstration and the groups of such demonstrations with similar features. Under this contract, RTI International is conducting meta-evaluations of selected groups of Medicaid section 1115 demonstrations.

Rapid cycle reporting is central to the Federal Meta-Analysis Support contract, providing CMS with timely, practical findings, and supporting dissemination of findings to key stakeholder audiences. This report is one of several rapid cycle reports prepared by RTI International under the contract.

Appendix A: Data, Methods, and Limitations

We used publicly available secondary data sources to create the same measures we plan to use in the meta-evaluation, but focusing on the period before the demonstration awards, from about 2010–2016. For data sources that have more recent data available, we have included the years 2017 and 2018 in Appendix B to begin providing a picture of how SUD treatment availability and other measures may change after the demonstration is implemented in a state. Except for overdose deaths, the data sources allowed us to focus on people who were Medicaid beneficiaries or had Medicaid as a primary payer.

To obtain averages for section 1115 SUD demonstration and non-demonstration states, we weighted measures by the relevant unit of analysis. Most measures were weighted by the state Medicaid beneficiary population. N-SSATS measures that describe percentages of facilities exhibiting a certain characteristic were weighted by the number of facilities in the state.

NSDUH. The National Survey on Drug Use and Health (NSDUH) is an annual, cross-sectional survey conducted by the Substance Abuse and Mental Health Services Administration (SAMHSA) to provide information on substance use, mental health, and other related issues in the United States. NSDUH is representative of the civilian, non-institutionalized U.S. population ages 12 and above. Homeless individuals and those in jails/prisons and other institutions are not surveyed. Due to a major survey design change between 2014 and 2015, data collected on SUD and OUD cannot be compared before and after the survey change. As a result, we report data from the 2016 and 2017 surveys only.

We used data from NSDUH to estimate prevalence of SUD and OUD among Medicaid beneficiaries in section 1115 SUD demonstration and non-demonstration states. SAMHSA provides access to state-level NSDUH data through its restricted data access system (RDAS) for 2-year intervals. We used NSDUH data from RDAS for 2016 and 2017 to summarize the baseline context of SUD and OUD prevalence, generating two measures: SUD prevalence among Medicaid beneficiaries and OUD prevalence among Medicaid beneficiaries.

The estimates are derived from the NSDUH variables UDPYILAL (for SUD; binary variable coded as “yes” or “no” for “Illicit drug or alcohol dependence or abuse—past year”) and UDPYOPI (for OUD; binary variable coded as “yes” or “no” for “Opioid dependence or abuse—past year”). Prevalence estimates were extracted by state for individuals reporting coverage by Medicaid or the Children’s Health Insurance Program (CHIP, using the variable CAIDCHIP; it is not possible to separate the two programs in NSDUH). Due to suppression rules in the RDAS system, we were unable to obtain estimates for six states for the OUD prevalence measure.

SUD Data Book. In 2019, CMS developed the SUD Data Book as a report to Congress on the utilization of SUD treatment services by Medicaid beneficiaries. The book breaks the data down by several factors, including disorder type, service type, and service setting. It draws from a research-ready version of Transformed Medicaid Statistical Information System (T-MSIS) data, the T-MSIS Analytic Files (TAF). The book presents data from calendar year 2017, which was the most recent complete T-MSIS enrollment and claims data available at the time of the analysis.

Drawing from T-MSIS files, the SUD Data Book provides state-level data on the number of Medicaid beneficiaries receiving treatment for SUD, as well as data on service type, service setting, delivery systems, and progression of care. Using these data, we examined the number of Medicaid beneficiaries per 100,000 who received treatment for SUD, and of those, the number per 100,000 who received OUD treatment.

We present the SUD Data Book measures as treatment rates per 100,000 Medicaid beneficiaries using the total number of state Medicaid beneficiaries reported in the SUD Data Book as the denominator. For this report, we generated two measures from the SUD Data Book related to the total number of Medicaid beneficiaries receiving SUD treatment services:

- Number of Medicaid beneficiaries treated for an OUD per 100,000 Medicaid beneficiaries.
- Number of Medicaid beneficiaries treated for a non-OUD SUD per 100,000 Medicaid beneficiaries.

In the SUD Data Book, Medicaid beneficiaries are identified as receiving SUD treatment, including treatment for tobacco use disorder, if they had at least one qualifying inpatient claim for a SUD, two outpatient or long-term care claims for SUD treatment on different dates, or one pharmacy claim for medication for a SUD. The SUD Data Book included OUD-specific measures, so we divided the reported number of Medicaid beneficiaries treated for an OUD by the total number of Medicaid beneficiaries and then multiplied by 100,000 to reach the first measure. To create the non-OUD SUD measure, we subtracted the reported number of Medicaid beneficiaries treated for an OUD from the reported number of beneficiaries treated for any SUD, before dividing this difference by the total number of Medicaid beneficiaries and multiplying by 100,000.

It is important to note that the quality and completeness of the data used in the SUD Data Book is dependent on the quality of state reporting of Medicaid enrollment, claims, and encounter data. The robustness, consistency, completeness, and accuracy of these data vary across states. Four states—Mississippi, Missouri, Montana, and Nebraska—were not included in the book’s analysis due to data quality issues. In addition, because the book identifies beneficiaries as having a SUD based on claims and encounter records, it does not include beneficiaries with a SUD who did not receive Medicaid-covered services for their condition. Despite these data quality considerations, the SUD Data Book provides the best available Medicaid-specific data on the number of Medicaid beneficiaries

receiving treatment for SUD, the types of services they receive, the settings where they receive these services, the delivery systems that provide the services, and the progression of care.

N-SSATS. We characterized SUD treatment infrastructure using data from the National Survey of Substance Abuse Treatment Services (N-SSATS). N-SSATS provides information on the characteristics of each facility and specific services provided, including MOUD. We described the pre-demonstration SUD treatment infrastructure using data from the 2010–2016 N-SSATS. To standardize this measure across states, we provide counts of SUD facilities per 100,000 population using state population estimates from the American Community Survey (IPUMS USA). For each state, we also report the proportions of facilities that accept Medicaid beneficiaries, and among those, proportions that offer MOUD.

