

DEPARTMENT OF HEALTH & HUMAN SERVICES  
Centers for Medicare & Medicaid Services  
7500 Security Boulevard, Mail Stop S2-25-26  
Baltimore, Maryland 21244-1850



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## State Demonstrations Group

May 31, 2024

Cynthia Beane  
Commissioner  
Bureau for Medical Services  
West Virginia Department of Health and Human Resources  
350 Capitol St., Room 251  
Charleston, WV 25301

Dear Commissioner Beane:

The Centers for Medicare & Medicaid Services (CMS) completed its review of the West Virginia Substance Use Disorder (SUD) Interim Evaluation Report, which is required by the Special Terms and Conditions (STCs), specifically STC #39 “Interim Evaluation Report” of the state’s section 1115 demonstration, “West Virginia Creating a Continuum of Care for Medicaid Enrollees with Substance Use Disorders (SUD)” (Project No: 11-W-00307/3), effective through September 30, 2024. This Interim Evaluation Report covers the period from January 1, 2018 through March 20, 2020 (with baseline data from January 1, 2016). CMS determined that the Evaluation Report, submitted on February 15, 2022 and revised on January 17, 2023, is in alignment with the CMS-approved Evaluation Design and the requirements set forth in the STCs, and therefore, approves the state’s SUD Interim Evaluation Report.

The findings of the Interim Evaluation Report provide evidence that West Virginia made progress toward its demonstration goals. For example, compared to the pre-demonstration period, Medicaid providers offering SUD treatments, peer recovery support specialists and services utilization, residential facilities and treatment utilizations increased. The state's Summative Evaluation Report is expected to provide a fuller understanding of the demonstration's effectiveness leveraging additional years of data with advanced statistical analysis and incorporating other comparison groups, such as out-of-state groups, that may enable separating out the confounding effects of the COVID-19 PHE from those of the demonstration itself more effectively.

In accordance with STC #41, the approved Interim Evaluation Report may now be posted to the state’s Medicaid website within 30 days. CMS will also post the Interim Evaluation Report on Medicaid.gov.

We look forward to our continued partnership on the West Virginia Medicaid Reform Demonstration. If you have any questions, please contact your CMS demonstration team.

Sincerely,

**Danielle**  
**Daly -S**

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Director

Division of Demonstration Monitoring and Evaluation

cc: Nicole Guess, State Monitoring Lead, CMS Medicaid and CHIP Operations Group



# **Interim Report (*Revised*)**

*1115 Substance Use Disorder Waiver Evaluation*

*August 15, 2022*

**Prepared for:**

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## Table of Contents

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Table of Contents .....	2
List of Tables .....	3
List of Figures .....	4
Document Acronyms .....	6
A. Executive Summary .....	7
B. General Background Information about the Demonstration .....	8
C. Evaluation Questions & Hypotheses .....	11
D. Methodology .....	14
1 Operationalization of Measures .....	14
2 Methodological Limitations .....	30
E. Results .....	35
3 What is the impact of the demonstration on quality of care for Medicaid enrollees? (EQ 1.1) ....	36
4 What is the impact of the demonstration on population health outcomes among Medicaid enrollees? (EQ 1.2).....	45
5 What is the impact of the demonstration on access to SUD treatment among Medicaid enrollees? (EQ 2.1).....	49
6 What is the impact of the demonstration on use of SUD treatment among Medicaid enrollees? (EQ 2.2) .....	54
7 What is the impact of the demonstration on emergency department (ED) utilization by Medicaid enrollees with SUD? (EQ 3.1) .....	59
8 What is the impact of the demonstration on inpatient hospital use by Medicaid enrollees with SUD? (EQ 3.2).....	82
9 What is the impact of the demonstration on the integration of physical and behavioral health care among Medicaid enrollees with SUD and comorbid conditions? (EQ 4.1).....	90
10 What is the impact of the demonstration on care transitions among Medicaid enrollees with SUD? (EQ 4.2).....	91
11 Cost Analysis .....	94
12 Changes to evaluation plan for extension .....	96
F. Conclusions .....	98
G. Interpretations, Policy Implications, and Interactions with Other State Initiatives .....	99

H. Lessons Learned & Recommendations .....	101
I. Attachments.....	103
Appendix A: Evaluation Measures Table .....	103
Appendix B: Interview Instrument.....	124

## List of Tables

---

Table C-1 Evaluation Questions & Hypotheses.....	11
Table D-1 Inpatient Measure Variations Used in Developing Analytic Approach .....	18
Table D-2 Examples of Real and Imputed Values March-May 2020.....	31
Table D-3 Frequency of POS Codes in Residential Adult Services Claims, 2020.....	33
Table E-1 Outpatient Service Utilization for SUD Treatment Among Enrollees with SUD- Methadone implementation .....	57
Table E-2 ED Measures .....	60
Table E-3 All-cause ED Utilization Among Enrollees with SUD- Methadone implementation .....	72
Table E-4 All-cause ED Utilization Among Enrollees with SUD- RAS & PRSS implementation .....	73
Table E-7 ED Visits for SUD among Enrollees with SUD- Methadone implementation.....	75
Table E-8 ED Visits for SUD among Enrollees with SUD- RAS & PRSS implementation .....	76
Table E-11 Share of Non-emergent ED Use Among Enrollees with SUD- Methadone implementation ....	78
Table E-12 Share of Non-emergent ED Use Among Enrollees with SUD- RAS & PRSS implementation ....	79
Table E-15 ED Visits for SUD Among All Enrollees- Methadone implementation .....	80
Table E-16 ED Visits for SUD Among All Enrollees- RAS & PRSS implementation .....	81
Table E-21 Inpatient Stays for SUD- Methadone implementation .....	83
Table E-22 Inpatient Stays for SUD- RAS & PRSS implementation .....	84
Table E-23 Inpatient Stays for OUD- Methadone implementation .....	86
Table E-24 Inpatient Stays for OUD- RAS & PRSS Implementation.....	87
Table E-28 All-Cause Inpatient Stays among Enrollees with SUD- Methadone implementation.....	89
Table E-29 All-Cause Inpatient Stays among Enrollees with SUD- RAS & PRSS implementation .....	90
Table E-34 Proposed Evaluation Plan for Waiver Extension.....	97
Table I-1 Evaluation Design Table .....	104

Table I-2 Changes to Evaluation Plan Measures Table as of November 2021.....	122
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## List of Figures

---

Figure C-1 Demonstration Logic Model .....	13
Figure D-1 RAS Utilization by Each MCO/FFS.....	32
Figure D-2 Percent of Inpatient Claims with Missing Discharge Date .....	33
Figure D-3 Inpatient Stays for SUD by MCO/FFS .....	34
Figure E-1 Receipt of MAT or Other SUD-related Treatment Among All Enrollees by Month (EQ 1.1, EH 1.1.1) .....	36
Figure E-2 Receipt of PRSS, RAS, and Methadone Services Among Enrollees with SUD by Month (EQ 1.1, EH 1.1.1).....	37
Figure E-3 Enrollees Completing Four Treatment Sessions within 30 Days Among those Receiving Treatment by Month (EQ 1.1, EH 1.1.1) .....	38
Figure E-4 Percent of Medicaid Enrollees with AOD who Initiated AOD Treatment by Year (EQ 1.1, EH 1.1.1) .....	39
Figure E-5 Percent of Medicaid Enrollees with AOD who Initiated and Engaged in AOD Treatment by Year (EQ 1.1, EH 1.1.1) .....	40
Figure E-6 MAT Utilization Among Enrollees with SUD by Month (EQ 1.1, EH 1.1.1) .....	41
Figure E-7 Continuous Receipt of Pharmacotherapy Among Enrollees with OUD (EQ 1.1, EH 1.1.1).....	42
Figure E-8 All-Cause Mortality Rate Among Enrollees with SUD by Quarter (EQ 1.2, EH 1.2.1) .....	45
Figure E-9 Opioid-Related Mortality Rate Among Enrollees with SUD by Month (EQ 1.2, EH 1.2.1).....	46
Figure E-10 All-Cause Readmission Rate within 30 Days of Previous Hospital Stay by Month (EQ 1.2, EH 1.2.1) .....	47
Figure E-11 Neonatal Abstinence Syndrome Morbidity (EQ 1.2, EH 1.2.1) .....	48
Figure E-12 Percent of Providers Offering SUD Treatment.....	49
Figure E-13 Number of Buprenorphine Prescribers by Month.....	50
Figure E-14 Number of Certified Peer Recovery Support Specialists .....	51
Figure E-15 Supply of Residential Treatment Facilities.....	52
Figure E-16 Supply of Residential Treatment Beds.....	53
Figure E-17 Receipt of Residential Treatment Services Among Enrollees with SUD Diagnosis by Quarter (EQ 2.2, EH 2.2.1) .....	54

Figure E-18 Receipt of Methadone Among Enrollees with OUD Diagnosis by Month (EQ 2.2, EH 2.2.1) ..	55
Figure E-19 Receipt of PRSS Services Among Enrollees with SUD Diagnosis by Month (EQ 2.2, EH 2.2.1)	55
Figure E-20 Outpatient Service Utilization for SUD Treatment Among Enrollees with SUD- Methadone implementation .....	56
Figure E-21 Service Utilization for SUD Treatment Among Enrollees with SUD- RAS & PRSS implementation .....	57
Figure E-22 Service Utilization for SUD Treatment Among Enrollees with SUD- RAS & PRSS implementation .....	58
Figure E-23 All-cause ED Utilization Among Enrollees with SUD- Methadone implementation.....	71
Figure E-24 All-cause ED Utilization Among Enrollees with SUD- RAS & PRSS implementation .....	72
Figure E-31 ED Visits for SUD among Enrollees with SUD- Methadone implementation .....	74
Figure E-32 ED Visits for SUD among Enrollees with SUD- RAS & PRSS implementation.....	75
Figure E-37 Share of Non-emergent ED Use Among Enrollees with SUD- Methadone implementation...	77
Figure E-38 Share of Non-emergent ED Use Among Enrollees with SUD- RAS & PRSS implementation...	78
Figure E-41 ED Visits for SUD Among All Enrollees- Methadone implementation.....	80
Figure E-42 ED Visits for SUD Among All Enrollees- RAS & PRSS implementation .....	81
Figure E-47 Inpatient Stays for SUD- Methadone implementation.....	83
Figure E-48 Inpatient Stays for SUD- RAS & PRSS implementation .....	84
Figure E-49 Inpatient Stays for OUD- Methadone implementation .....	85
Figure E-50 Inpatient Stays for OUD- RAS & PRSS Implementation .....	86
Figure E-54 All-Cause Inpatient Stays among Enrollees with SUD- Methadone implementation.....	88
Figure E-55 All-Cause Inpatient Stays among Enrollees with SUD- RAS & PRSS implementation .....	89
Figure E-60 PRSS Recipients and Cost Per Quarter.....	94
Figure E-61 Methadone Recipients and Cost Per Quarter.....	95
Figure E-62 RAS Recipients and Cost Per Quarter .....	95

## Document Acronyms

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The following acronyms are used throughout this document:

Acronym	Definition
AMA PCPI	American Medical Association <sup>®</sup> Physician Consortium for Performance Improvement <sup>®</sup>
ARP	American Rescue Plan
ASAM	American Society of Addiction Medicine
COE	Centers of Excellence
CSEDW	Children with Serious Emotional Disorder Section 1915(c) Waiver
DFMB	Drug Free Moms and Babies
DHHR	West Virginia Department of Health and Human Resources
FFS	Fee-for-Service
MODRN	Medicaid Outcomes Distributed Research Network
MAT	Medication-Assisted Treatment
MCO	Managed Care Organization
MHP	Mountain Health Promise
MOUD	Medication for Opioid Use Disorder
NAS	Neonatal Abstinence Syndrome
OHA	West Virginia Office of Health Affairs
ODD	Opioid Use Disorder
PPW-PLT	State Pilot Grant Program for Treatment for Pregnant and Postpartum Women
RAS	Residential Adult Services
SAMHSA	Substance Abuse and Mental Health Services Administration
SMI	Serious Mental Illness
SOR	State Opioid Response grant
STC	Special Terms and Conditions
SUD	Substance Use Disorder
WV	West Virginia
WVCBAPP	West Virginia Certification Board for Addiction & Prevention Professionals
WVU	West Virginia University



## A. Executive Summary

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In 2018, the West Virginia Department of Health and Human Resources (DHHR) implemented a Section 1115 Substance Use Disorder (SUD) Medicaid waiver to promote access and use of SUD treatment among Medicaid enrollees. The waiver allows WV Medicaid to reimburse for three services designed to address gaps in the SUD care continuum- peer recovery services, residential adult services, and methadone. As part of the waiver agreement, the WVU Office of Health Affairs (OHA) evaluation team was tasked with measuring resulting changes in the supply of SUD treatment, utilization, and related outcomes. This interim report provides preliminary findings for these measures, as well as a description of two major evaluation challenges that have occurred.

These challenges have both affected how we analyze and interpret claims data. First, the anticipated control state implemented policies during the post-period that no longer make it a suitable comparator for some of our analyses. Second, the claims data and vital statistics data used in the evaluation have significant quality issues, including duplications, billing/coding errors, and other limitations. The evaluation team is working closely with the data suppliers to identify and correct these errors to provide the most rigorous results possible. This interim report highlights results that we believe are accurate. Analyses that were based on lower quality data are included under their respective measure names, but include a disclaimer to interpret the results with caution.

Among the findings we believe are accurate, the evaluation team found that the waiver improved the supply of residential facilities, bed, and peer recovery support specialists (PRSS). PRSS are an especially valuable resource for providers and were reported to help make care transitions more “seamless”, specifically in residential settings. However, connecting patients to residential beds is still subject to barriers, most notably approval from managed care organizations (MCOs).

Additionally, while uptake of individual waiver services rose over time, the observed rise in overall SUD treatment utilization use appears to be part of a larger trend beginning prior to waiver implementation. We are unable to determine whether the waiver was responsible for these increases, even though they continued during the waiver period. In addition, it appears that quality of SUD treatment (e.g. engagement) may have worsened during the waiver period. However, this may also be due to broader declines in care quality that began prior to the waiver’s implementation. When interpreting the results in this report, it is also important to note that opioid overdose deaths increased significantly in the West Virginia post-waiver implementation. This trend has notably been driven by increased fentanyl on the market. Between 2019 and 2020, the rate of synthetic opioid overdose deaths increased 81% in WV.<sup>1</sup> Therefore, while some analyses in this report appear to show worsening outcomes, the waiver may instead have mitigated a worsening opioid crisis in the state. With the data available to the research team, we are unable to determine the extent to which this occurred.

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<sup>1</sup> Centers for Disease Control and Prevention. (2022). Synthetic Opioid Overdose Data. <https://www.cdc.gov/drugoverdose/deaths/synthetic/index.html#:~:text=In%202020%2C%20more%20than%2056%2C000,opioid%2Dinvolved%20deaths%20in%202020.>

Poor data quality has increased the time we will need to fully describe the impact of the waiver in terms of health care outcomes. In the meantime, the evaluation team and the State are working together to address these data quality issues. We strongly recommend that the State consider data quality improvements as a major cornerstone of its waiver extension plan.

## B. General Background Information about the Demonstration

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This report communicates interim findings from OHA’s evaluation of the 1115 Substance Use Disorder (SUD) Medicaid Waiver, as of July 2022. A summative report will be issued in February 2023. The measures outlined in this report were approved by the Center for Medicaid Services (CMS) on May 29th, 2020.

The WV Bureau of Medical Services (BMS) received approval for a 5-year (from January 2018 to December 2022) section 1115 waiver demonstration entitled “Creating a Continuum of Care for Medicaid Enrollees with Substance Use Disorders” on October 6, 2017 (henceforth referred to as the “waiver”). Including the pre-waiver implementation period, this evaluation will analyze data from January 2016 through December 2022.

This demonstration was developed to address the state’s SUD epidemic. West Virginia has the highest age-adjusted rate of drug overdose deaths in the country (52.8 deaths per 100,000 residents in 2019)<sup>2</sup>, almost 2.5 times the national average.<sup>3</sup> Between 2012 and 2019, the death count due to drug overdoses increased 55.9%.<sup>4</sup> Additionally, 51 of every 1,000 births in the state involve babies born with Neonatal Abstinence Syndrome (NAS) resulting from substance use among pregnant women.<sup>5</sup> As of June 2021, the WV Medicaid program provides health coverage to more than 596,000 residents with over 80% of members served through the state’s managed care delivery system.<sup>6</sup> More than one-third of WV’s population is covered by Medicaid at some point during the year.

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<sup>2</sup>National Center for Health Statistics, Centers for Disease Control and Prevention (2021). Drug Overdose Mortality by State.

[https://www.cdc.gov/nchs/pressroom/sosmap/drug\\_poisoning\\_mortality/drug\\_poisoning.htm](https://www.cdc.gov/nchs/pressroom/sosmap/drug_poisoning_mortality/drug_poisoning.htm)

<sup>3</sup> Centers for Disease Control and Prevention. (2021). Drug Overdose Deaths.

<https://www.cdc.gov/drugoverdose/deaths/index.html>

<sup>4</sup> National Center for Health Statistics, Centers for Disease Control and Prevention (2021). Drug Overdose Mortality by State.

[https://www.cdc.gov/nchs/pressroom/sosmap/drug\\_poisoning\\_mortality/drug\\_poisoning.htm](https://www.cdc.gov/nchs/pressroom/sosmap/drug_poisoning_mortality/drug_poisoning.htm)

<sup>5</sup> Umer, A., Loudin, S., Maxwell, S., et al (2019). Capturing the statewide incidence of neonatal abstinence syndrome in real time: the West Virginia experience. *Pediatric research*, 85(5),607-611.

<https://doi.org/10.1038/s41390-018-0172-z>

<sup>6</sup> WV Department of Health and Human Resources (2021). West Virginia Medicaid Managed Care and Fee for Service Monthly Report 2021.

<https://dhhr.wv.gov/bms/Members/Managed%20Care/MCOreports/Documents/Copy%20of%20Managed%20Care%20Monthly%20Enrollment%20Report%20June%202021.pdf>

Against this backdrop, the waiver aimed to meet the following objectives stated in the approved special terms and conditions:

- Improve quality of care and population health outcomes for Medicaid enrollees with SUD;
- Increase enrollee access to and utilization of appropriate SUD treatment services based on the American Society of Addiction Medicine (ASAM) Criteria or comparable, nationally, recognized SUD program standards based on evidence-based clinical treatment guidelines;
- Decrease medically inappropriate and avoidable utilization of high-cost emergency department and hospital services by enrollees with SUD; and
- Improve care coordination and care transitions for Medicaid enrollees with SUD.