N-SSATS is an annual census of specialty SUD treatment facilities conducted by SAMHSA. N-SSATS captures information on the characteristics of each facility (e.g., levels of care, participation in Medicaid) and specific services provided, including MOUD. N-SSATS receives completed surveys from about 90 percent of identified facilities each year. Deidentified N-SSATS data are disseminated in a public use data file. We characterize the pre-demonstration SUD treatment infrastructure using data from the 2010–2016 N-SSATS. To put counts of facilities in context, we provide counts of SUD facilities per 100,000 population using state population estimates from the American Community Survey (ACS).

We generated four measures from N-SSATS to characterize states' SUD treatment infrastructure before the demonstration. First, we computed the number of SUD treatment facilities per 100,000 population. Next, we computed three measures that describe the facilities:

- Percentage of facilities that accept Medicaid beneficiaries.
- Percentage of facilities that offer MOUD.
- Among facilities that accept Medicaid beneficiaries, the percentage that offer MOUD.

Our rate per 100,000 measure was computed as the number of facilities in the state times 100,000 and divided by the state population. That measure provides a general idea of SUD treatment capacity, although it does not consider the fact that facilities vary in the number of patients they can serve, and facilities may be concentrated geographically, resulting in disparities in capacity across substate regions. Facilities are also asked to report whether they provide any pharmacotherapies for OUD (i.e., methadone, buprenorphine, or naltrexone). We created a binary measure that was set to 1 if the facility offered any of the aforementioned pharmacotherapies in any formulation and 0 otherwise. We calculated the percentage of facilities that offer MOUD for all facilities, and for the subset of facilities that reported accepting Medicaid beneficiaries. These measures describe capacity for Medicaid beneficiaries with SUD in a state between 2010 and 2016, as well as potential capacity should participation in Medicaid increase as a result of the demonstration.

CDC WONDER. CDC Wide-ranging ONline Data for Epidemiologic Research (WONDER) system is a public use online database for epidemiologic research that contains information about mortality (deaths) and census data. The mortality data are based on information from all death certificates for U.S. residents filed in the 50 states and the District of Columbia. Each death certificate contains a single underlying cause of death (UCD), up to 20 additional multiple causes, and demographic data. The UCD is defined by the World Health Organization (WHO) as "the disease or injury which initiated the train of events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury." UCD is selected from the conditions entered by the physician on the cause of death section of the death certificate. When more than one cause or condition is entered by the physician, the UCD is determined by the sequence of conditions on the certificate, provisions of the ICD, and associated selection rules and modifications. Mortality data from the death certificates are coded by the states and provided to National Center for Health Statistics (NCHS) through the Vital Statistics Cooperative Program or coded by NCHS from copies of the original death certificates provided to NCHS by the State registration offices.

SUD overdose deaths include deaths where the UCD is listed as one of the following causes:

- Drug poisonings (overdose), unintentional (ICD-10: X40-X44).
- Drug poisonings (overdose), suicide (ICD-10: X60-X64).
- Drug poisonings (overdose), homicide (ICD-10: X85).
- Drug poisonings (overdose), undetermined intent (ICD-10: Y10-Y14).
- Alcohol poisonings (overdose) (ICD-10: X45, X65, Y15).

OUD overdose deaths include deaths where the underlying cause is listed as drug poisoning overdose, regardless of the intent (ICD-10: X40-44, X60-64, X85, Y10-14), and the multiple cause of death is listed as poisoning by narcotics and psychodysleptics with any of the following:

- Opium (ICD-10: T40.0).
- Heroin (ICD-10: T40.1).

- Other opioids (ICD-10: T40.2).
- Methadone (ICD-10: T40.3).
- Other synthetic narcotics (ICD-10: T40.4).
- Other and unspecified narcotics (ICD-10: T40.6).

In CDC WONDER, mortality statistics are suppressed when the number of deaths is less than 10 for the specified strata and are considered unreliable when the number of deaths is less than 20. Because the number of OUD overdose deaths was less than 20, the OUD overdose death rate is not available for North Dakota for 2010.

Using the CDC WONDER interface, death counts and rates are automatically calculated and downloadable by cause, age, sex, and state. We obtained crude death rates per 100,000 population for ages 12–64 years by state and cause of death for all SUD overdose deaths and for the subset of SUD deaths that resulted from OUD overdose.

HCUP. HCUP is a family of health care databases that is maintained by the Agency for Healthcare Research and Quality (AHRQ) and includes the largest collection of longitudinal hospital care data in the United States. HCUP provides publicly available data that include annual population-based rates of opioid-related inpatient and ED visits reported at the state and national levels. It also reports quarterly discharge counts by primary expected payer, including Medicaid.

HCUP data are not available for all states. Annual opioid-related inpatient visit data are available for 46 states and the District of Columbia and annual opioid-related ED visit data are available for 35 states and DC. Inpatient quarterly discharge counts by primary expected payer data are available for 44 states and ED quarterly discharge counts by primary expected payer data are available for 31 states. HCUP data are available for 2005 through 2018. State data are released on a rolling basis; therefore, not all states have data available for 2018. The most recent year of data available for all states is 2016.

Opioid-related hospital visits are defined using ICD-9-CM and ICD-10-CM and ICD-10-PCS codes. A hospital visit can have multiple diagnosis codes attached to it. Opioid-related visits are identified using all listed diagnosis codes. In October 2015, the United States transitioned from using ICD-9-CM to ICD-10-CM/PCS. Due to this transition, there was a discontinuity in trends observed related to opioid-related hospital visits. This means that data prior to 2016 are not directly comparable to data from 2016 and later. Another limitation is that HCUP suppresses annualized rates where the numerator is less than 26 and quarterly counts are less than 26 to protect patient identities, so states with low numbers of opioid-related inpatient discharges or ED visits have suppressed data in some years. Additionally, any state missing one or more quarters was not included in the utilization counts.

We created a measure using HCUP data of the baseline level of OUD-related hospital utilization as the number of opioid-related inpatient and ED visits per 100,000 people where Medicaid was the primary expected payer.

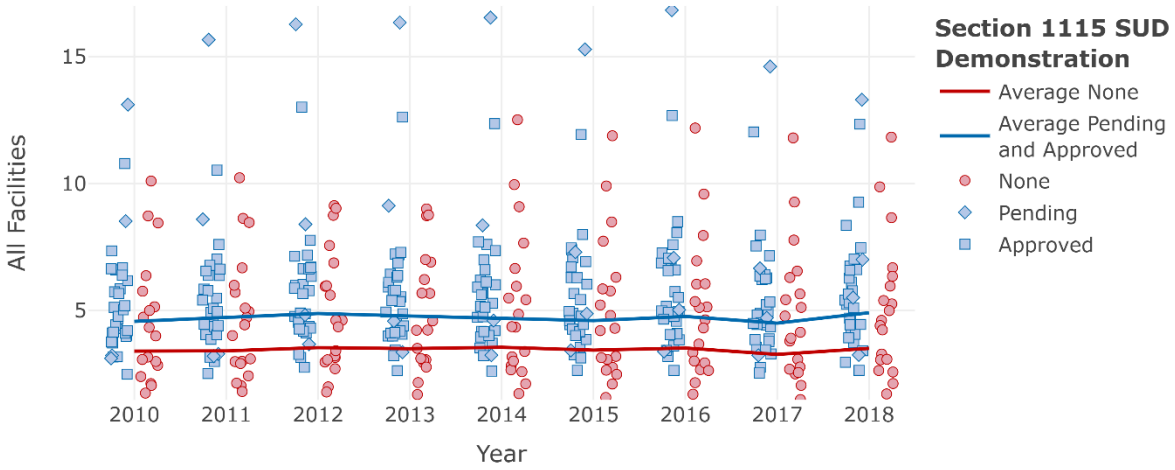
The publicly available HCUP data provide quarterly discharge or visit counts by primary expected payer, including Medicaid. We summed these OUD counts for each year and state, which were reported for ages 19 to 64 years. We then combined them with state-level data from the Integrated Public Use Microdata Series (IPUMS) USA on the estimated number of people who were Medicaid beneficiaries. Finally, we calculated the annual number of OUD-related discharges or visits with Medicaid as a primary payer per 100,000 Medicaid beneficiaries.

The data used for this rapid cycle report are publicly available, and although they include information about opioid-related discharges, they do not allow for an analysis of the broader category of SUD-related discharges. To answer questions about SUD-related impacts of the demonstration, we have obtained restricted-use HCUP data files for use in the meta-evaluation.

Appendix B: Additional State Results

Figure B1 shows section 1115 SUD demonstration states having a higher average number of SUD treatment facilities per 100,000 population from 2010 to 2018 than states without a section 1115 SUD demonstration. In 2018, section 1115 SUD demonstration states had an average of 4.82 SUD treatment facilities per 100,000 population. Section 1115 SUD demonstration state averages ranged from a low of 2.64 SUD treatment facilities per 100,000 population in Virginia, to a high of 12.34 in Alaska. In 2018, state without a section 1115 SUD demonstration had an average of 3.51 SUD treatment facilities per 100,000 population; state averages ranged from a low of 1.71 SUD treatment facilities per 100,000 population in Texas to a high of 11. 83 in Hawaii.

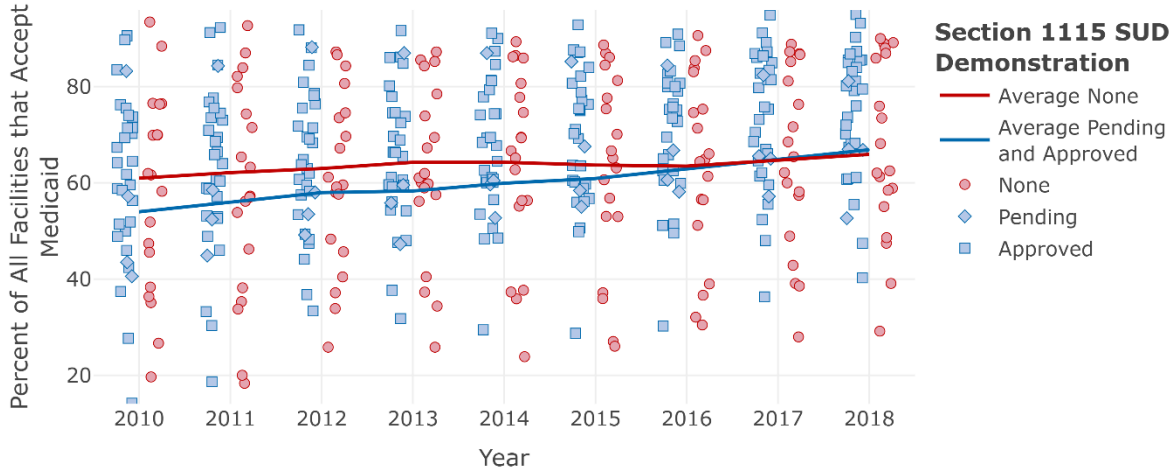
Figure B1. SUD treatment facilities per 100,000 population



Data source: National Survey of Substance Abuse Treatment Services (N-SSATS). Prevalence rates for section 1115 SUD demonstration and non-demonstration states obtained by averaging state prevalence rates weighted by total population.

Figure B2 shows that 54 percent of SUD treatment facilities in section 1115 SUD demonstration states accepted Medicaid in 2010, whereas 64 percent of facilities in states without a section 1115 SUD demonstration accepted Medicaid. From 2010 to 2018 the percentage of SUD treatment facilities accepting Medicaid increased to 67 percent in states with a section 1115 SUD demonstration and to 66 percent in states without a section 1115 SUD demonstration.