The waiver approach centers upon three reimbursement mechanisms designed to address gaps in the SUD care continuum and were thought to be cost-neutral. The waiver also established standards of care for SUD services that incorporate industry standard benchmarks from the ASAM criteria for patient assessment and placement.

The three main treatment options expanded through Medicaid are peer recovery support services, adult residential treatment, and methadone treatment.

1. **Peer Recovery Support Services (PRSS):** These services are designed and delivered by individuals in recovery from SUD, who provide counseling support to help prevent relapse and promote recovery. Services are provided by appropriately trained staff employed by Licensed Behavioral Health Centers. Peer recovery coaches must be certified through a WV Department of Health and Human Resources approved training program. This service became officially available for Medicaid reimbursement beginning on July 1<sup>st</sup>, 2018.
2. **Residential Treatment Services:** These services are available to adult Medicaid beneficiaries with a SUD diagnosis who are residents in facilities that meet the definition of an Institution for Mental Disease (IMD). Facilities must be enrolled as Medicaid providers and must deliver care consistent with ASAM Levels 3.1, 3.3, 3.5 and/or 3.7, as assessed by BMS staff. These services can be provided in settings of any size. The average length of stay for individuals receiving these services must be 30 days or less. Covered services include withdrawal management, addiction pharmacotherapy, drug screening, motivational enhancement, counseling, clinical monitoring, and recover support services. This service was implemented on July 1<sup>st</sup>, 2018.
3. **Methadone Treatment:** This service bundle benefit includes physician-supervised daily opioid agonist medication, counseling services provided to maintain multidimensional stability for Medicaid beneficiaries with OUD, as well as associated lab services. This service can be provided by BMS-licensed Opioid Treatment Programs (OTPs, methadone clinics) in accordance with an individualized service plan determined by a licensed physician or prescriber. Covered services include use of opioid agonist pharmacotherapy (methadone), drug screening, linkage to psychological and medical consultation, cognitive or behavioral therapy, and referral for infectious disease screening. This service was implemented on January 14<sup>th</sup>, 2018.

This demonstration was designed to impact West Virginia residents with SUD who are enrolled in Medicaid. In particular, the policy targets those who need services meeting ASAM levels of care 3.1-3.7,

and those who can benefit from peer support services and/or medication for opioid use disorders (MOUD).

The structure of the waiver demonstration was significantly altered in 2019 with the transition to managed care. BMS initiated this change in alignment with a broader WV Medicaid programmatic shift to stronger reliance on MCOs for service delivery. The objective of managed care service delivery is to improve care coordination for those enrolled via improved administrative functionality, and as a result to increase access to services and to improve member health outcomes. Additionally, improved care coordination helps support efficient economic operations. The State contracts with multiple MCO organizations; currently, approximately 80% of WV members receive services via managed care. On July 1, 2019, adult residential services and peer recovery support services were carved in to MCO contracts, making the organizations responsible for providing necessary authorizations and for paying claims for these services. Although methadone is not carved in under the MCOs, in the MCO contracts for SUD services BMS did include that MCOs will be responsible for assisting a member during the admission and discharge transition processes for Opioid Treatment Program services. The 1115 Evaluation Design was altered to address these changes to the waiver program. The updated design highlighted how the evaluation planned to incorporate managed care into cost analyses conducted, using actual amounts paid to providers for each encounter in addition to FFS payments (where appropriate) to calculate costs. CMS approved the Final Evaluation Design, inclusive of these changes, on September 27, 2019.

As discussed in more detail later in this report, through creating the Interim Evaluation Report the evaluating team has discovered differences in treatment-related outcomes over time depending on whether an individual received services via FFS versus MCO. Recognizing this, the evaluators have broken down several of the data trends reported on by FFS and MCO to show the difference between the two. The analysis revealing these differences further break down the MCO trend into individual trends for each of the three MCOs so that comparison among each of the MCOs and FFS is accessible. Recognizing these discrepancies revealed by the data, the waiver evaluation team is currently considering future analytic options for separating outcomes into FFS versus MCO to assess changes in the impact of the waiver by payer.

The state notes that another major operational change to the waiver program was the amendment, with federal authorization, to allow Children with Serious Emotional Disorder Section 1915(c) Waiver (CSEDW) members a lock-in period for continuous enrollment with a single MCO in Mountain Health Promise (MHP), the Specialized Managed Care Plan for Children and Youth. This amendment was approved on December 12, 2019, and in 2020 CSEDW automatic enrollment was integrated under the 1115 waiver. This programmatic system enrollment change was made in order to provide specialized and coordinated care to CSEDW members in the most seamless and cost-effective way possible. Given that this change was operational and specific to program coordination among the State's waivers, no CSEDW automatic enrollment- specific changes were implemented as part of the Evaluation Design. Though the state wishes to include this information in this report, the state has told the evaluation team that this change has no bearing on the population being treated by the waiver services.

Finally, the Special Terms and Conditions (STCs) for the 1115 waiver were edited and updated twice during the effective demonstration period, with updates made in both April and December of 2019. The

first set of changes added flexibilities that SUD providers can use for determining assessment criteria, updating the original condition that providers should use the ASAM criteria to allow for assessment based on ASAM criteria or another nationally recognized and approved set of SUD criteria based on evidence-based treatment guidelines. The STCs finalized in December 2019 were updated to incorporate STCs specific to the inclusion of the CSEDW member automatic enrollment in accordance with the demonstration amendment approved by CMS on December 12, 2019. Each of these updates to the STCs were made to clarify and update terms and conditions in order to reflect how the State was currently operating the waiver demonstration. The evaluation team asked the state whether they expected this change to affect waiver outcomes; they reported that they did not.

### C. Evaluation Questions & Hypotheses

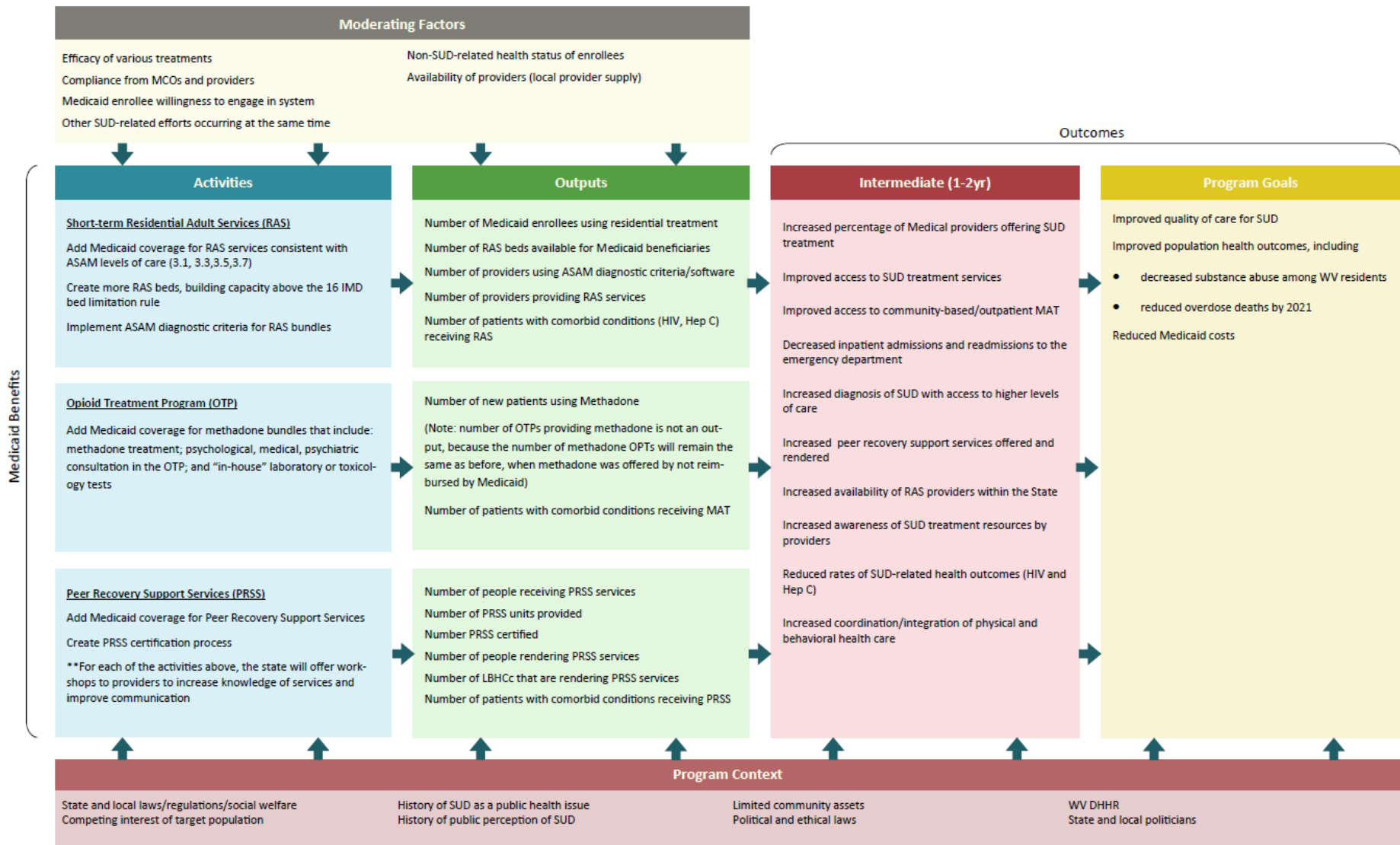
To measure the performance of the demonstration, the state’s goals were translated into quantifiable targets for improvement. Figure C-1, the demonstration logic model, explains the c behind the demonstration features and intended outcomes. Table C-1 lists the evaluation questions and hypotheses. For a full list of the original evaluation measures, including a table providing the most recent set of updates made to the measures, please see Appendix A: Evaluation Measures Table.

*Table C-1 Evaluation Questions & Hypotheses*

Evaluation Question (EQ)	Evaluation Hypothesis (EH)
<p><b>1.1:</b> What is the impact of the demonstration on quality of care for Medicaid enrollees?</p>	<p><b>1.1.1:</b> The demonstration will improve the quality of SUD services delivered to Medicaid enrollees.</p> <p><b>1.1.2:</b> The demonstration will increase provider knowledge of appropriate SUD treatment options.</p>
<p><b>1.2:</b> What is the impact of the demonstration on population health outcomes among Medicaid enrollees?</p>	<p><b>1.2.1:</b> The demonstration will decrease morbidity and among Medicaid enrollees and their children.</p>
<p><b>2.1:</b> What is the impact of the demonstration on access to SUD treatment among Medicaid enrollees?</p>	<p><b>2.1.1:</b> The demonstration will increase the supply of residential, MAT, and PRSS care available for Medicaid enrollees.</p>
<p><b>2.2:</b> What is the impact of the demonstration on use of SUD treatment among Medicaid enrollees?</p>	<p><b>2.2.1:</b> The demonstration will increase the use of residential, MAT, and PRSS care available by Medicaid enrollees.</p>
<p><b>3.1:</b> What is the impact of the demonstration on emergency department (ED) utilization by Medicaid enrollees with SUD?</p>	<p><b>3.1.1:</b> The demonstration will decrease the rate of ED use and the percentage of ED visits that are non-emergent among Medicaid enrollees with SUD.</p>

<p><b>3.2:</b> What is the impact of the demonstration on inpatient hospital use by Medicaid enrollees with SUD?</p>	<p><b>3.2.1:</b> The demonstration will decrease hospital admissions among Medicaid enrollees with SUD.</p>
<p><b>4.1:</b> What is the impact of the demonstration on the integration of physical and behavioral health care among Medicaid enrollees with SUD and comorbid conditions?</p>	<p><b>4.1.1:</b> The demonstration will increase the rate of Medicaid enrollees with SUD-related physical health conditions who are also receiving behavioral care.</p>
<p><b>4.2:</b> What is the impact of the demonstration on care transitions among Medicaid enrollees with SUD?</p>	<p><b>4.2.1:</b> The demonstration will improve communication among providers who transition patients to other providers.</p>

Figure C-1 Demonstration Logic Model



## D. Methodology

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For many of the outcomes, the planned evaluation was originally an assessment of pre/post data with a comparison group. A unique feature of the evaluation for WV's waiver is that we secured data from a comparator state (State A, which did not implement an 1115 Waiver over the course of the study period) to act as a control group. This allows us to conduct *difference-in-differences models* for several of our measures. The difference-in-differences technique is an accepted way to mimic an experimental research design, in the absence of the ability to implement a true experimental design.<sup>7</sup> For the measures where State A data is insufficient or inappropriate for use as a control, we instead planned to conduct difference-in-differences, matched-control, or interrupted time series analyses, using only WV data. However, due to data quality issues described in Section 2: Methodological Limitations, we have not used difference-in-difference modeling for any measures in this report. Instead, we have used interrupted time series analyses when possible.

Our analytic sample included all individuals age 18-64, enrolled in WV or State A Medicaid for at least one month throughout the study period. Individuals who were dually eligible for Medicare were excluded.

The demonstration project began with the implementation methadone reimbursement in January 2018, followed by RAS and PRSS reimbursement in July 2018, and is scheduled to run through 2022. The post-treatment period for the evaluation begins in January 2018 for analyses related to methadone use and July 2018 for analyses specific to RAS and PRSS use. For many measures throughout the report, a separate analysis has been run for each implementation date. In most cases, the pre-treatment period begins in 2016.

### 1 Operationalization of Measures

To operationalize our measures, we began with the measure sets suggested by CMS. In the cases where a CMS recommended measure set did not exist for our outcome, we either identified or are continuing to look for measure specifications from other nationally recognized data stewards (e.g. National Quality Forum). The denominators for certain measures – as defined by the data stewards – in Appendix A: Evaluation Measures Table specify the population of interest as “all Medicaid beneficiaries.” However, we have limited the denominator for each of these measures to include only Medicaid beneficiaries with SUD. Claims with a diagnosis code (any diagnosis on the claim) listed under one the following HEDIS 2019 Value Sets denotes a SUD diagnosis: (1) Alcohol Abuse and Dependence, (2) Opioid Abuse and Dependence, and (3) Other Drug Abuse and Dependence, as well as claims for drug overdoses.

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<sup>7</sup> Wing C, Simon K, Bello-Gomez RA. Designing Difference in Difference Studies: Best Practices for Public Health Policy Research. *Annual Review of Public Health*. 2018;39(1):453-469. doi:10.1146/annurev-publhealth-040617-013507



### 1.1.1 Data Sources

The primary data source for this evaluation is administrative Medicaid claims data, from both WV and (depending on appropriateness) the comparator State A. The limited claims data set currently includes all eligibility, authorization, pharmaceutical, facility, and professional claims, as well as provider-level reference data from January 2009 to through February 2020. In this revised interim report, additional data points have been added to measures of inpatient, outpatient, and emergency department utilization, as well as supply measures. These measures now include data through December 2021. A second data source is the WV DHHR Vital Statistics mortality database that includes death certificate data for all decedents in WV. These data include both date of death, as well as underlying and contributing cause of death codes. The third data source is the WV Birth Score Program, which collects information on NAS for every birth in the state; these data are being used to assess the impact of the Waiver on NAS morbidity. Finally, the team collected primary, qualitative data to assess outcomes that are unobtainable from other sources.

### 1.1.2 Analytic Approach

In addition to descriptive statistics provided in this report, the WVU Evaluation Team has also conducted single-group and multi-group interrupted time series modeling for measures as applicable. In an interrupted time series model (ITS), outcome variables for at least one group are required at equally spaced time intervals pre- and post- intervention. This allows the researcher to calculate a pre-trend and post-trend, then compare these trends for statistical significance, as well as a change in the immediate level of the variable before and after the intervention. In the case of a multi-group interrupted time series model, a comparison group can be included to help control for confounding variables. This version of the ITS model relies on the assumption that the groups' pre-trends and levels are not statistically significantly different.

This report utilizes the Interrupted Time Series Analysis (ITSA) Stata package created by Linden Consulting Group, LLC.<sup>8</sup> This package includes a Newey OLS regression model that estimates the coefficients using the OLS regression, but produces Newey-West standard errors. These standard errors handle potential autocorrelation as well as potential heteroscedasticity.

The single group ITS model is written as follows:

$$Y_t = \beta_0 + \beta_1 T_t + \beta_2 X_t + \beta_3 X_t T_t + \epsilon_t$$

In which  $Y_t$  is the outcome variable,  $T_t$  is the time since the beginning of the analysis period and  $X_t$  represents the intervention (0 for pre-intervention and 1 for post-intervention). The intercept,  $\beta_0$ , is the level of the outcome variable at the beginning of the analysis period.  $\beta_1$  is the pre-intervention trend.  $\beta_2$

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<sup>8</sup> Ariel Linden (Linden Consulting Group, LLC.) Conducting interrupted time-series analysis for single- and multiple-group comparisons. *The Stata Journal*. 2015;15(2):480-500. [http://www.lindenconsulting.org/documents/ITSA\\_Article.pdf](http://www.lindenconsulting.org/documents/ITSA_Article.pdf)

is the immediate change in level of the outcome variable post-intervention (signifies an immediate effect).  $\beta_3$  is the difference in pre- and post-intervention trends (signifies an effect over time).

The multi-group ITS model is written as follows:

$$Y_t = \beta_0 + \beta_1 T_t + \beta_2 X_t + \beta_3 X_t T_t + \beta_4 Z + \beta_5 Z T_t + \beta_6 Z X_t + \beta_7 Z X_t T_t + \epsilon_t$$

In which Z is a dummy variable signifying the treatment or control group. In this model,  $\beta_4$  represents the difference in the outcome level at the beginning of the analysis period between the treatment and control groups,  $\beta_5$  represents the difference in pre-intervention trends between the treatment and control groups,  $\beta_6$  represents the difference in the immediate change in level of the outcome variable post-intervention between the treatment and control groups, and  $\beta_7$  represents the difference in the outcome variable's trend pre- and post- intervention between the treatment and control groups. Thus, we look for changes in  $\beta_6$  and  $\beta_7$  to assess whether the intervention had a statistically significant effect on the control group. Detailed information on these models and how they are run in the ITSA Stata package can be found at [www.lindenconsulting.org/documents/ITSA\\_Article.pdf](http://www.lindenconsulting.org/documents/ITSA_Article.pdf).<sup>9</sup>

#### *Refining the Analytic Approach*

The Evaluation Team used inpatient utilization measures to test various analytic approaches with both single group and multi-group interrupted time series. Table D-1 describes each variation, including the type of ITS and whether or not the assumptions were met. Based on this investigation, we are currently determining which approach(es) will be implemented for the remaining measures in the evaluation plan.