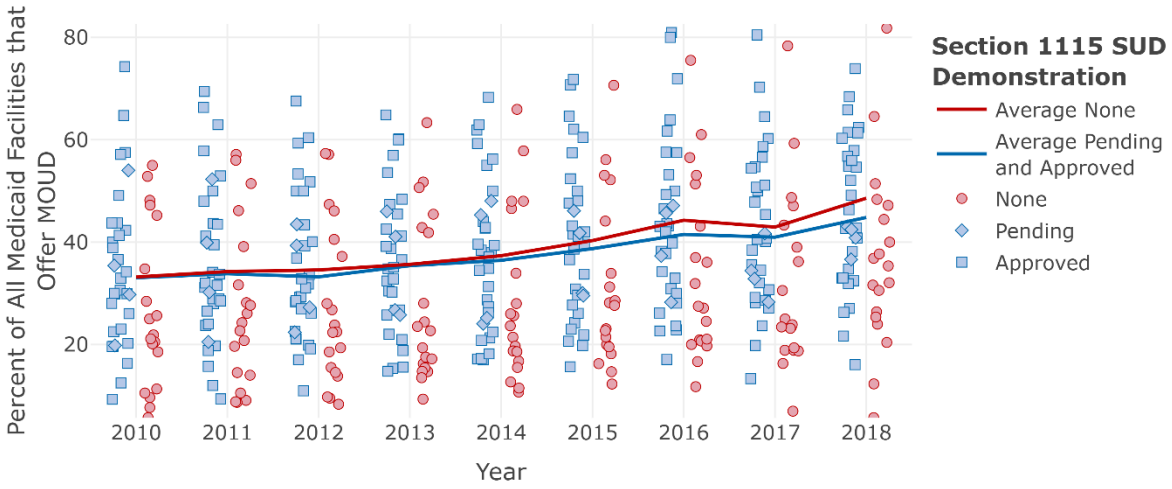
Figure B2. Percentage of SUD treatment facilities that accept Medicaid, 2010–2018



Data source: National Survey of Substance Abuse Treatment Services (N-SSATS). Prevalence rates for section 1115 SUD demonstration and non-demonstration states obtained by averaging state prevalence rates weighted by Medicaid beneficiary population.

Figure B3 shows, in 2010, 33 percent of SUD treatment facilities that accepted Medicaid offered MOUD in both section 1115 SUD demonstration and non- demonstration states. From 2010 to 2018, the percentage of Medicaid facilities that offered MOUD increased to 45 percent in section 1115 SUD demonstration states and to 49 percent in states without a section 1115 SUD demonstration. In 2018, the percentage of Medicaid facilities in section 1115 SUD demonstration states that offered MOUD ranged from 16 percent in Idaho to 74 percent in Rhode Island; among states without a section 1115 SUD demonstration, the percentage ranged from 6 percent in South Dakota to 82 percent in New York.

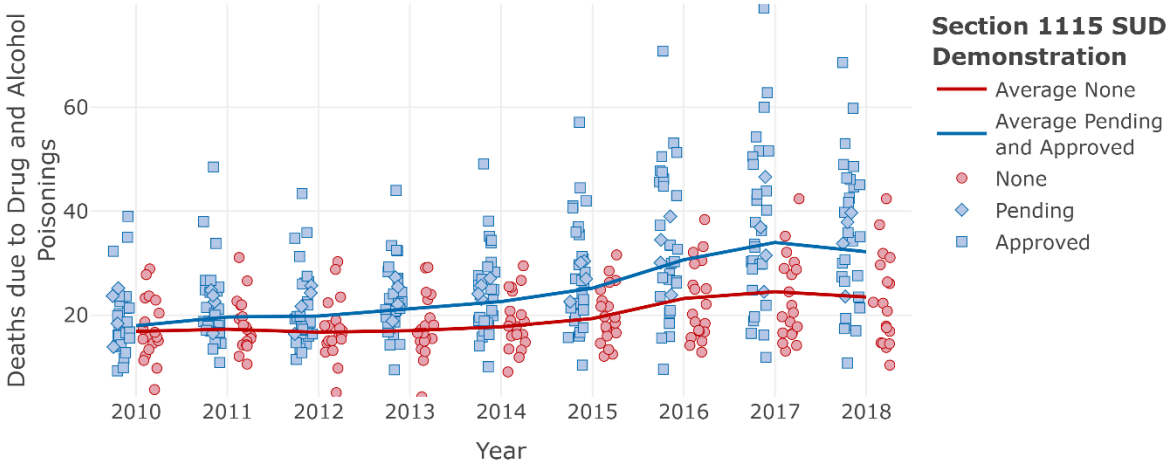
Figure B3. Percentage of facilities that provide MOUD among facilities that accept Medicaid, 2010–2018



Data source: National Survey of Substance Abuse Treatment Services (N-SSATS). Prevalence rates for section 1115 SUD demonstration and non-demonstration states obtained by averaging state prevalence rates weighted by Medicaid beneficiary population.

Figure B4 shows, from 2010 to 2018, the average alcohol and drug overdose death rates per 100,000 population in section 1115 SUD demonstration states was higher (17.54 in 2010, 32.16 in 2018) than the overdose death rates per 100,000 population in states without a section 1115 SUD demonstration (16.88 in 2010, 23.50 in 2018). Although death rates for both section 1115 SUD demonstration and non-demonstration states increased between 2010 and 2018, average death rates in demonstration states increased 14.62 per 100,000 population compared to an increase of 6.62 per 100,000 population for non-demonstration states.