All inpatient measures were developed using definitions created by the Medicaid Outcomes Distributed Research Network (MODRN), as described in Appendix A: Evaluation Measures Table, and use Medicaid claims data from January 2016 through December 2021. The evaluation team did not run a difference-in-differences analysis for these measures due to the policy State A enacted in the post-period, which violates the parallel trends assumption, as described in the Methodological Limitations. Therefore, several multi-group interrupted time series models were tested as options for modeling the effects of the waiver on inpatient utilization. For most of these tested models, the parallel pre-trend and pre-level assumptions were not met. When this assumption is met, it means that the change in level or trend of the outcome variable is expected to be the same for both the treatment and control groups if the intervention did not happen.

In addition, the evaluation team modeled single group interrupted time series analyses to investigate the changes in outpatient utilization post-waiver implementation. The evaluation team recognizes that a single group ITS is not as robust as a multi-group ITS. However, this was the best option available given the data limitations, as single group ITS analyses do not rely on a comparison group that meets the parallel pre-trends assumption.

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<sup>9</sup> Ariel Linden (Linden Consulting Group, LLC.) Conducting interrupted time-series analysis for single- and multiple-group comparisons. *The Stata Journal*. 2015;15(2):480-500. [http://www.lindenconsulting.org/documents/ITSA\\_Article.pdf](http://www.lindenconsulting.org/documents/ITSA_Article.pdf)

Each inpatient measure was analyzed two ways- one using the implementation date of methadone reimbursement (January 2018) and one using the implementation date of residential services and peer recovery support specialist reimbursement (July 2018) to determine the pre- and post-periods. By analyzing both ways, we can compare the significance of each waiver implementation stage.

Table D-1 Inpatient Measure Variations Used in Developing Analytic Approach

Measure	Intervention Date	Analytic Approach	Pre-Trend/Pre-Level Assumptions Met (Yes/No)	Level Change	Trend Change	Graph
Inpatient Stays for SUD among Enrollees with SUD	January 2018	Single Group ITS	n/a	No statistically significant change.	-9.4 per 100,000 enrollees (p<0.01)	<p>The graph displays inpatient stays for SUD per 100,000 enrollees from January 2016 to January 2022. A vertical dashed line at January 2018 indicates the start of methadone reimbursement. The y-axis ranges from 400 to 1400. The x-axis shows quarterly intervals. The legend shows 'Actual' data points and a 'Predicted' trend line. The predicted line shows a steady decline from approximately 1150 in early 2016 to about 650 in early 2022. Actual data points generally follow this trend but show significant volatility, with a notable peak in late 2016 and a sharp dip in early 2021.</p>

<p>Inpatient Stays for SUD among Enrollees with SUD</p>	<p>July 2018</p>	<p>Single Group ITS</p>	<p>n/a</p>	<p>No statistically significant change.</p>	<p>-7.8 per 100,000 enrollees (p&lt;0.05)</p>	
<p>Inpatient Stays for OUD among Enrollees with OUD</p>	<p>January 2018</p>	<p>Single Group ITS</p>	<p>n/a</p>	<p>No statistically significant change.</p>	<p>2.7 per 100,000 enrollees (p&lt;0.05)</p>	

<p>Inpatient Stays for OUD among Enrollees with OUD</p>	<p>July 2018</p>	<p>Single Group ITS</p>	<p>n/a</p>	<p>No statistically significant change.</p>	<p>4.1 per 100,000 enrollees (p&lt;0.05)</p>	
<p>Inpatient Stays for OUD vs. Other SUD among Enrollees with OUD vs. Other SUD</p>	<p>January 2018</p>	<p>Multi-Group ITS</p>	<p>No</p>	<p>n/a</p>	<p>n/a</p>	

<p>Inpatient Stays for OUD vs. Other SUD among Enrollees with OUD vs. Other SUD</p>	<p>July 2018</p>	<p>Multi-Group ITS</p>	<p>No</p>	<p>n/a</p>	<p>n/a</p>	
<p>Inpatient Stays for SUD among Enrollees with and without a PRSS claim</p>	<p>July 2018</p>	<p>Multi-Group ITS</p>	<p>No</p>	<p>n/a</p>	<p>n/a</p>	

<p>Inpatient Stays for SUD among Enrollees with and without an RAS claim</p>	<p>July 2018</p>	<p>Multi-Group ITS</p>	<p>No</p>	<p>n/a</p>	<p>n/a</p>	
<p>Inpatient Stays for SUD among Enrollees with and without a methadone claim</p>	<p>January 2018</p>	<p>Multi-Group ITS</p>	<p>Yes</p>	<p>-870.9 per 100,000 enrollees (p&lt;0.001)</p>	<p>No statistically significant change.</p>	

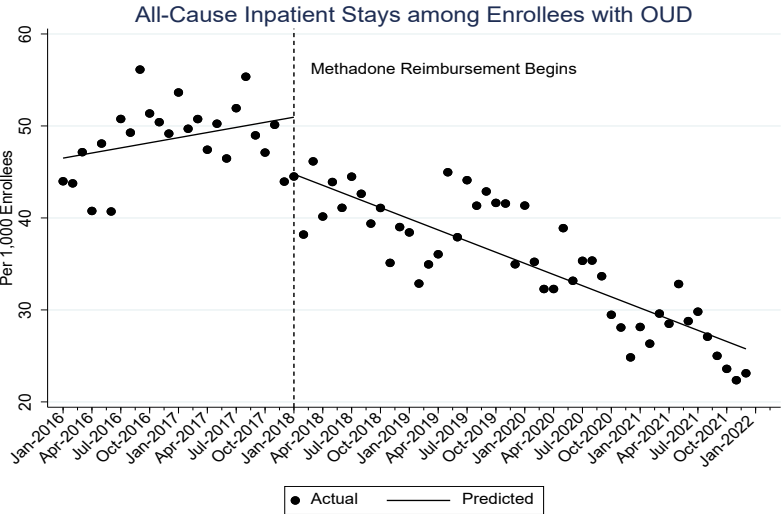
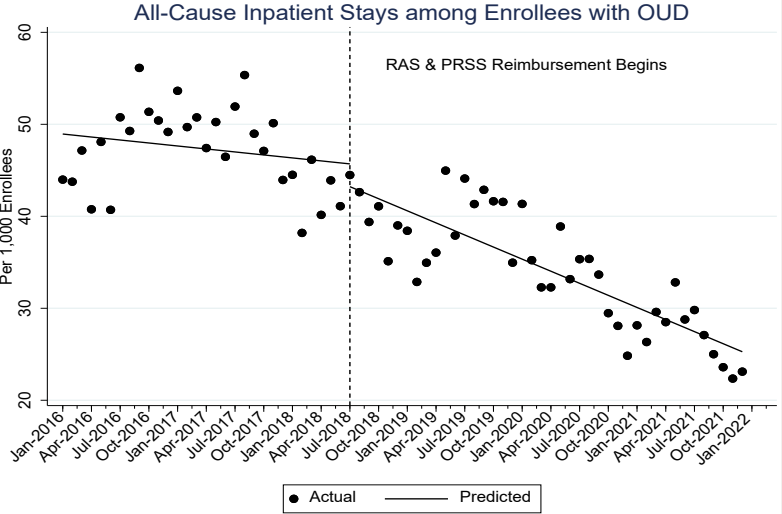


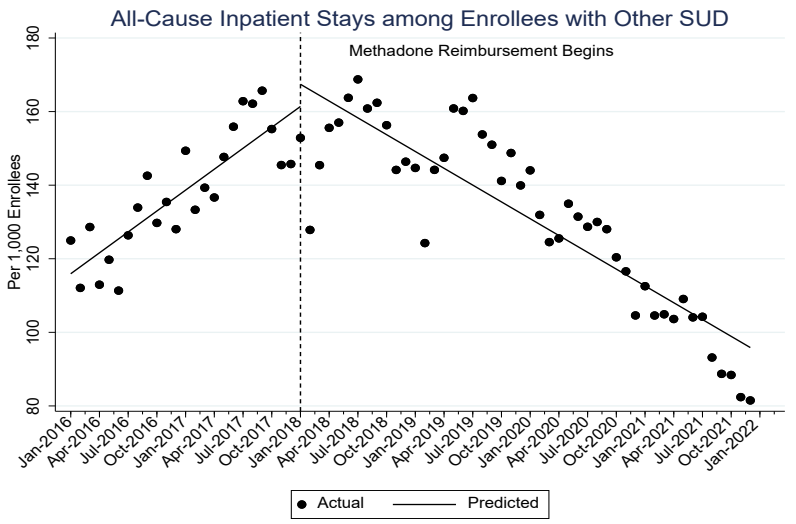
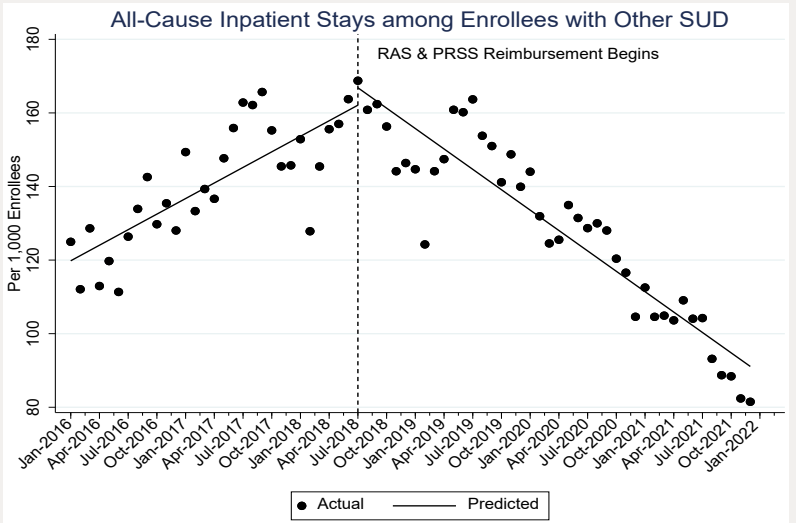
<p>Inpatient Stays for OUD among Enrollees with and without a PRSS claim</p>	<p>July 2018</p>	<p>Multi-Group ITS</p>	<p>Yes</p>	<p>No statistically significant change.</p>	<p>-13.7 per 100,000 enrollees (p&lt;0.05)</p>	
<p>Inpatient Stays for OUD among Enrollees with and without an RAS claim</p>	<p>July 2018</p>	<p>Multi-Group ITS</p>	<p>No</p>	<p>No statistically significant change.</p>	<p>n/a</p>	

<p>Inpatient Stays for OUD among Enrollees with and without a methadone claim</p>	<p>January 2018</p>	<p>Multi-Group ITS</p>	<p>No</p>	<p>n/a</p>	<p>n/a</p>	
<p>Inpatient Stays for Other SUD among Enrollees with and without a PRSS claim</p>	<p>July 2018</p>	<p>Multi-Group ITS</p>	<p>No</p>	<p>n/a</p>	<p>n/a</p>	

<p>Inpatient Stays for Other SUD among Enrollees with and without an RAS claim</p>	<p>July 2018</p>	<p>Multi-Group ITS</p>	<p>No</p>	<p>n/a</p>	<p>n/a</p>	
<p>Inpatient Stays for Other SUD among Enrollees with and without a methadone claim</p>	<p>January 2018</p>	<p>Multi-Group ITS</p>	<p>No</p>	<p>n/a</p>	<p>n/a</p>	

All-Cause Inpatient Stays among Enrollees with SUD	January 2018	Single Group ITS	n/a	-7.1 per 1,000 enrollees (p<0.001)	-1.1 per 1,000 enrollees (p<0.001)	
All-Cause Inpatient Stays among Enrollees with SUD	July 2018	Single Group ITS	n/a	No statistically significant change.	-0.78 per 1,000 enrollees (p<0.001)	

All-Cause Inpatient Stays among Enrollees with OUD	January 2018	Single Group ITS	n/a	-6.2 per 1,000 enrollees (p<0.001)	-0.59 per 1,000 enrollees (p<0.001)	
All-Cause Inpatient Stays among Enrollees with OUD	July 2018	Single Group ITS	n/a	No statistically significant change.	No statistically significant change.	

All-Cause Inpatient Stay among Enrollees with Other SUD	January 2018	Single Group ITS	n/a	No statistically significant change.	-3.417 per 1,000 enrollees (p<0.001)	
All-Cause Inpatient Stay among Enrollees with Other SUD	July 2018	Single Group ITS	n/a	No statistically significant change.	-3.3 per 1,000 enrollees (p<0.001)	

### 1.1.3 Cost Analysis

We did not require minimum enrollment durations for beneficiaries to be included in this analysis. Beneficiaries are included in the analysis during the first month in which a relevant SUD diagnosis or treatment claim was observed, and for up to 11 additional months that did not include a relevant diagnosis or treatment claim. Once an individual has period of 1 year with no relevant diagnosis or treatment claims, that beneficiary will be excluded from further analyses, unless and until they have a subsequent relevant diagnosis and/or treatment claim. This ensures our analysis represents the costs of serving individuals in the target population with active treatment needs. All cost outcome measures are expressed in terms of the recommended dollars per member per month.

So far, we have calculated and trended monthly spending for the three main waiver services offered. We also plotted the means compiled in the tables below to show trends visually and verify that month-to-month variation is within expectations and does not indicate an underlying data error. As needed, we conducted quarterly spending analyses to smooth out monthly variation in costs.

Still in progress are the regression models for costs. Because some person-months have \$0 healthcare spending, and other months have very large values, we are conducting two-part regression models. In particular, we are conducting a model that accounts for whether they are any costs in the person-month (logit model) and then another model that accounts for the level of costs conditional on having non-zero costs (generalized linear model [GLM]). We will run separate models for each of the outcomes described in the equation above, including total costs. We will control for covariates including age, race, gender, dual eligibility status, and physical or behavior health comorbidities.

### 1.1.4 Qualitative Analysis

The final component of our analysis is qualitative and intended to yield information that is not otherwise attainable from administrative data sources. Due to significant concerns over nonresponse bias from employing traditional survey research methods, communication among providers and provider knowledge has been assessed via focus groups.

A purposive sample of providers was guided by two broad, general questions per current phenomenological research recommendations. These two broad general questions are: “What have you experienced in terms of the phenomenon (i.e., communication among providers and provider knowledge)”; and, “What contexts or situations have typically influenced or affected your experiences of the phenomenon”? A semi-structured interview guide was developed around these two questions (see Appendix B: Interview Instrument). Per current recommendations, we planned to conduct interviews with groups of 3 to 5 providers with a maximum sample size of 25 annually over the three-year period between 2020 and 2022. Providers were to be purposefully selected each year from the list of Medicaid substance use disorder providers maintained by the state. In the first year of interviews, a maximum variation approach was employed with a goal of annually selecting providers that represent all 4 geographic regions of the state (Ohio River Valley, Allegheny Plateau, Allegheny Highlands, Potomac Section). In the second year of interviews, our team also employed a maximum variation approach and selected providers that ensured representation across ASAM levels 3.1, 3.5, and 3.7. The first 3.3 level

facility available to WV Medicaid enrollees (located in Ohio) did not open until April 2021; therefore, we did not purposefully select from this level of care.

Our sampling strategy and interview goals changed slightly in 2021, as our ongoing analyses indicated two areas for further exploration: rising HIV/HCV rates in the state around the same time the waiver was implemented, and general state-wide enthusiasm for peer recovery support specialists. To better understand the reasons for rising HIV/HCV rates and determine whether the waiver was truly correlated with this trend, we conducted two additional focus groups with a total of seven individuals who are subject matter experts in the field. To learn more about experiences specific to peer recovery support specialists in the state, we conducted one additional focus group with a total of three individuals in this role. This additional focus group data is not included in this report, as we limited our reported results to the measures outlined in the original evaluation plan.

In line with traditional data collection and translational protocols, interviews were audio recorded and transcribed by an external professional transcriber. A twofold coding process was employed using the NVIVO® software subjected to line-by-line coding with a goal of identifying a parsimonious set of themes. Consensus with a second researcher was sought per current qualitative research recommendations. As needed, discrepancies were resolved by a third party. Respondent quotes that captured the essence of each theme were selected as the primary data outcomes.

## 2 Methodological Limitations

As our evaluation has progressed, we've encountered several major limitations. First, changes occurred in the SUD landscape of our intended control group (State A) after initial approval of our evaluation plan. We have noted that there are several measures for which the comparator state and WV outcomes do not appear to meet the parallel trends assumption (i.e., that trends in both states would have remained the same, had the WV waiver not taken place). If we were to compare outcomes between WV and State A, the difference-in-differences approach would yield a biased result. Due to these changes, the evaluation team is still assessing whether and for what measures the State A data can be best used for this analysis. Therefore, State A data are not included in this report. Because State A data are not included, the evaluation team was not able to complete difference-in-differences analyses for any of the measures outlined in the evaluation plan. Without a control group, any observed significant changes reported in this document could be due to pre-existing trends specific to WV or other policy changes during the measurement period. Instead, the Evaluation Team has begun to implement interrupted time series analyses when possible. The single and multi-group ITS methods are described in Section D: Methodology.

Additionally, the COVID-19 pandemic has implications for our study. It has become evident that the pandemic directly contributed to a rise in opioid and other drug use, as well as related morbidity and mortality. To address this, we have imputed data from March/April/May of 2020 (the months during which the WV stay at home order was in place) with mean data from those same months in the years 2019 and 2021. Our goal in doing this was to help the reader see what the trend might have been, had the COVID pandemic not occurred. By taking an average of the previous and following years for each month, this removes the effect the stay at home order would otherwise have on the trend. As a reference, Table D-2 compares the original values with these imputed values for a set of example measures. Without



the imputation, the data show extraordinarily high rates of health care use, which should not be attributed to the waiver’s effects.