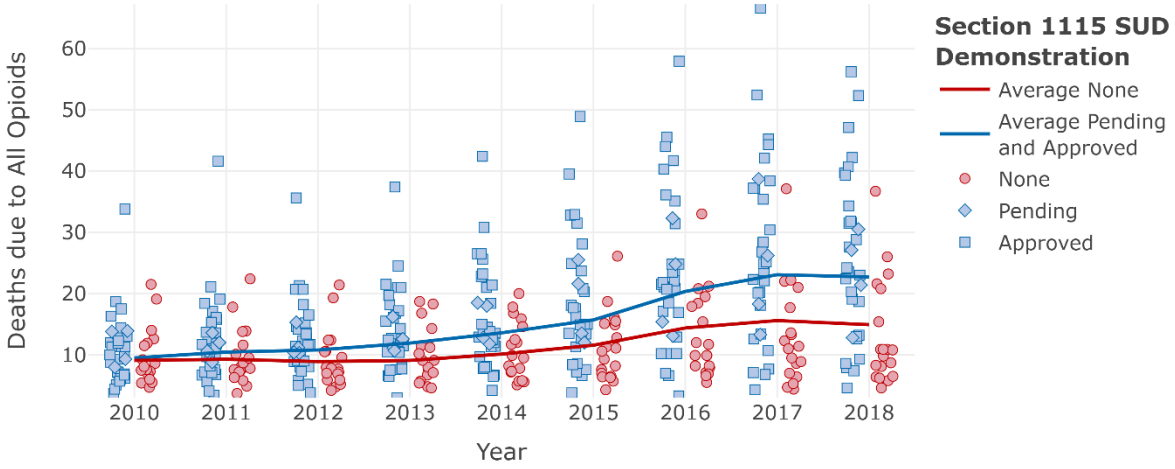
Figure B4. Alcohol and drug overdose death rates per 100,000 population, 2010–2018



Data source: CDC WONDER. Death rates for section 1115 SUD demonstration and non-demonstration states obtained by averaging state prevalence rates weighted by state population.

Figure B5 shows section 1115 SUD demonstration and non- demonstration states had similar opioid overdose death rates in 2010, with section 1115 SUD demonstration states having an average of 9.22 per 100,000 population and states without a section 1115 SUD demonstration having an average of 9.09 opioid overdose deaths per 100,000 population. From 2010 to 2018, the average rate of opioid overdose deaths in section 1115 SUD demonstration states increased to 22.86 per 100,000 population, while the average rates opioid overdose deaths in states without a section 1115 SUD demonstration increased to 14.92 per 100,000 population.

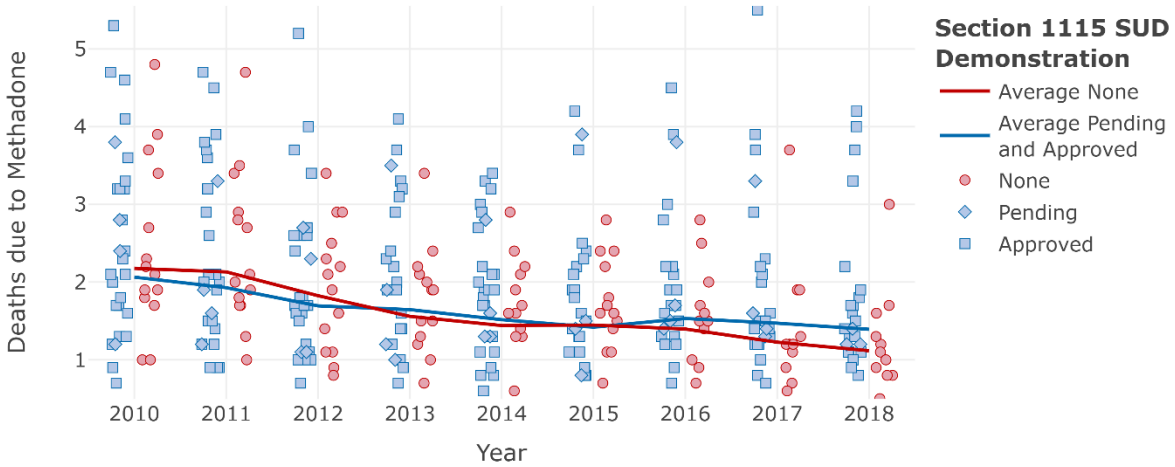
Figure B5. Opioid overdose death rates per 100,000 population, 2010–2018



Data source: CDC WONDER for crude death rates per 100,000 population for ages 12-64 years by state. Average rates for section 1115 SUD demonstration and non-demonstration states obtained by averaging state rates weighted by state population.

Figure B6 shows, from 2010 to 2018, a decline in deaths due to methadone in both section 1115 SUD demonstration and non-demonstration states per 100,000 population. In 2010, section 1115 SUD demonstration states had an average of 2.04 and non-demonstration states had an average of 2.18 deaths due to methadone per 100,000 population. In 2018, deaths due to methadone in section 1115 SUD demonstration states decreased to 1.41 and in non-demonstration states decreased to 1.12 per 100,000 population.

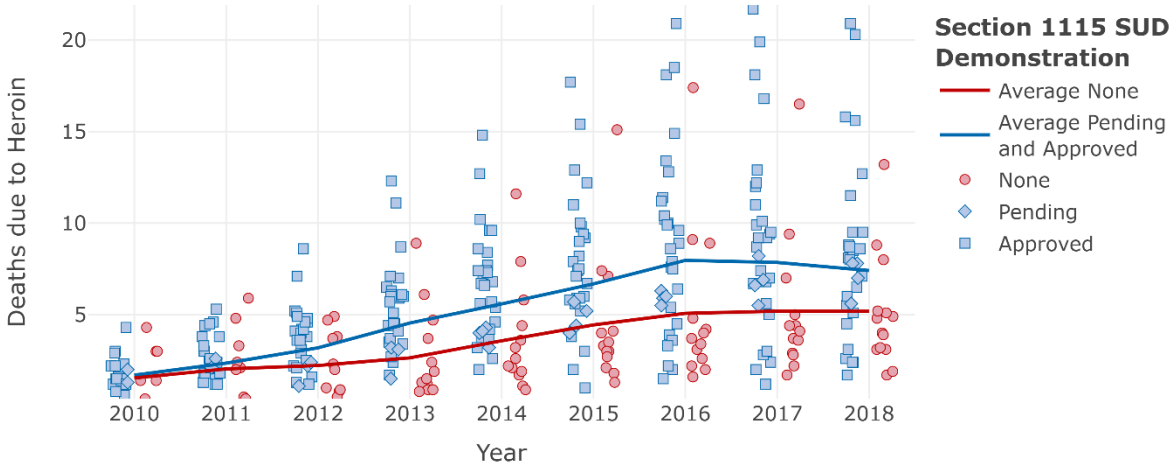
Figure B6. Deaths due to methadone per 100,000 population, 2010–2018



Data source: CDC WONDER for crude death rates per 100,000 population for ages 12-64 years by state. Average rates for section 1115 SUD demonstration and non-demonstration states obtained by averaging state rates weighted by population.