*Table D-2 Examples of Real and Imputed Values March-May 2020*

Measurement		Month		
		Mar-20	Apr-20	May-20
<b>Inpatient Stays for SUD among Enrollees with SUD Per 100,000 Enrollees</b>	Original	904.4	894.0	992.5
	Imputed	848.1	888.9	848.5
	% Change	-6.2%	-0.6%	-14.5%
<b>Inpatient Stays for OUD among Enrollees with OUD Per 100,000 Enrollees</b>	Original	308.0	334.8	337.0
	Imputed	257.0	279.0	342.9
	% Change	-16.6%	-16.7%	1.8%
<b>ED Visits for SUD among Enrollees with SUD Per 1,000 Enrollees</b>	Original	38.8	31.5	42.4
	Imputed	45.8	45.3	46.4
	% Change	18.0%	43.8%	9.3%
<b>ED Visits for OUD among Enrollees with OUD Per 1,000 Enrollees</b>	Original	10.8	10.3	13.7
	Imputed	12.5	13.5	15.2
	% Change	16.1%	31.1%	10.7%
<b>Outpatient Services for SUD among enrollees with SUD Per 1,000 Enrollees</b>	Original	753.0	773.0	754.0
	Imputed	744.0	741.7	739.5
	% Change	-1.2%	-4.1%	-1.9%

A third limitation that has become apparent throughout the evaluation period is the poor quality of the WV Medicaid data available to the evaluation team. For example, the evaluation team discovered that the vital statistics data used in the mortality analysis measures have double-counted some individuals’ deaths. As another example, methadone treatment is billed in weekly bundles, which does not allow us to observe how many or where (e.g., in clinic or via take-home) doses were taken. Providers often miscode services when billing, which in turn would yield inaccurate results from our models. We are working with the state to remedy these problems, or to find work arounds that maintain the rigor of our analyses. Below, we describe some of these data quality issues related to treatment-related outcomes.

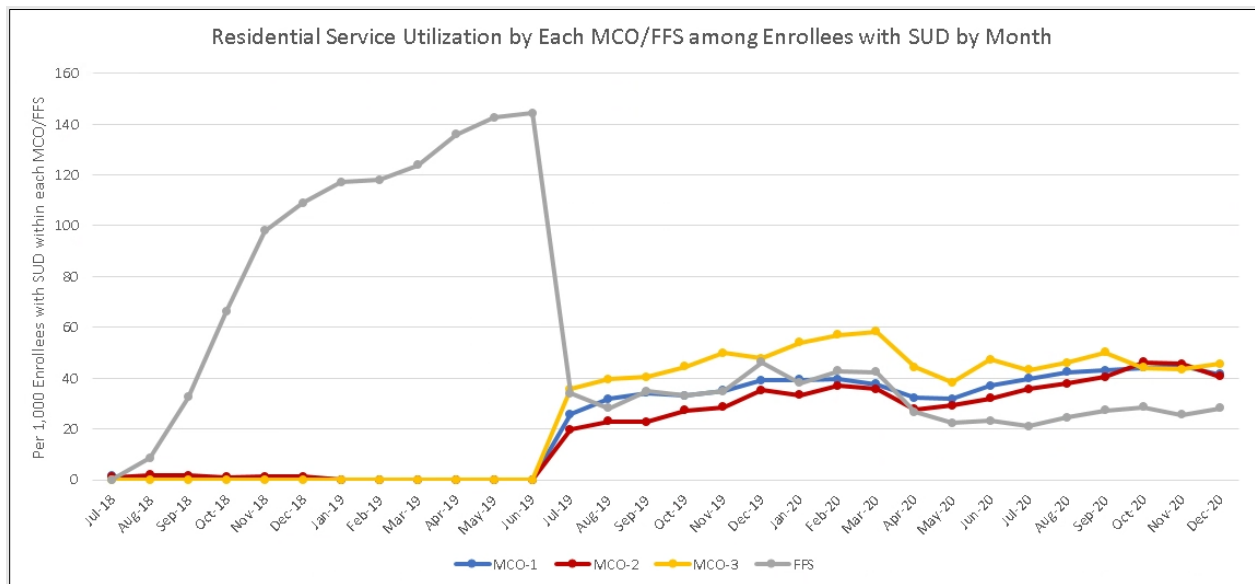
*Examples of Data Quality Issues in Treatment-Related Outcomes*

In this section, we present results from four of our data quality checks, which illustrate some of the data concerns as they relate to treatment-related outcomes. These outcomes include:

- All-Cause and Drug-Related Mortality Rate (EQ 1.2, EH 1.2.1)
- Plan All-Cause Readmissions (EQ 1.2, EH 1.2.1)
- Inpatient Stays for SUD & OUD (EQ 3.2, EH 3.2.1)
- ED Utilization (EQ 3.1, EH 3.1.1)
- Neonatal Abstinence Syndrome Rates (EQ 1.2, EH 1.2.1)

As shown in Figure D-1, nearly all residential service claims were billed as fee-for-service prior to June 2019, at which point these services were carved in to MCO coverage for those with Medicaid plans administered by MCOs. This policy change coincides with several unexpected outcomes that we had been seeing in our results, including a sharp increase in inpatient stays among enrollees with SUD (see Table D-1).

Figure D-1 RAS Utilization by Each MCO/FFS



Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-December 2020

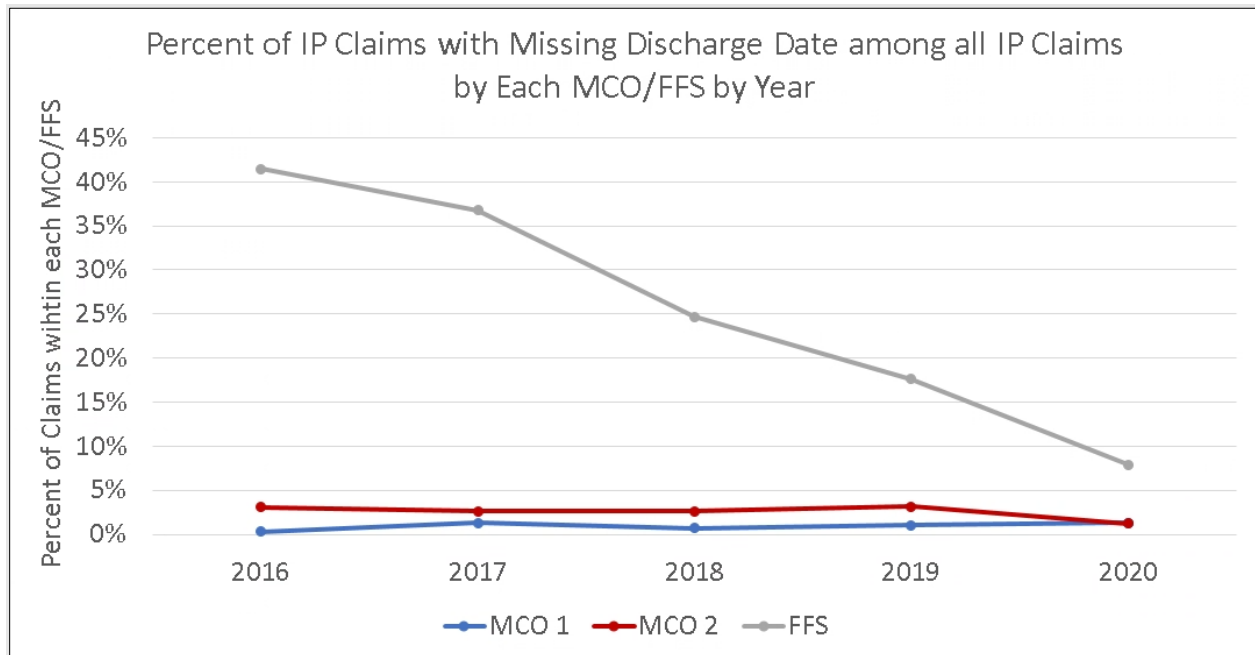
Investigating this further, our team stratified RAS claims by connected Place of Service Codes to determine whether there is overlap between our RAS measure definition and other measure definitions. Table D-3 documents some miscoding of this variable in the 2020 Medicaid claims data. For example, over 7% of RAS claims were coded as taking place in an office setting, while over 7% more were coded as taking place in a psychiatric residential treatment center. A small number of claims were also miscoded as taking place in an inpatient setting. All incorrect codes in Table D-3 are assumed to be due to miscoding and are therefore included in the count of RAS claims. In addition, any claims with an RAS procedure code are removed from inpatient and outpatient measurements so that they are only counted once as RAS. Finally, some RAS visits included two consecutive payers (usually one FFS and one MCO). In these cases, we counted the visit as being covered by the first payer.

Table D-3 Frequency of POS Codes in Residential Adult Services Claims, 2020

Claim Type		Place of Service Code										Total
		Telehealth (2)	Indian Health Services Free-standing Facility (5)	Office (11)	Inpatient (21)	Outpatient Hospital (22)	Inpatient Psychiatric Facility (51)	Community Mental Health Center (53)	Residential Substance Abuse Facility (55)	Psychiatric Residential Treatment Center (56)	Missing (99)	
Facility Claims	Frequency	-	-	-	568	-	-	-	-	-	-	568
	Percent	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100%
Professional Claims	Frequency	507	4	8,487	-	14	1	24,536	77,342	9,193	53	120,137
	Percent	0.42%	0.00%	7.06%	0.00%	0.01%	0.00%	20.42%	64.38%	7.65%	0.04%	100%
Total	Frequency	507	4	8,487	568	14	1	24,536	77,342	9,193	53	120,705

Further, in Figure D-2 we document the substantial (though improving) rate of missing data in some of our sources. For example, we find that a large percentage of inpatient claims are missing a discharge date, which has implications for outcomes related to inpatient hospitalization and length of stay. It appears that the majority of problematic claims can be attributed to FFS inpatient stays. Note that MCO-3 is not included in this table because they do not have any missing discharge date fields.

Figure D-2 Percent of Inpatient Claims with Missing Discharge Date



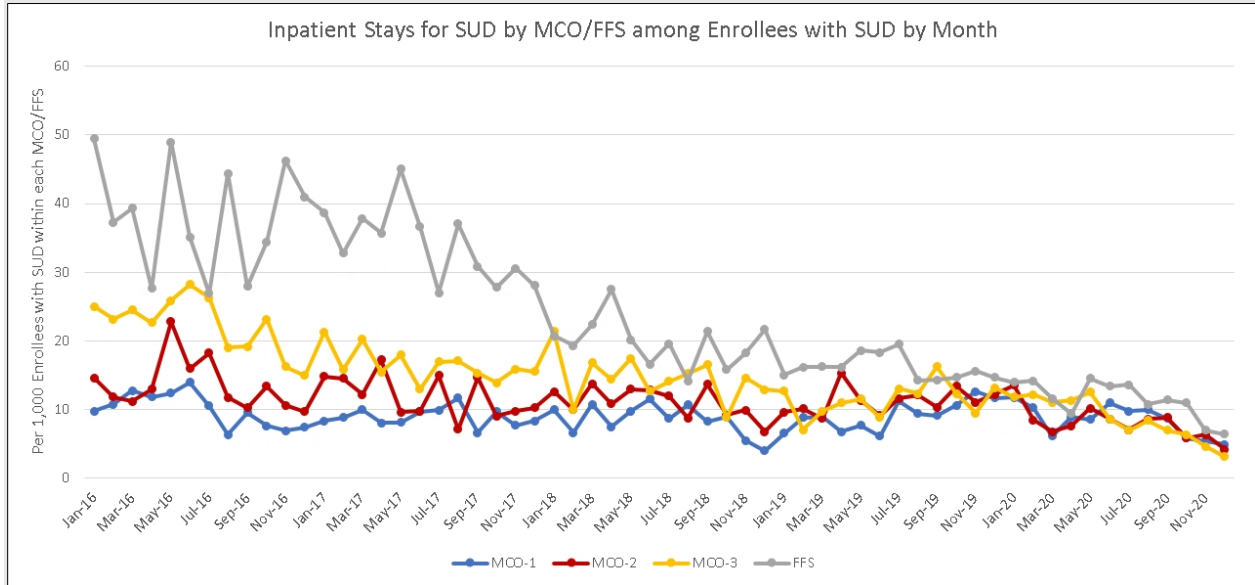
Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-December 2020

The evaluation team has also discovered differences in treatment-related outcomes over time by FFS versus MCO, as illustrated in Figure D-3. The graph shows that inpatient stays for SUD among those who have FFS-administered Medicaid increased substantially starting at the end of 2018 and continuing

throughout 2019. By analyzing this outcome with FFS and MCO claims combined, we are obscuring important individual trends by payer that warrant additional investigation. Therefore, the evaluation team is currently considering options for separating our outcomes into FFS versus MCO to assess changes in the impact of the waiver by payer types.

Figure D-3 Inpatient Stays for SUD by MCO/FFS



Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-December 2020

## E. Results

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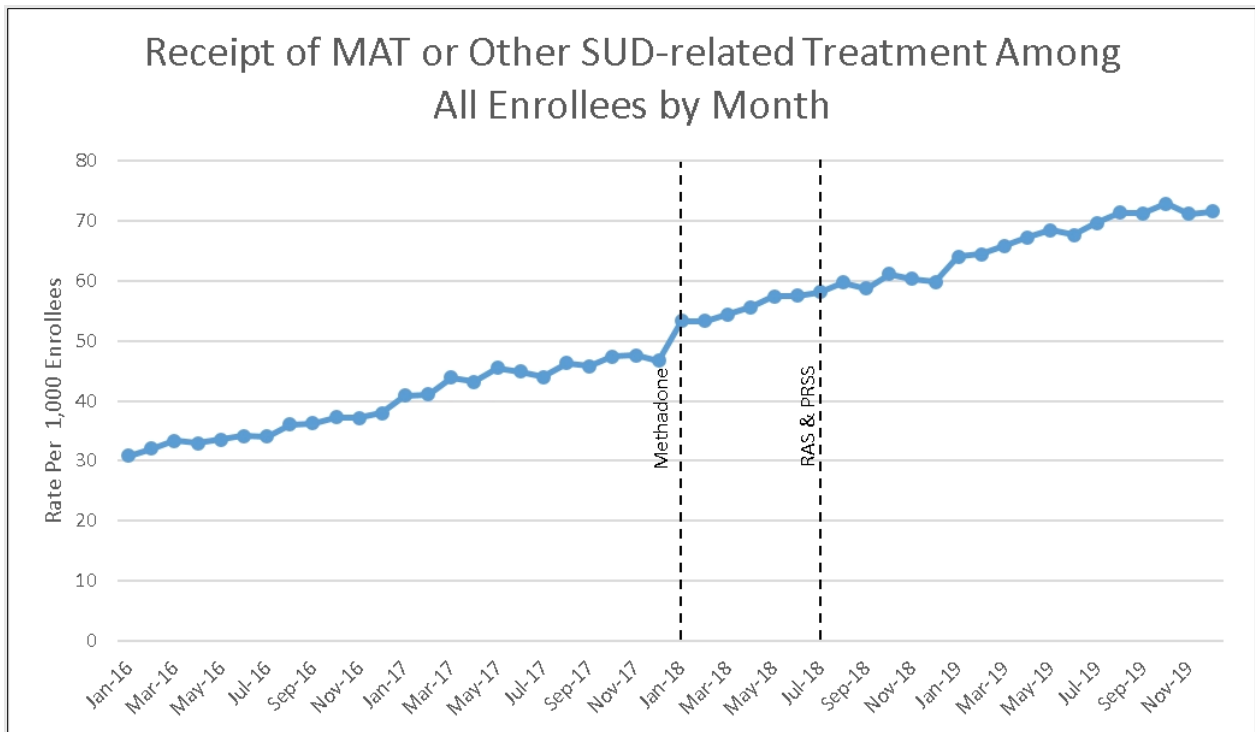
This section of the report reviews evaluation findings as of June 2022. As noted in the methodology section, these findings include data from January 2016 to December 2019, with some exceptions for measures that include data through February 2020. In this revised interim report, additional data points have been added to measures of inpatient, outpatient, and emergency department utilization, as well as supply measures, through December 2021. Because the evaluation is ongoing and our team continues to refine measures, not all measures will be populated. A list of measures not included in this report can be found in Section F. In graphs that include vertical dotted lines, the lines at January 2018 or Q1-2018 correspond to the inclusion of methadone reimbursement under Medicaid and the lines at July 2018 or Q3-2018 correspond to the inclusion of RAS and PRSS services. Preliminary findings have been organized under each evaluation question and hypothesis.

3 What is the impact of the demonstration on quality of care for Medicaid enrollees? (EQ 1.1)

1.1.5 The demonstration will improve the quality of SUD services delivered to Medicaid enrollees. (EH 1.1.1)

Delivery of waiver services has increased since the waiver’s implementation. In Figure E-1, the trend line shows an increase in the rate of enrollees who received all types of MAT (buprenorphine, naltrexone, methadone, acamprosate, and disulfiram) or had qualifying facility or professional claims with a SUD diagnosis and SUD-related treatment starting before waiver implementation and continuing post-waiver implementation, reaching a rate of just over 70 per 1,000 enrollees by December 2019. However, a major limitation of this and the findings that follow is that it does not include receipt of SUD treatment that was paid for with other insurance or cash pre-waiver implementation, as these analyses only use Medicaid data. Therefore, it is possible we are underreporting the receipt of services prior to 2018. The following measures investigate how the waiver has impacted initiation, engagement, and continuation of treatment; the utilization of waiver-covered services; and changes in emergency department visits over time.