Figure B7 shows that in 2010, the average death rate due to heroin overdose among section 1115 SUD demonstration states was 1.70 per 100,000 population. States without a section 1115 SUD demonstration had a slightly lower death rate due to heroin overdose with a rate of 1.54 per 100,000 population. From 2010 to 2018, the death rate due to heroin in section 1115 SUD demonstration states increased to 7.47 deaths per 100,000 population while in non-demonstration states deaths due to heroin increased to 5.18 deaths per 100,000 population. Five of the six states with the largest increases in deaths due to heroin from 2010 to 2018 are section 1115 SUD demonstration states: West Virginia (17.7), New Jersey (15.3), Illinois (11.3), Maryland (9.8), and Virginia (8.4). Connecticut (13.5) is the only state without a section 1115 SUD demonstration among the five states with large increases in heroin overdose deaths.

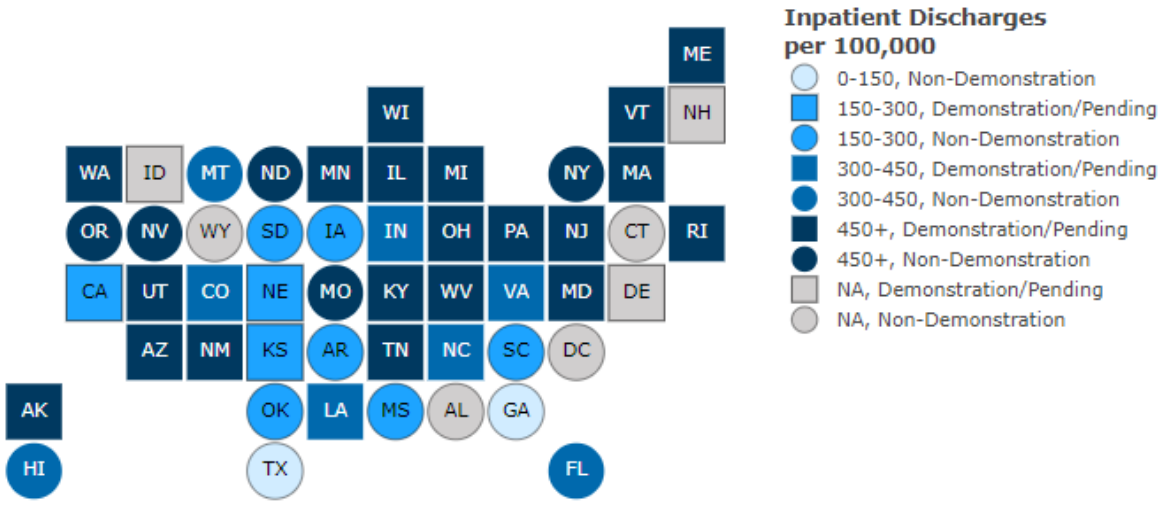
Figure B7. Deaths due to heroin per 100,000 population, 2010–2018



Data source: CDC WONDER for crude death rates per 100,000 population for ages 12-64 years by state. Average rates for section 1115 SUD demonstration and non-demonstration states obtained by averaging state rates weighted by population.

Figure B8 shows 2016 state opioid-related inpatient discharges per 100,000 population. The circles are states without a section 1115 SUD demonstration and the squares are approved or pending section 1115 SUD demonstration states. States without data are shown in gray. Section 1115 SUD demonstration states with an average of 451 opioid-related inpatient discharges or higher in 2016 include Alaska, Illinois, Kentucky, Massachusetts, Michigan, Minnesota, New Jersey, New Mexico, Ohio, Pennsylvania, Rhode Island, Utah, Washington, West Virginia, Wisconsin, and Vermont. Non-demonstration states with an average equal to or greater than 451 opioid-related inpatient dischargers per 100,000 include Missouri, Nevada, New York, North Dakota, and Oregon.

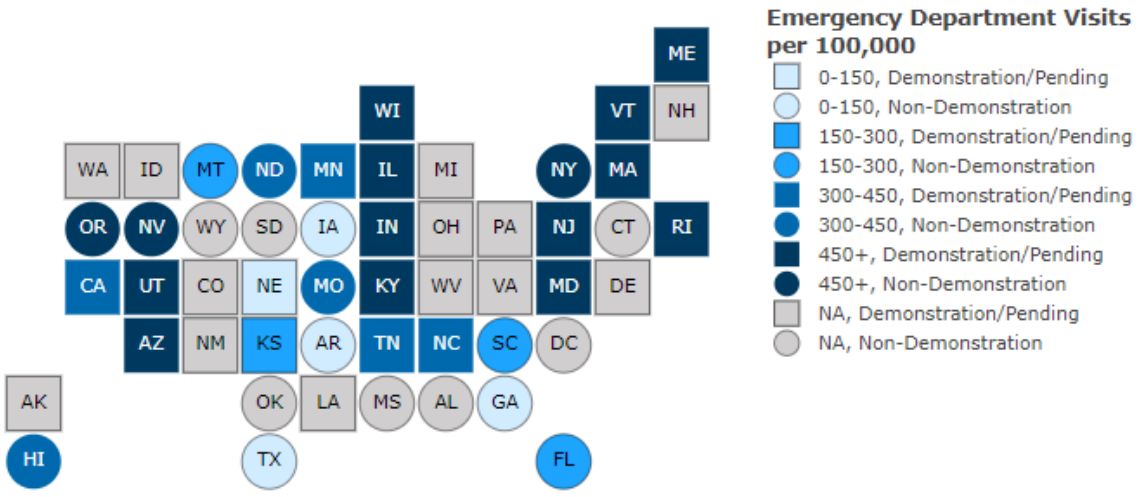
Figure B8. Map of state rates of opioid-related inpatient discharges, 2016



Data source: HCUP data for rates of opioid-related discharges by state; using ICD-10-CM/PCS codes.