Figure E-1 Receipt of MAT or Other SUD-related Treatment Among All Enrollees by Month (EQ 1.1, EH 1.1.1)



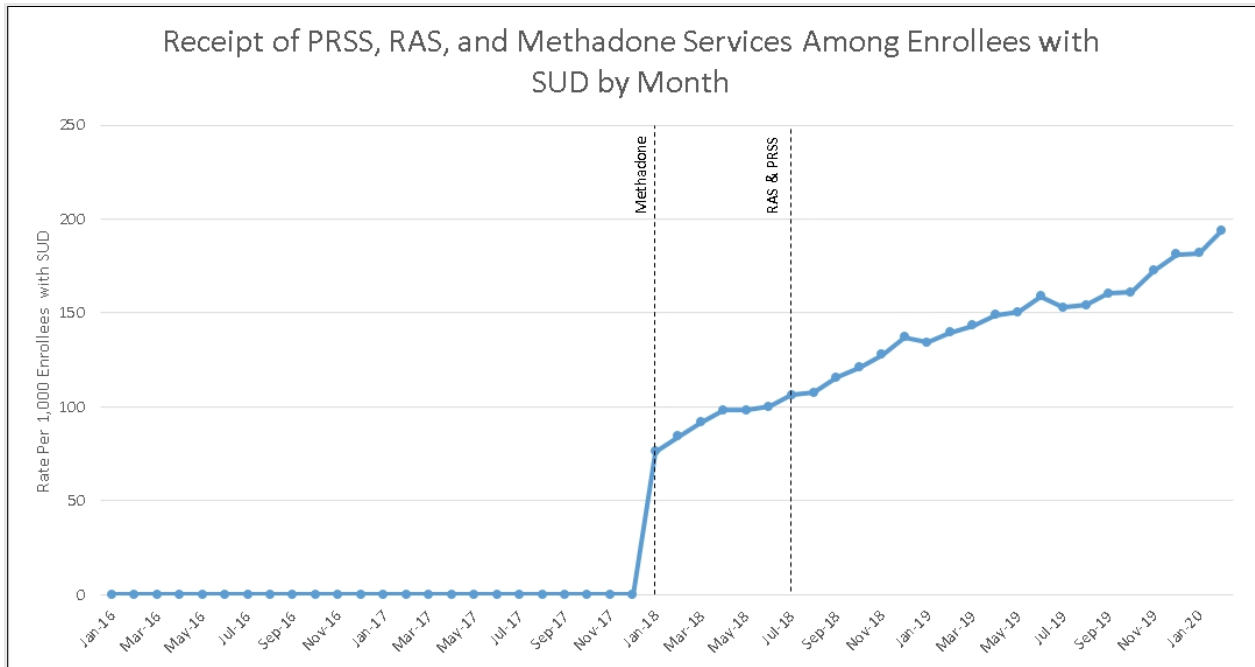
Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-December 2019

*Rate of beneficiaries with a SUD diagnosis who used SUD services per month*

At the onset of methadone coverage in January 2018, about 76 per 1,000 enrollees with SUD were receiving a waiver-covered service. As of February 2020, about 194 per 1,000 enrollees with SUD were receiving a service covered by the waiver each month.

*Figure E-2 Receipt of PRSS, RAS, and Methadone Services Among Enrollees with SUD by Month (EQ 1.1, EH 1.1.1)*



*Analytic Approach: Descriptive*

*Source: WV Medicaid Claims Data, January 2016-February 2020*

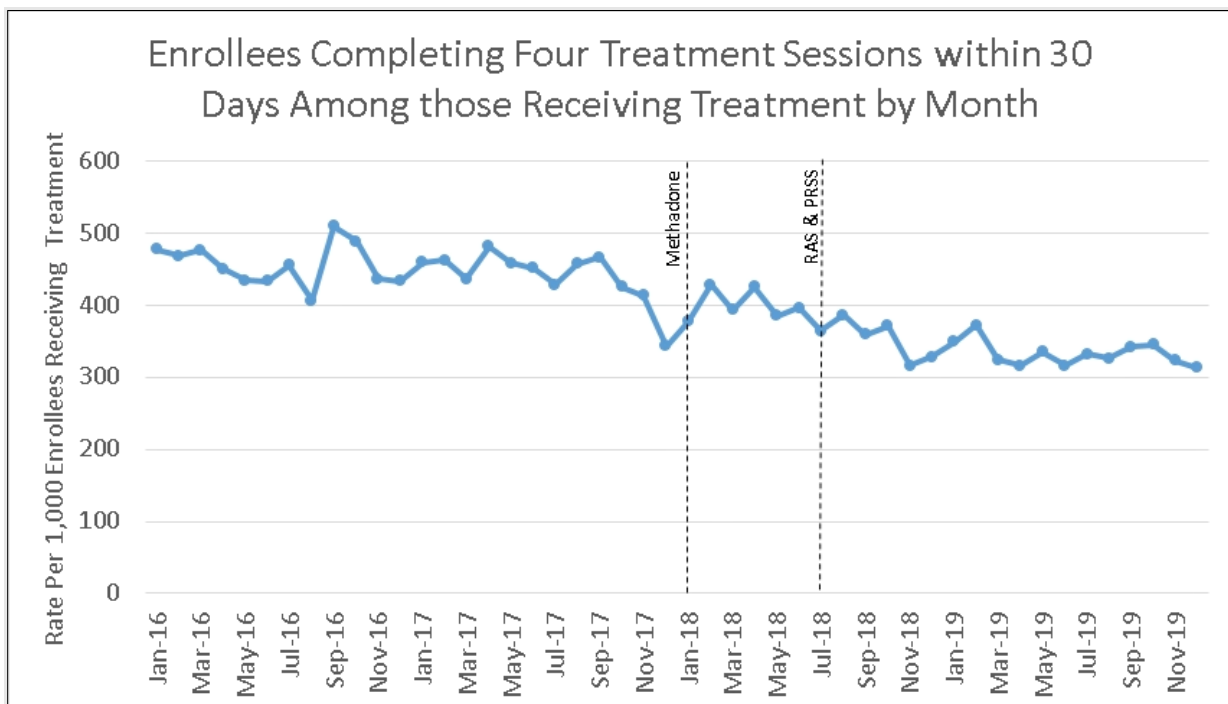
*Time to Treatment*

Note that there are currently no technical specifications available for this requested measure. Our team was not able to operationalize this measure due to the lack of guidance.

### Rate of continuation of treatment

The number of enrollees who completed a fourth treatment session within the first 30 days of treatment in WV fell as compared with the beginning of the pre-implementation period (January 2016). It appears that this decrease was happening before the waiver was implemented. Note that there are currently no technical specifications available for this requested measure. **This measure was operationalized in the following way: the numerator is the number of people who started treatment in a given month that went on to receive at least three more treatment sessions within 30 days; the denominator is the number of people who started treatment in that month that received two or fewer treatment sessions within 30 days. Enrollees are counted within the month they began treatment.**

Figure E-3 Enrollees Completing Four Treatment Sessions within 30 Days Among those Receiving Treatment by Month (EQ 1.1, EH 1.1.1)



Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-December 2019

### Length of Engagement in Treatment

Note that there are currently no technical specifications available for this requested measure. Our team was not able to operationalize this measure due to the lack of guidance.

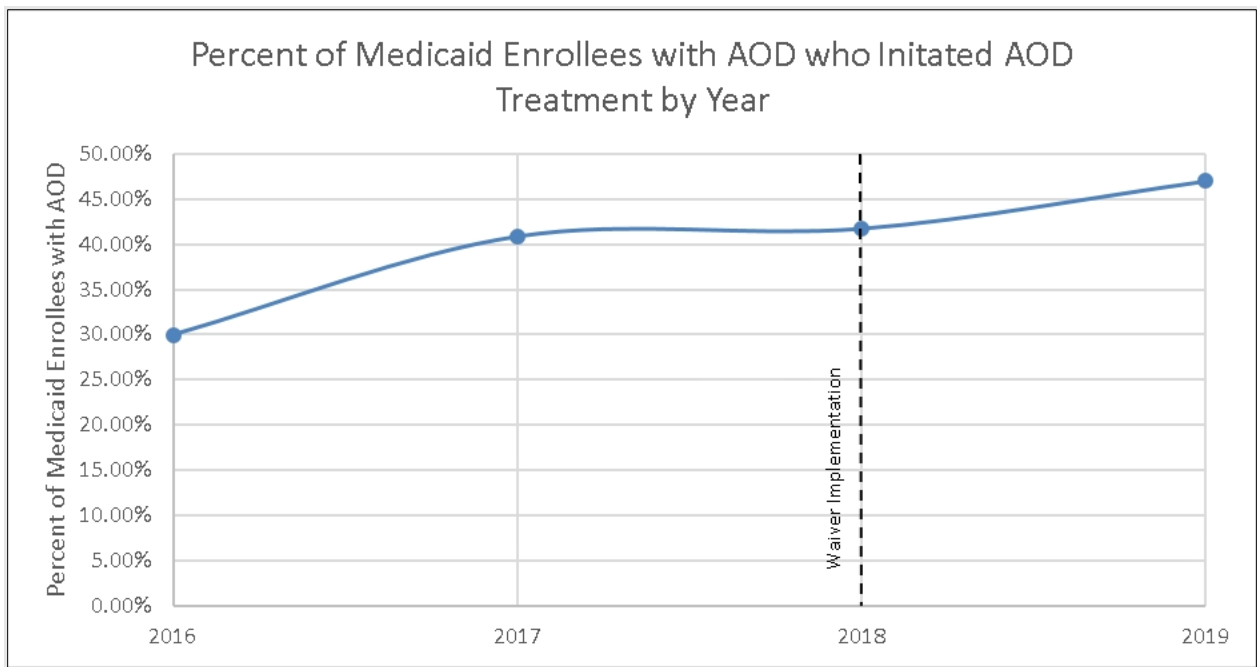


*Initiation and engagement of alcohol and other drug (AOD) dependence treatment*

For these measures, we used definitions created by the Medicaid Outcomes Distributed Research Network (MODRN); we note this because these measures are reported at the yearly level, unlike most of the other measures we report. They assess the waiver’s impact on the number of enrollees both starting and engaging in treatment for AOD. Engagement is defined as having two or more additional AOD services within 34 days of the initial treatment visit.

The number of Medicaid enrollees with AOD that initiated AOD treatment in WV increased by about five percentage points since the onset of the waiver (about a 13% relative increase). The number of enrollees with AOD who initiated and engaged in AOD treatment in WV also increased by about five percentage points during this time period (about a 20% relative increase).

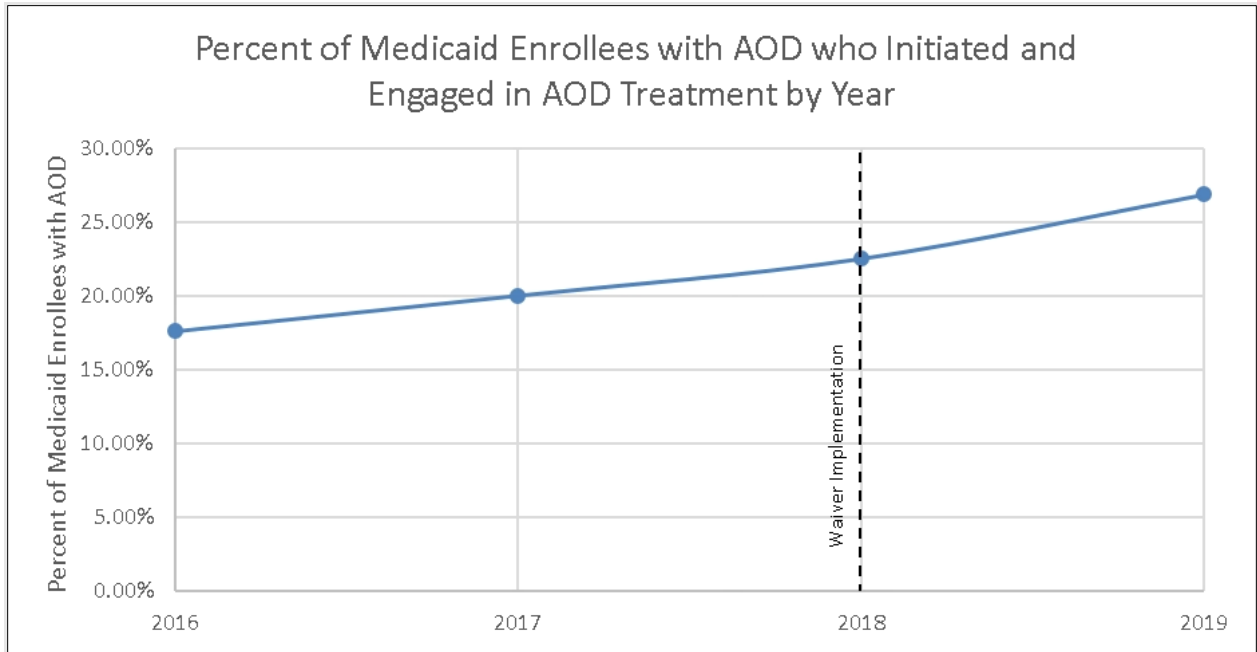
*Figure E-4 Percent of Medicaid Enrollees with AOD who Initiated AOD Treatment by Year (EQ 1,1, EH 1.1.1)*



*Analytic Approach: Descriptive*

*Source: WV Medicaid Claims Data, January 2016-December 2019*

Figure E-5 Percent of Medicaid Enrollees with AOD who Initiated and Engaged in AOD Treatment by Year (EQ 1.1, EH 1.1.1)



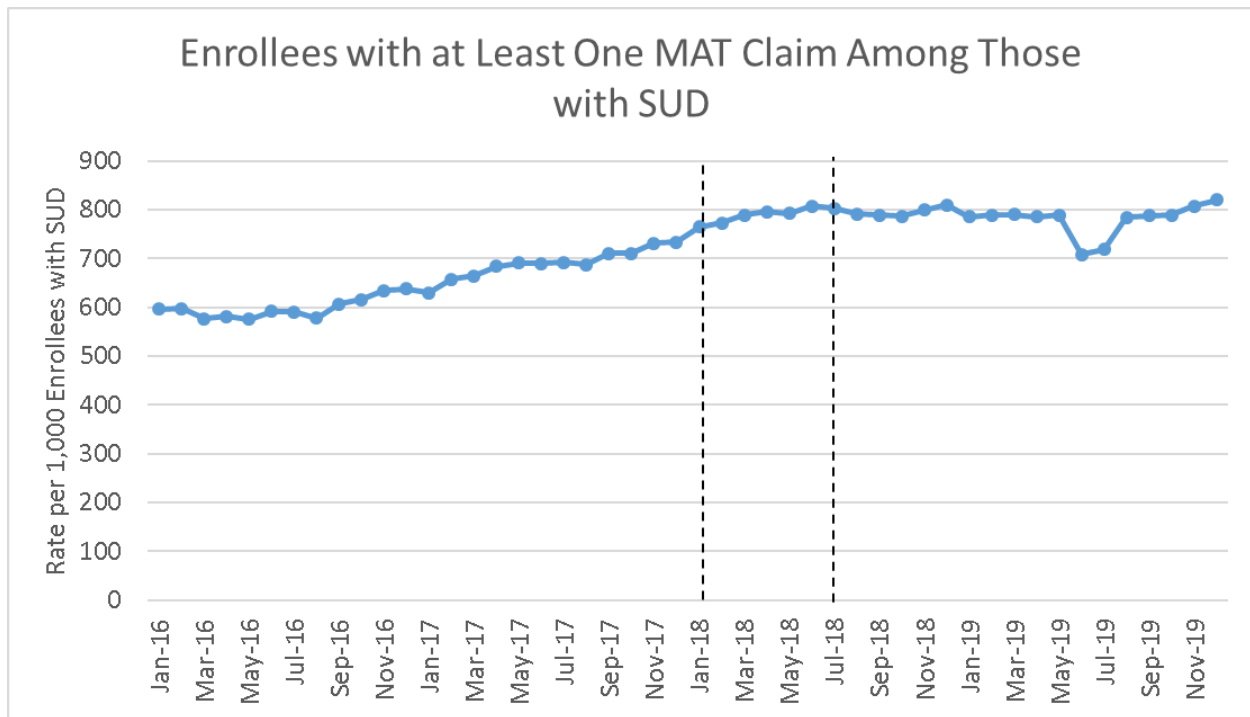
Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-December 2019

### Medication-Assisted Treatment Utilization

Medicaid claims data were analyzed to determine the number of unique beneficiaries who had a claim for MAT services (buprenorphine, naltrexone, methadone, acamprosate, and disulfiram) during the measurement period. MAT utilization increased by 7% between the onset of the waiver service (January 2018) and December 2019, from a rate of 765 per 1,000 enrollees with SUD to 820 per 1,000 enrollees with SUD. MAT claims increased during the wavier period; however, this increase may be part of an upward trend that began two years to the waiver’s start, and therefore may not be attributable to the waiver alone. As noted earlier in the report, this measure only includes claims covered by Medicaid, and therefore cannot be used to determine whether overall utilization changed post-waiver implementation.

Figure E-6 MAT Utilization Among Enrollees with SUD by Month (EQ 1.1, EH 1.1.1)



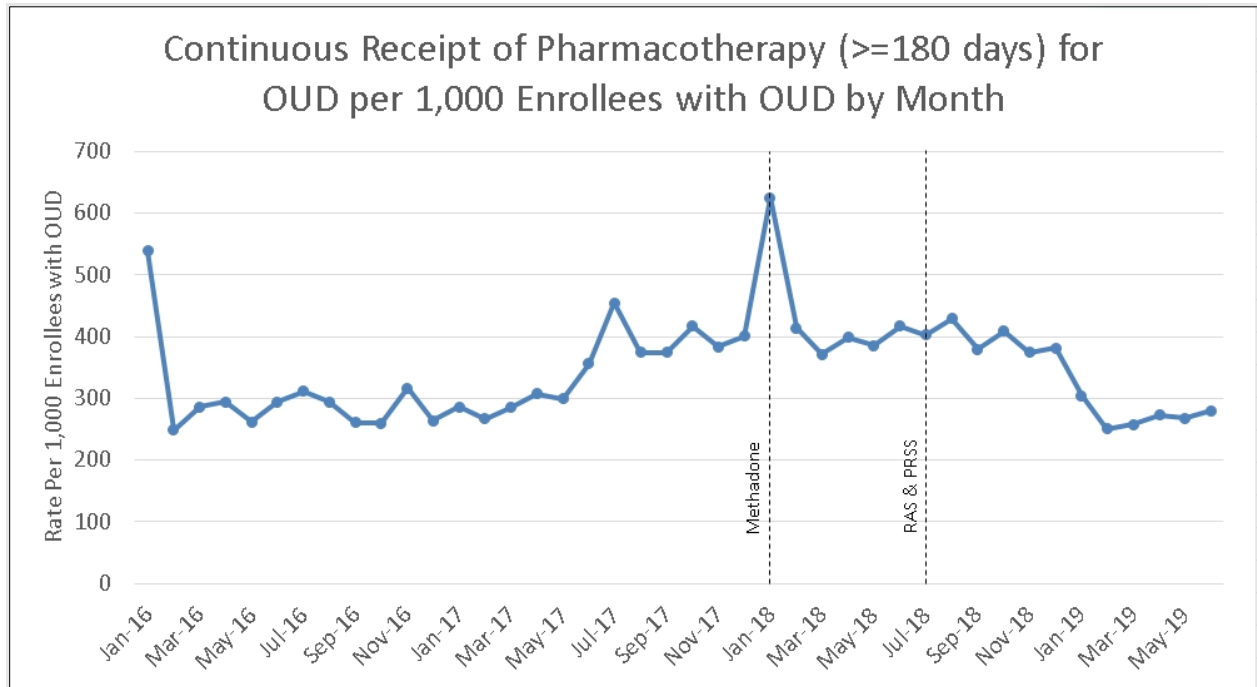
Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-December 2019

### Continuity of pharmacotherapy for OUD

This measure omits data from July 2019 through December 2019 to account for the 180-day measurement period to determine continuity of pharmacotherapy. Despite a large initial spike at the waiver's introduction, continuous receipt of pharmacotherapy (a measure of treatment quality) rates decreased from 400 per 1,000 enrollees with SUD in December 2017 (the month prior to methadone coverage under the waiver) to 279 per 1,000 enrollees with OUD in June 2019.