Figure B9 shows 2016 state opioid-related ED visits per 100,000 population. The circles are states without a section 1115 SUD demonstration and the squares are approved or pending section 1115 SUD demonstration states. States without data are shown in gray. Section 1115 SUD demonstration states with the highest opioid-related ED visits, an average equal to or greater than 451 per 100,000 population, are shaded in dark blue and include Illinois, Indiana, Kentucky, Maryland, New Jersey, Rhode Island, Utah, Vermont, and Wisconsin. Non-demonstration states with the highest rates of opioid-related ED visits, an average equal to or greater than 451 per 100,000 population, include Nevada, New York, and Oregon.

Figure B9. Map of state rates of opioid-related ED visits, 2016



Data source: HCUP data for rates of opioid-related ED visits by state; using ICD-10-CM/PCS codes.

Appendix C: Urban and Rural Differences in Overdose Deaths

Objectives

This appendix focuses on pre-demonstration measures of SUD and OUD overdose death rates for urban and rural areas, exploring how urban and rural overdose death rates differed between 2010 and 2016 for states that had an approved section 1115 SUD demonstration as of June 1, 2020, and for states that did not have an approved or pending section 1115 SUD demonstration by June 1, 2020. Although this is a preliminary, observational analysis, differences between urban and rural areas in overdose death rates and trends in overdose death rates in the pre-demonstration period suggest that section 1115 SUD demonstration strategies may need to target the specific needs of urban and rural areas to achieve the demonstration goals and achieve equity in access, treatment, and outcomes between urban and rural areas.

Data and Methods

Findings in this appendix are based on data from the publicly available CDC Wide-ranging ONline Data for Epidemiologic Research (WONDER) system. This analysis used multiple cause of death (MCD) data from 2010 through 2016. WONDER MCD data are obtained from death certificates for U.S. residents; the data are reported by county of residence for the decedent. In this analysis, urban areas were defined to include the following categories: Large Central Metropolitan, Large Fringe Metropolitan, Medium Metropolitan, and Small Metropolitan. Rural areas were defined to include the Micropolitan (Nonmetropolitan) and NonCore (Nonmetropolitan) categories. These categories are from the 2013 National Center for Health Statistics Urban-Rural Classification Scheme for Counties.

As in the Baseline RCR primary analyses, Section 1115 SUD demonstration approval status is defined as of June 1, 2020. At that time, the following states had received CMS approval for their section 1115 SUD demonstration applications: Alaska, California, Delaware, District of Columbia, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New Jersey, New Mexico, North Carolina, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin. States that did not have a section 1115 SUD demonstration included Alabama, Arkansas, Connecticut, Florida, Georgia, Hawaii, Iowa, Mississippi, Missouri, Montana, Nevada, New York, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Texas, and Wyoming. The four states with pending section 1115 SUD demonstration applications (Arizona, Colorado, Maine, and Tennessee) were not included in this analysis.

Each death in WONDER includes one underlying cause of death (UCD) and may include up to 20 additional MCDs. ICD-10 codes are used to code UCD and MCDs. Selected causes of death are grouped into categories based on intent, substances, and other factors. For example, unintentional drug overdose deaths (i.e., poisonings) are identified using the ICD-10 codes of X40–X44 listed as the UCD. In our primary analysis of alcohol and drug overdose death rates, we examined all deaths where a drug or alcohol overdose was coded as the underlying cause. To examine overdose deaths from opioids, we first identified deaths coded as a drug overdose in the UCD and then the specific opioid substances in the MCDs (e.g., opium, heroin, other synthetic narcotics).[14] For each substance or group of substances, we calculated the crude death rate per 100,000 population aged 12–64. We examined trends over the 2010–2016 period for death rates for opioids and the broader category of drug and alcohol overdoses. Earlier research showed that SUD death rates from specific opioids may differ between urban and rural areas; therefore, we wanted to examine whether differences between states that do and do not implement a section 1115 SUD demonstrations are also observed in urban/rural areas. This appendix builds on the findings reported in the primary analyses, which examined state-level differences between section 1115 SUD demonstration and non-demonstration states. Results present stratified overdose death rates and did not assess the significance of differences between urban and rural death rates within or across demonstration and non-demonstration states.

Results

Figures C1 through **C4** show overdose deaths related to alcohol and drugs (**Figures C1** and **C2**) and opioids (**Figures C3** and **C4**) by demonstration status, separately for urban and rural areas. Each figure shows overdose deaths per 100,000 population for ages 12 to 64 for 2010–2016 of the baseline period. Annual state-specific overdose death rates are shown with blue dots for states that had an approved Medicaid section 1115 SUD demonstration (hereinafter, “demonstration states”) and with red squares for states that did not have an approved Medicaid section 1115 SUD demonstration (hereinafter, “non-demonstration states”). States with pending applications were excluded from this analysis. The average overdose death rates across all urban or rural areas are shown with a blue line for demonstration states and a red line for non-demonstration states.

The stratification highlights whether overall state-level differences between demonstration and non-demonstration states were also observed within urban and rural areas of the states. Our main findings from this stratified analysis are as follows:

- In 2010, overdose death rates in both urban and rural areas were similar for demonstration and non-demonstration states.

[14] The full list of UCDs used in our analysis includes unintentional drug overdoses (X40–X44), drug overdoses where the intent was coded as suicide (X60–X64), drug overdoses where the intent was coded as homicide (X85), drug overdoses with undetermined intent (Y10–Y14), and alcohol overdoses (X45, X65, Y15).