Figure E-7 Continuous Receipt of Pharmacotherapy Among Enrollees with OUD (EQ 1.1, EH 1.1.1)



Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-July 2019

### 1.1.6 The demonstration will increase provider knowledge of appropriate SUD treatment options. (EH 1.1.2)

As described in the Methodology section, OHA conducted focus groups among RAS staff members over two years- 2020 and 2021. In the first year, the evaluation team conducted six focus groups across six different RAS facilities, with a total of 22 staff members participating. In the second year, the evaluation team conducted seven focus groups across six different RAS facilities, with a total of 23 individuals participating.

To provide more context on the provision of residential adult services, focus group data were analyzed to determine the degree to which these providers demonstrated changes in ability to correctly identify the expanded treatment mechanisms as a result of state-run trainings ((EQ 1.1, EH 1.1.2). At the beginning of each focus group, we asked participants how familiar they were with the waiver. Once we received their answers, we then explained any parts of the waiver they were not able to identify. Notably, the themes that emerged from the focus groups were largely the same between 2020 and 2021.

Among participating focus groups in Fall 2020, knowledge of the waiver was limited. Four participants reported generally having knowledge of the waiver and able to name all three components. Six participants were unsure exactly what services were provided by the waiver. One respondent summed up their facility's knowledge by saying "I think we're all kind of fairly clueless on it, it seems." Note that some facilities may not provide all the services covered by the waiver, which would result in less knowledge about all services provided through the waiver. In addition, some facilities were aware they could provide services and bill through Medicaid but were just unaware the waiver was the reason why.

A similar finding emerged during the focus groups held in Fall 2021. Overall, most participants had little to no knowledge of the waiver and any of its components. Forty-four statements were made regarding a lack of waiver knowledge, while only nine statements mentioned information about the purpose of the waiver and one or more components. However, some participants were unable to provide waiver knowledge due to their role beginning or facility opening during or after waiver implementation.

Based on these findings, we recommend that the state discuss if they feel awareness of the waiver is important. If they do feel that awareness of the waiver among providers is important, additional education and training could help fill this knowledge gap. In addition, one respondent explained that more education about methadone would help them better utilize this waiver service:

*"I think maybe some more education would be awesome. [...] Even having worked in substance abuse for such a long amount of time, I was not familiarized with methadone. I had to do my own little bit of research and ask questions from the other staff. I also think not just for facilities in general, but I think also maybe other providers. Providing education that would maybe help ease those conversations about other recovery pathways."*

Other barriers related to MOUD in general came up during focus groups, as well. In the 2021 focus groups, five statements were made about how facilities not accepting patients who receive MOUD inhibits their recovery and limits treatment options, while fifteen statements cited provider stigma and beliefs surrounding MOUD as another barrier. A few providers mentioned that they had some initial biases towards certain types of MOUD (notably, methadone) when they first entered their role:

*“I’ll just be honest, I think initially before I came into this role, I think I struggled with some stigma and some of my own personal biases towards people on methadone.”*

Additionally, some providers said that they still encounter stigma such as this from others in the field:

*“So five years ago I’d say there’s a massive stigma with methadone. I still think there’s a massive stigma with methadone.”*

*“I think people think if anything, it’s a harm. It’s another substance that they’re abusing, and that frankly just isn’t true.”*

However, providers with patients who were able to continue treatment while receiving MOUD expressed positive opinions of MOUD and shared their patients’ success with it.

Other participants stated that barriers related to MOUD sometimes affect care transitions. In particular, providers noted difficulty transitioning patients to clinics that provide MOUD such as suboxone during both the 2020 and 2021 focus groups. The stigma around methadone use for treatment was also identified as a barrier in transitioning patients to other providers.

4 What is the impact of the demonstration on population health outcomes among Medicaid enrollees? (EQ 1.2)

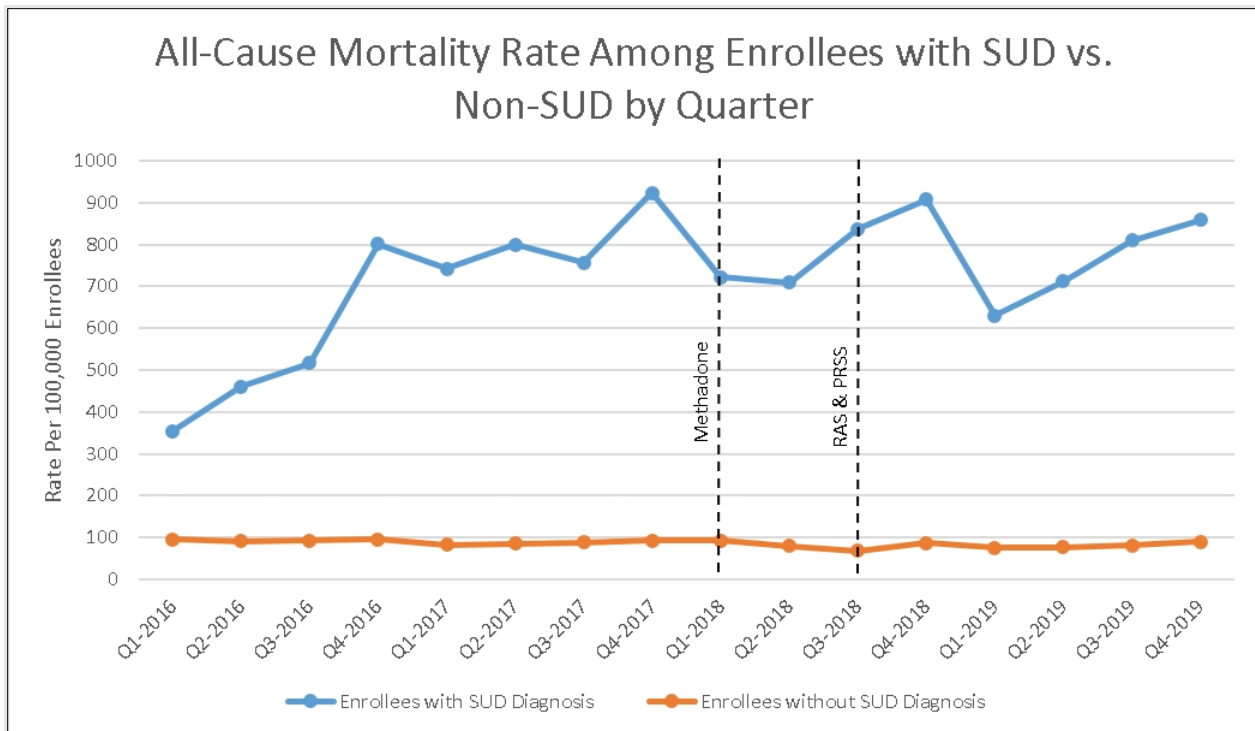
1.1.7 The demonstration will decrease morbidity and among Medicaid enrollees and their children. (EH 1.2.1)

We hypothesized that the waiver demonstration would be associated with lower morbidity and mortality rates among enrollees with SUD. Preliminary findings suggest this has not been the case. The following measures investigate morbidity and mortality rates among the SUD population in more detail. **Given the data quality issues outlined in Section 2, we ask readers to interpret the following results with appropriate caution.**

*Mortality rate among beneficiaries with and without SUD*

The WVU team analyzed the all-cause mortality rate among beneficiaries with SUD and compared it to all-cause mortality among enrollees without SUD in WV. While the mortality rate for enrollees without SUD remained relatively constant throughout the study period, there was more fluctuation in the mortality rate among enrollees with a SUD diagnosis, which could be due to the smaller sample size of the SUD population. We are planning to use enrollees without a SUD diagnosis as a control group for a difference-in-differences analysis in the next iteration of this report.

Figure E-8 All-Cause Mortality Rate Among Enrollees with SUD by Quarter (EQ 1.2, EH 1.2.1)



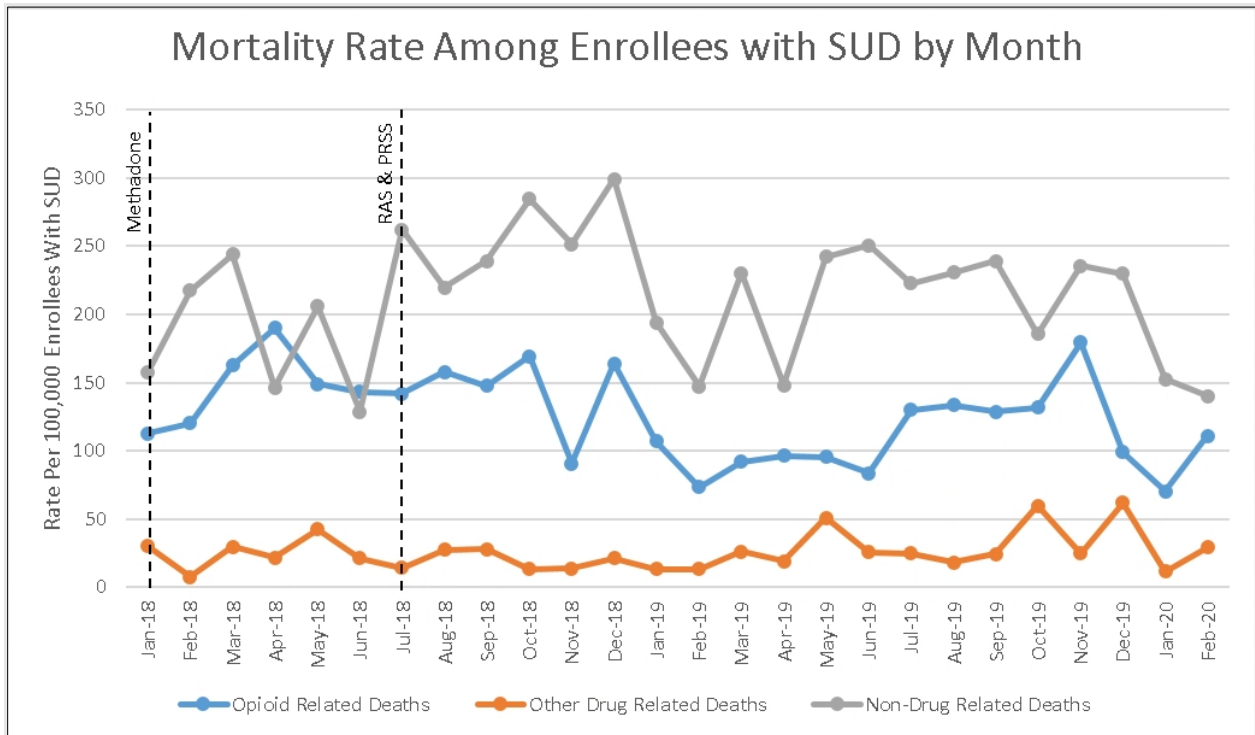
Analytic Approach: Descriptive

Source: WV DHHR Vital Statistics Data, January 2016-December 2019

*Drug-related mortality (due to any drug/ due to opioids alone)*

These measures capture trends from the beginning of the waiver (January 2018) to February 2020. Cause of death data are not available prior to 2018. The blue line in Figure E-9 indicates the opioid-related mortality rate, and the orange line indicates the mortality rate for all other drugs. The opioid-related mortality rate decreases over 2018, with the lowest dip in February 2019 (73.65 deaths per 100,000 enrollees with SUD), but increases again between then and the end of the period of analysis (February 2020), at which point deaths were occurring at a rate of 111 deaths per 100,000 enrollees with SUD.

*Figure E-9 Opioid-Related Mortality Rate Among Enrollees with SUD by Month (EQ 1.2, EH 1.2.1)*



*Analytic Approach: Descriptive*

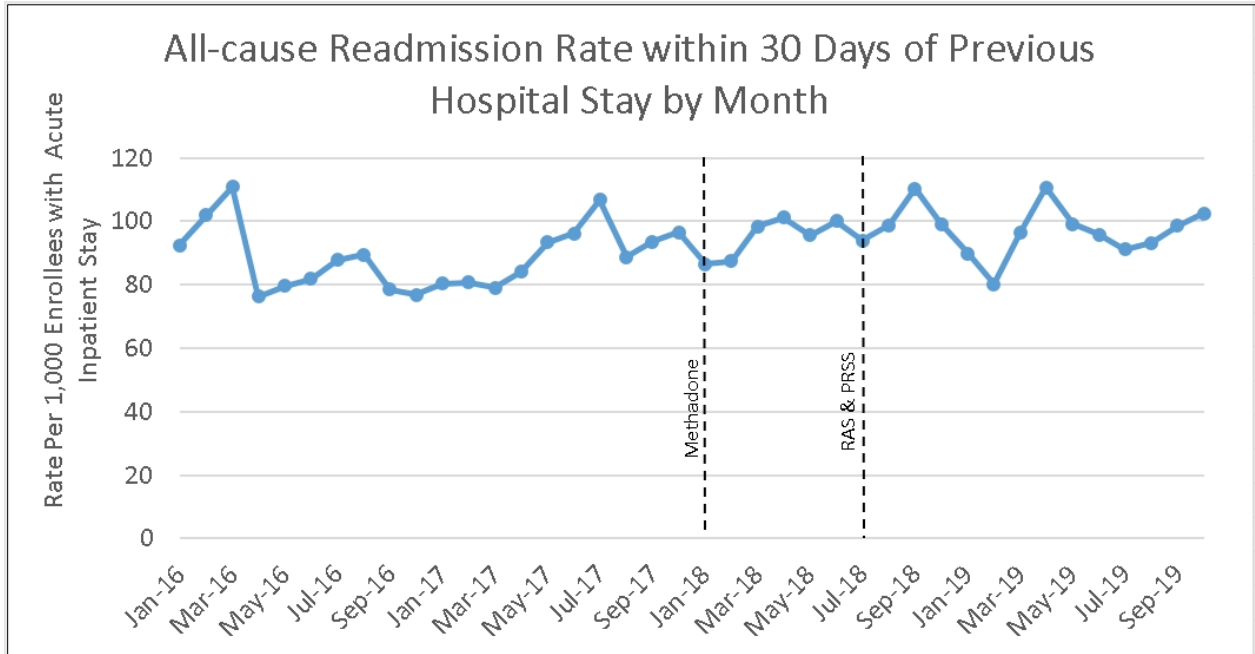
*Source: WV DHHR Vital Statistics Data, January 2016-February 2020*



Plan all-cause readmissions

This measure omits November and December data for each year because the denominator only includes dates between January 1 and December 1 for each year. The numerator is defined as readmission within 30 days, so we exclude index dates in November to account for the omission of December readmission data. We do not observe a clear trend in readmission rates comparing the pre-waiver period to the post-waiver period in WV.

Figure E-10 All-Cause Readmission Rate within 30 Days of Previous Hospital Stay by Month (EQ 1.2, EH 1.2.1)



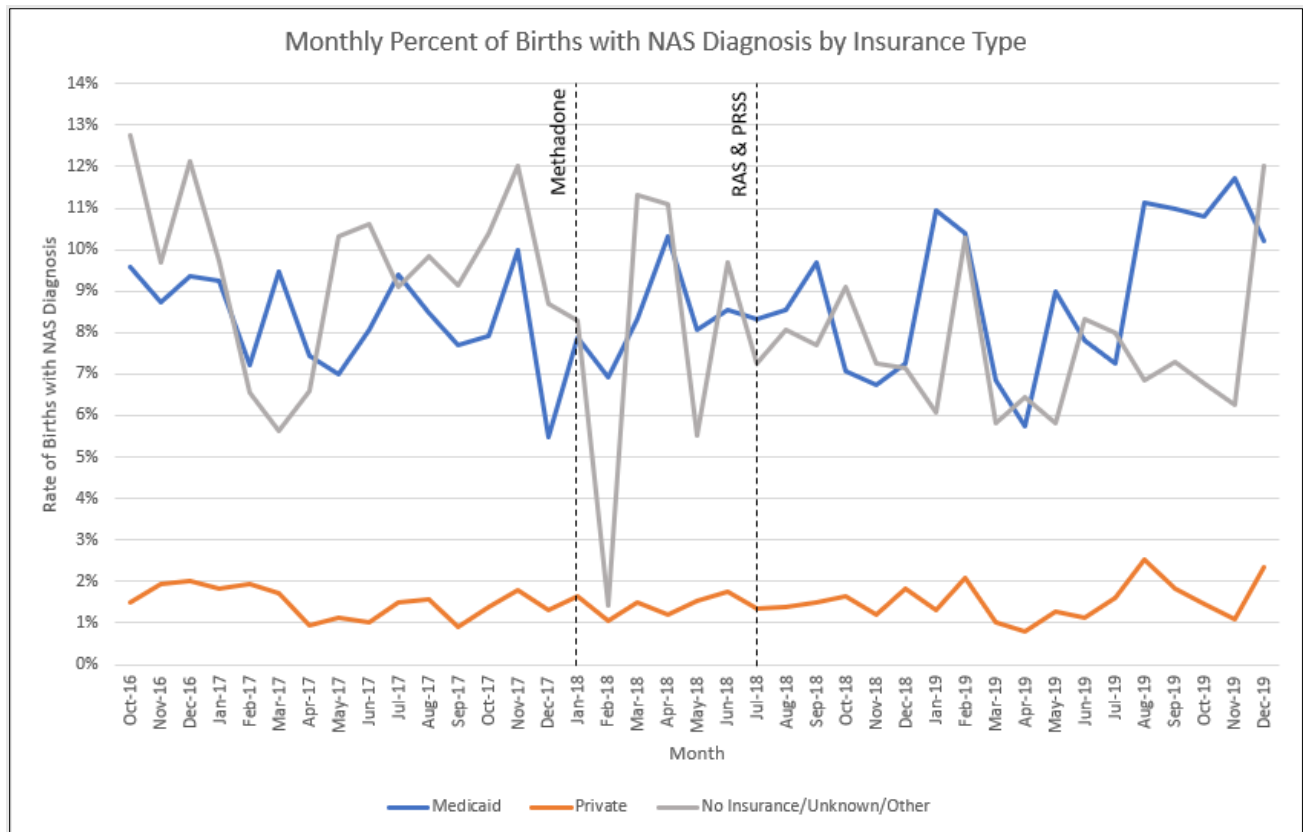
Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-October 2019

### Neonatal Abstinence Syndrome Rates

In addition to treatment-related outcomes in adults with SUD, we hypothesized the waiver would decrease morbidity rates in the children of these adults, particularly the rate of neonatal abstinence syndrome (NAS). NAS is a group of conditions caused when a newborn withdraws from drugs they are exposed to in the womb. Thus, if SUD treatment rates increase, we would expect lower NAS rates. However, as shown in Figure E-11, NAS rates did not decrease after the introduction of the waiver. For reference, this graph also includes rates among adults with private insurance and no insurance/unknown status/other insurance. This measure utilizes WV Birth Score data made available through the WV Birth Score Program.

Figure E-11 Neonatal Abstinence Syndrome Morbidity (EQ 1.2, EH 1.2.1)



Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-December 2019

5 What is the impact of the demonstration on access to SUD treatment among Medicaid enrollees? (EQ 2.1)

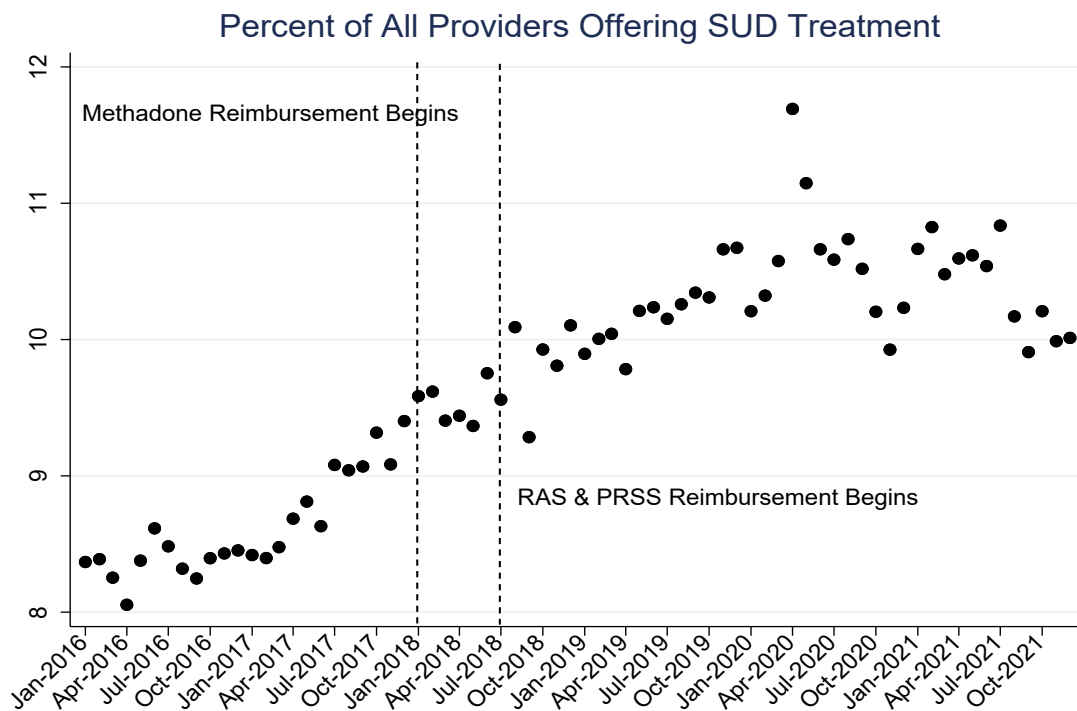
1.1.8 The demonstration will increase the supply of residential, MAT, and PRSS care available for Medicaid enrollees. (EH 2.1.1)

We hypothesized that the waiver demonstration would increase the supply of residential, MOUD, and PRSS care available for Medicaid enrollees. Since the waiver was implemented, the number of providers, facilities, and beds for SUD treatment in WV did indeed rise. This section reviews the changes in supply of providers treating SUD overall, and reviews availability for each waiver service.

*Supply of SUD providers*

Due to a lack of methadone coverage under Medicaid in State A, a WV-only descriptive analysis was conducted to determine whether the supply of Medicaid providers delivering SUD treatment services changed significantly during the measurement period. This analysis was conducted by identifying providers in the claims data that provided SUD treatment to at least one person (MAT or a behavioral health services with a primary diagnosis of SUD listed on the professional claim). From January 2016 to December 2021, the percentage of Medicaid providers offering these services increased by about two percentage points (about a 25% relative change), with the increase beginning around March 2017, prior to the waiver’s start.

Figure E-12 Percent of Providers Offering SUD Treatment by Month



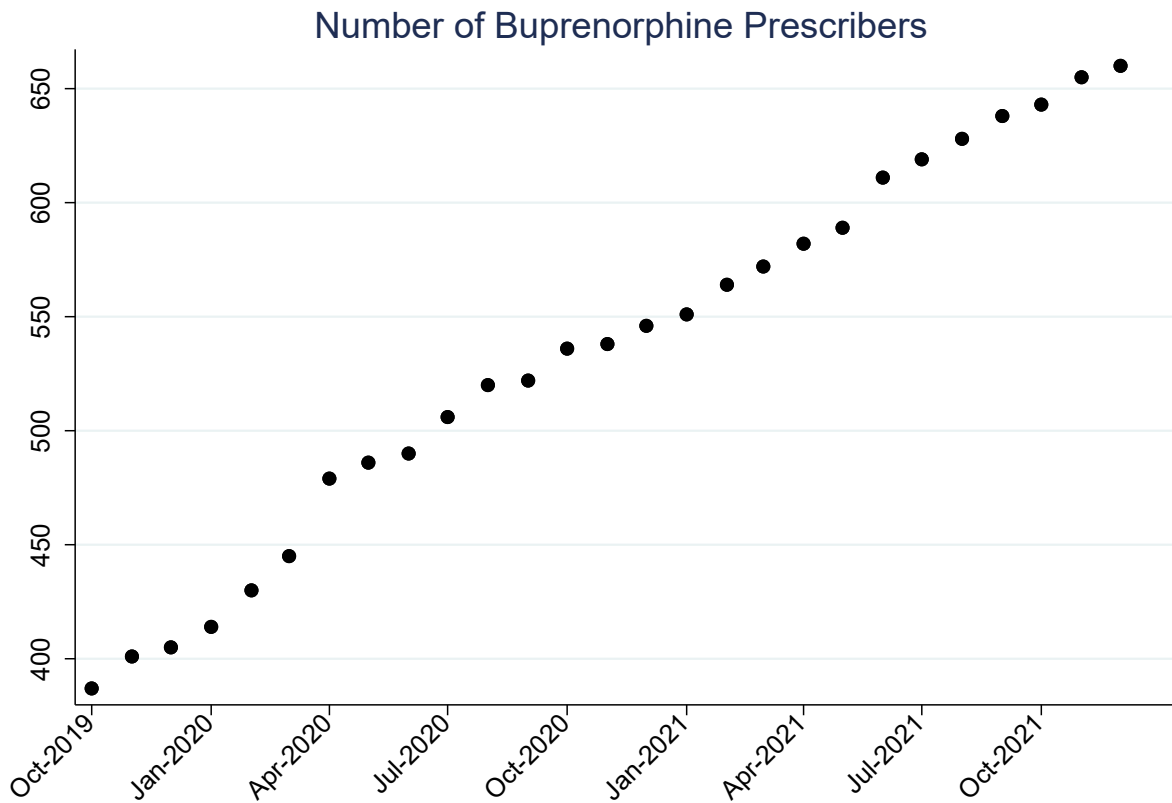
Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-December 2021

*Buprenorphine prescriber availability*

Even though buprenorphine was covered prior to the waiver, DHHR was interested in determining whether the waiver also improved the supply of providers who are waived/approved by BMS to prescribe buprenorphine, as providers may be more likely to begin offering other types of SUD treatment in conjunction with waiver services. Providers that meet certain criteria are eligible to prescribe buprenorphine to patients with OUD via a prescribing waiver administered by Substance Abuse and Mental Health Services Administration (SAMHSA). Information for these providers is available through WV DHHR starting October 2019. Between then and December 2021, the number of buprenorphine prescribers increased 71% (273 providers). Note that the graph below shows the number of clinicians on the buprenorphine waiver list, regardless of whether they actually prescribed buprenorphine.

*Figure E-13 Number of Buprenorphine Prescribers by Month*



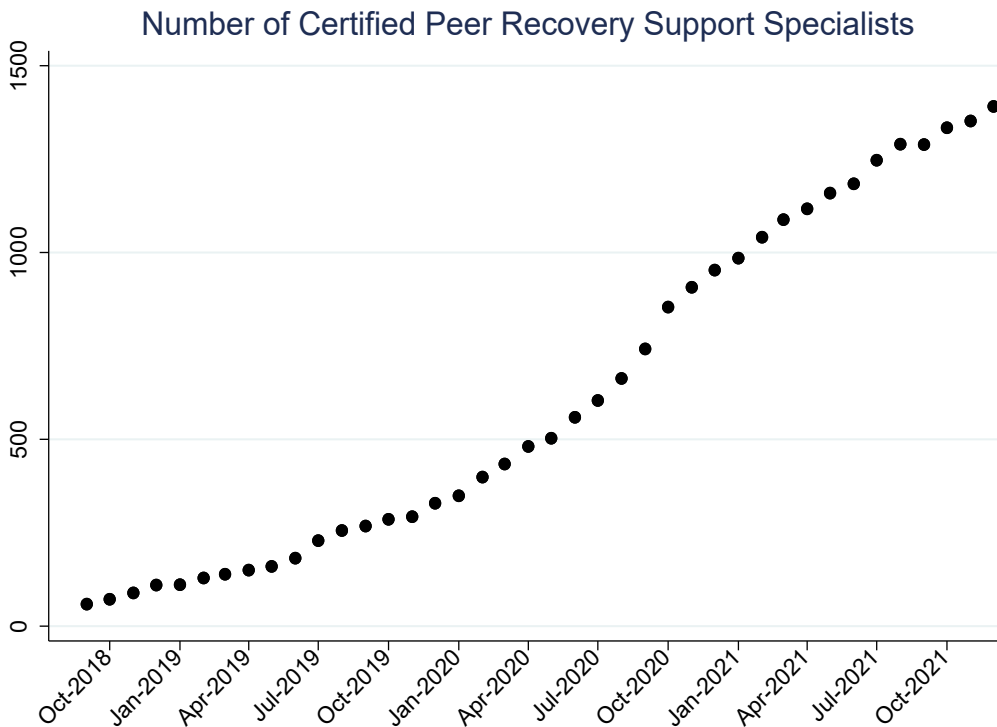
*Analytic Approach: Descriptive*

*Source: WV Suboxone Prescriber Lists via WV DHHR, October 2019-December 2021*

*Peer recovery support specialist availability*

While peer recovery coaches existed prior to the waiver, state-certified peer recovery support specialists were newly reimbursed via the waiver beginning July 2018. WVU has access to provider data starting September 2018, at which time 59 certified PRSS were employed in WV. Between then and December 2021, that number increased to 1391 PRSS.

*Figure E-14 Number of Certified Peer Recovery Support Specialists*



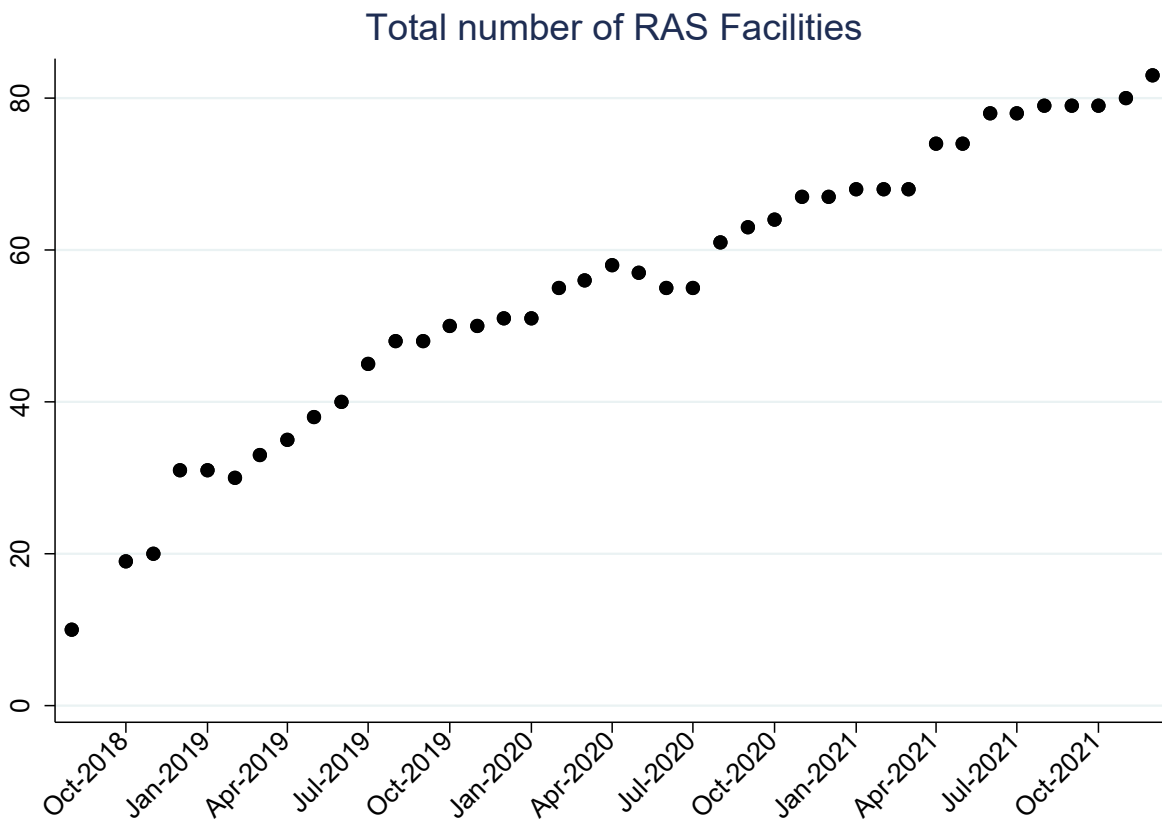
*Analytic Approach: Descriptive*

*Source: WV PRSS Counts via WV DHHR, September 2019-December 2021*

*Supply of SUD residential treatment facilities and beds*

SUD residential treatment facilities and the total number of residential beds in WV have also increased since the waiver implementation. While two months of data are missing due to unknown reasons (July and September 2018), the number of treatment facilities has increased from 19 in October 2018 to 83 in December 2021 (an increase of 64 facilities). The number of residential treatment beds has also increased, from 145 in August 2018 to 1295 in December 2021 (an increase of 1150 beds). Across all three waiver components, the demonstration has considerably increased the supply of both services and providers in the state. Note that RAS bed data included a source not available for facilities; thus, the bed data is more complete. This is a result of missing state records and cannot be rectified for this report.