- Over the 2010–2016 period, overdose death rates increased at a faster rate in demonstration states than in non-demonstration states in both urban and rural areas, which potentially affected those states' decisions to apply for the section 1115 SUD demonstration.
- By 2016, opioid overdose death rates were higher in urban areas than in rural areas. Urban rates were about 30 percent higher in demonstration than in non-demonstration states and rural rates were about were about 60 percent higher in demonstration states than in non-demonstration states.

In sum, we observed differences in overdose death rates between urban and rural areas, where urban areas had higher rates of deaths from opioids and all substances than rural areas. However, the states that had an approved section 1115 SUD demonstration saw more rapid increases in their overdose deaths prior to the start of the demonstration than states that did not have an approved or pending demonstration. This was especially true for urban areas, as increases in overdose deaths from opioids or any substance did not increase as rapidly in rural areas between 2014 and 2016 as in urban areas. These observations suggest that rural versus urban status may be an important stratification to consider when evaluating the impact of the section 1115 SUD demonstration.

Figure C1. Alcohol and drug overdose deaths per 100,000 in urban areas for states with and without an approved Medicaid section 1115 SUD demonstration, 2010–2016

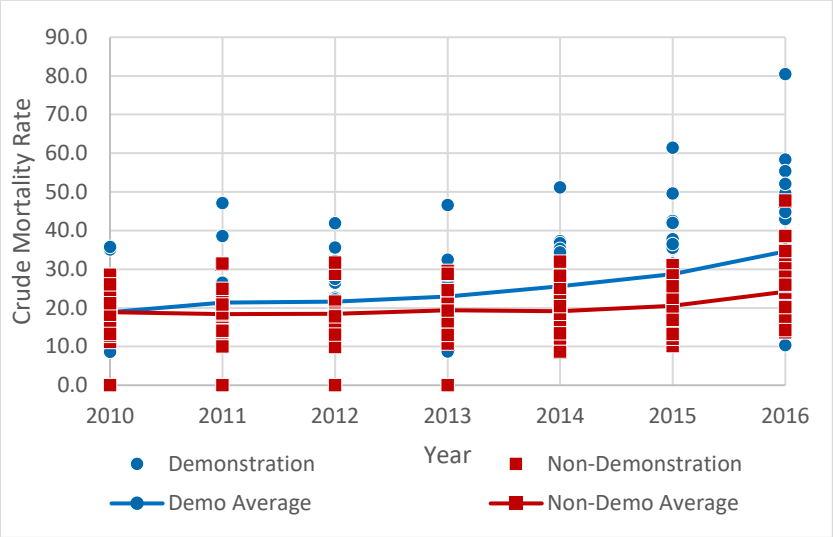


Figure C2. Alcohol and drug overdose deaths per 100,000 in rural areas for states with and without an approved Medicaid section 1115 SUD demonstration, 2010–2016

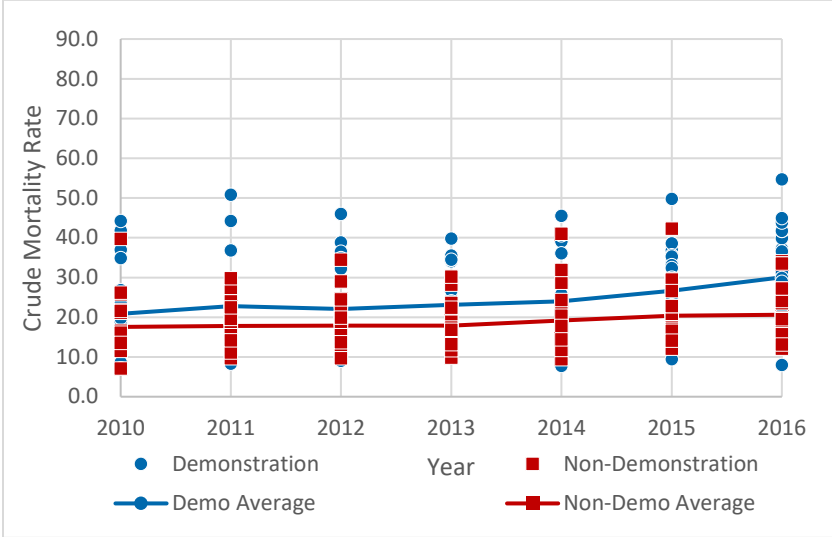


Figure C3. Opioid overdose deaths per 100,000 in urban areas for states with and without an approved Medicaid section 1115 SUD demonstration, 2010–2016

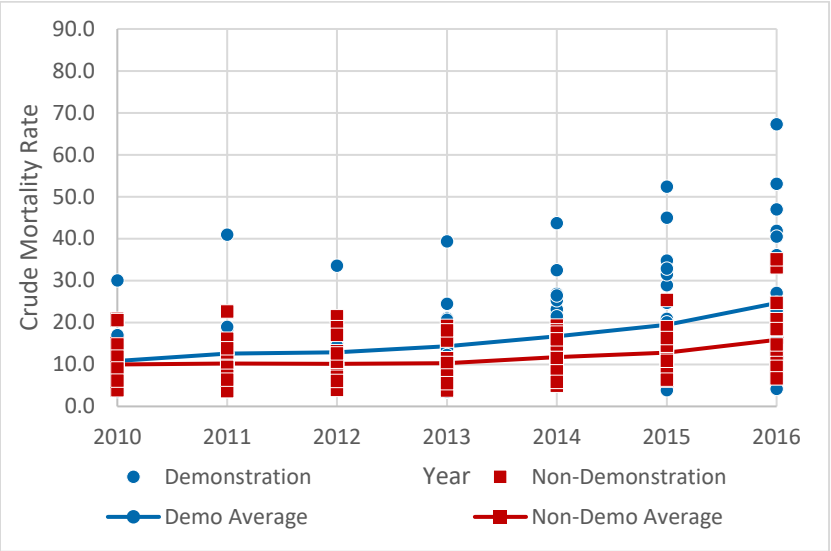


Figure C4. Opioid overdose deaths per 100,000 in rural areas for states with and without an approved Medicaid section 1115 SUD demonstration, 2010–2016