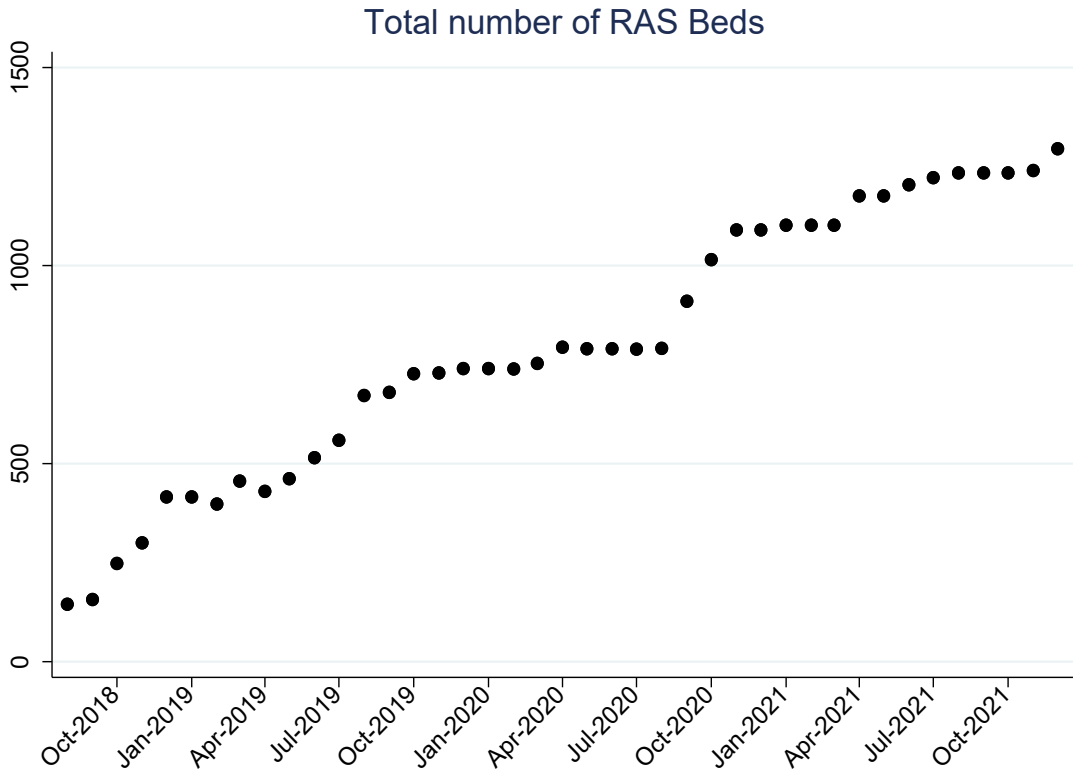
*Figure E-15 Supply of Residential Treatment Facilities*



*Analytic Approach: Descriptive*

*Source: WV RAS Counts via WV DHHR, September 2018-December 2021*

Figure E-16 Supply of Residential Treatment Beds



Analytic Approach: Descriptive

Source: WV RAS Counts via WV DHHR, September 2018-December 2021

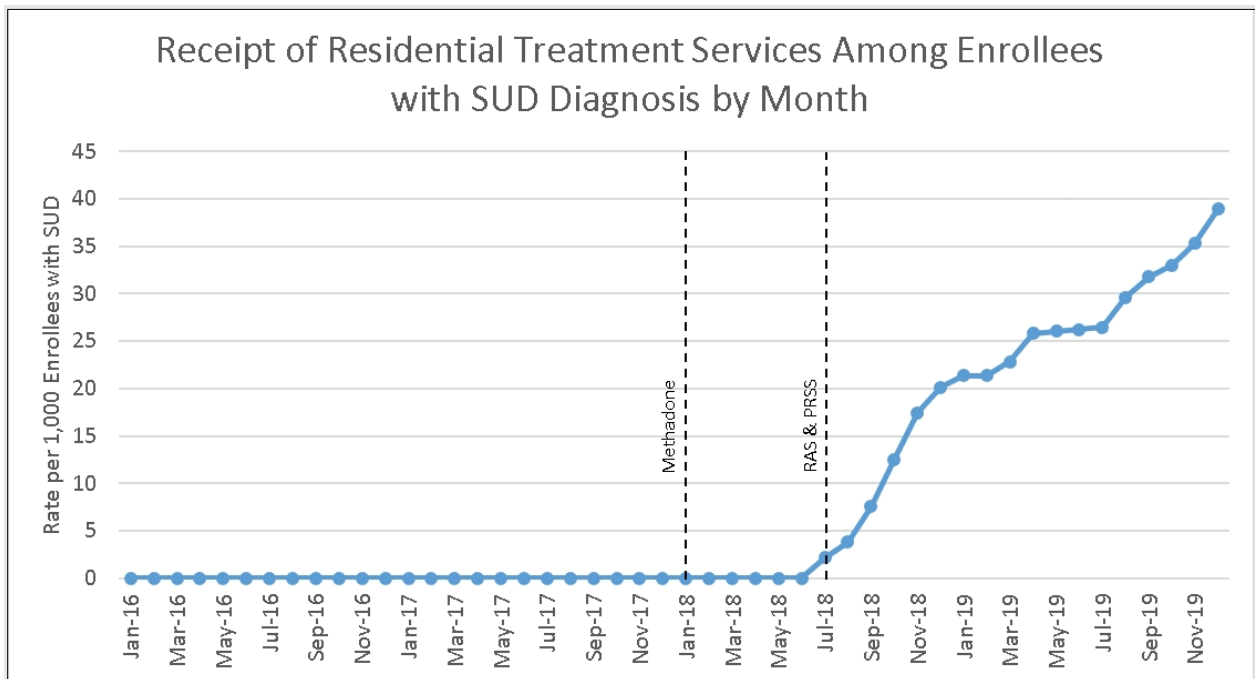
6 What is the impact of the demonstration on use of SUD treatment among Medicaid enrollees? (EQ 2.2)

1.1.9 The demonstration will increase the use of residential, MAT, and PRSS care available by Medicaid enrollees. (EH 2.2.1)

*Residential, Methadone, and PRSS Services Used*

Analyzed as individual services, utilization of all three waiver-covered treatments (residential adult services, methadone, and PRSS support) has increased since the start of each related part of the waiver (MOUD in January 2018 and PRSS and RAS in July 2018). Residential treatment service use has increased to a rate of about 50 per 1,000 enrollees with SUD since its onset. By the end of 2019, methadone utilization was up to about 140 per 1,000 enrollees with OUD. Finally, peer recovery support services continued to rise in WV through 2019. Note that beneficiaries could have received methadone treatment prior to the waiver by paying in cash; these claims are not available in the Medicaid data.

*Figure E-17 Receipt of Residential Treatment Services Among Enrollees with SUD Diagnosis by Quarter (EQ 2.2, EH 2.2.1)*

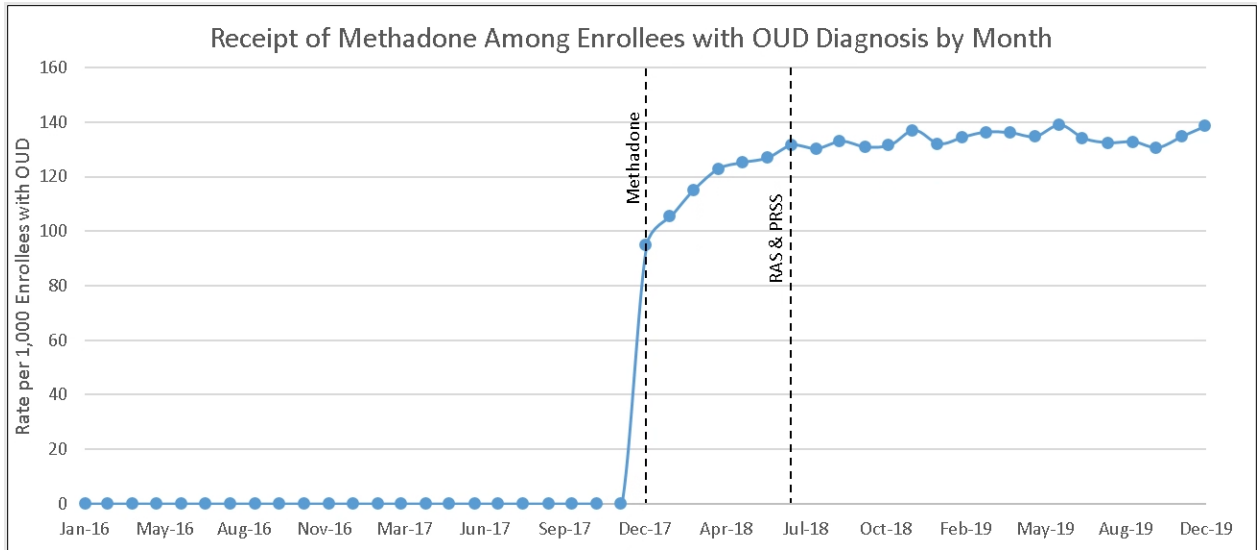


*Analytic Approach: Descriptive*

*Source: WV Medicaid Claims Data, January 2016-December 2019*



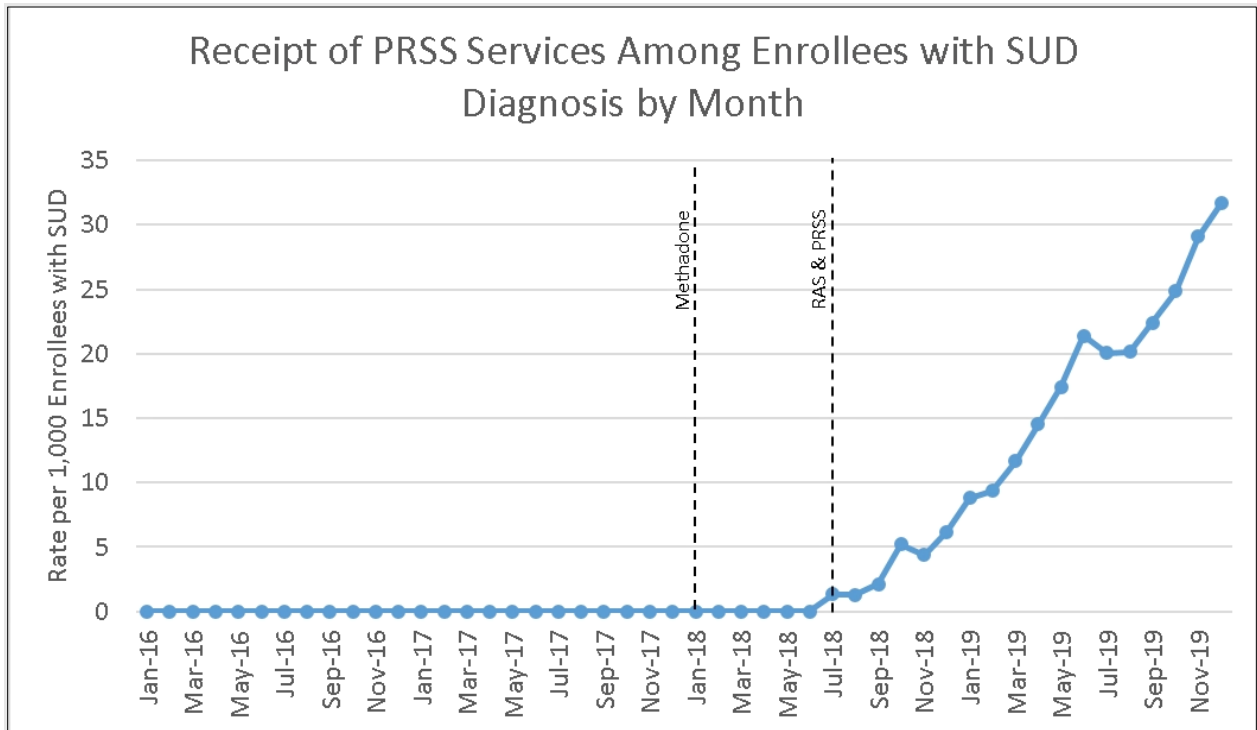
Figure E-18 Receipt of Methadone Among Enrollees with OUD Diagnosis by Month (EQ 2.2, EH 2.2.1)



Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-December 2019

Figure E-19 Receipt of PRSS Services Among Enrollees with SUD Diagnosis by Month (EQ 2.2, EH 2.2.1)



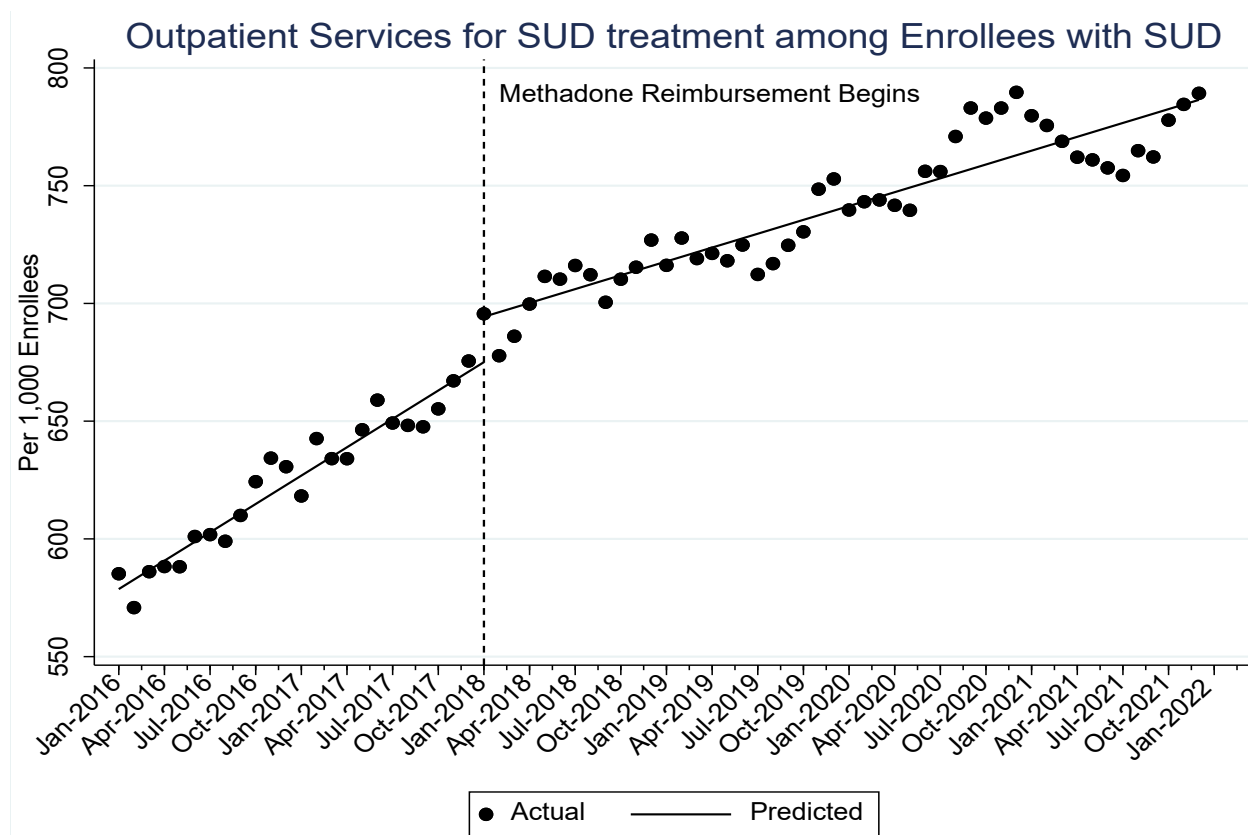
Analytic Approach: Descriptive

Source: WV Medicaid Claims Data, January 2016-December 2019

*Outpatient services for SUD treatment*

Below, we define the rate of outpatient services for SUD treatment as the number of enrollees with SUD who have received outpatient services per month over all enrollees with SUD. Although use of outpatient services for SUD continued to rise after the waiver was implemented, the slope (or rate) of this change statistically significantly by 2.1 per 1,000 enrollees ( $p < 0.001$ ). The level of outpatient stays statistically significantly increased by 19.3 per 1000 SUD enrollees immediately following the intervention ( $p < 0.001$ ). After the implementation of RAS and PRSS reimbursement, the monthly trend statistically significantly decreased at 2.5 per 1,000 enrollees ( $p < 0.001$ ). There was no statistically significant change in the level immediately following the RAS and PRSS implementation.

*Figure E-20 Outpatient Service Utilization for SUD Treatment Among Enrollees with SUD- Methadone implementation*



Analytic Approach: Single Group ITS

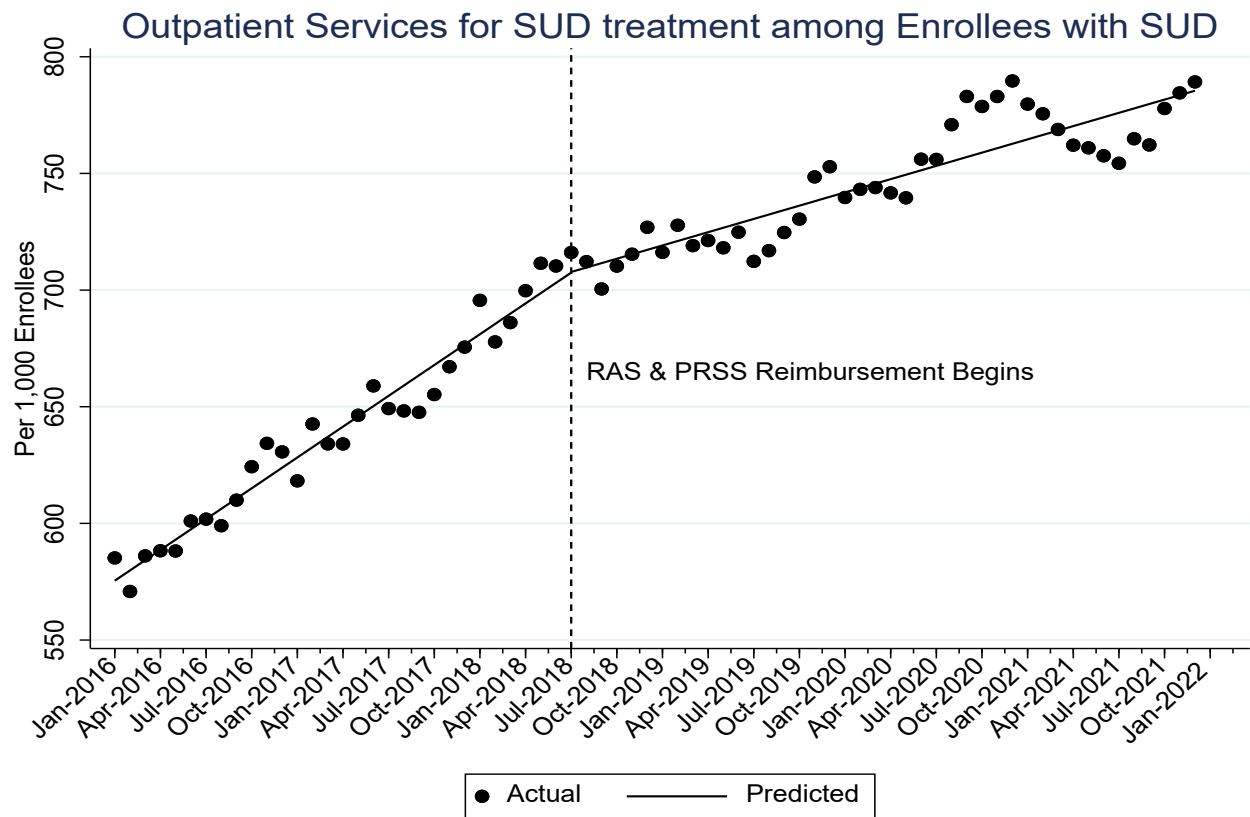
Source: WV Medicaid Claims Data, January 2016-December 2021

Table E-1 Outpatient Service Utilization for SUD Treatment Among Enrollees with SUD- Methadone implementation

Outcome	B-coefficient	Standard Error
<i>Before Methadone Reimbursement</i>		
Constant	578.696***	(2.31)
Monthly Trend	4.015***	(0.17)
<i>After Methadone Reimbursement</i>		
Immediate Level Change	19.268***	(3.59)
Trend Change	-2.055***	(0.27)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Figure E-21 Service Utilization for SUD Treatment Among Enrollees with SUD- RAS & PRSS implementation



Analytic Approach: Single Group ITS

Source: WV Medicaid Claims Data, January 2016-December 2021

Figure E-22 Service Utilization for SUD Treatment Among Enrollees with SUD- RAS & PRSS implementation

Outcome	B-coefficient	Standard Error
<i>Before RAS&amp; PRSS Reimbursement</i>		
Constant	575.437***	(1.79)
Monthly Trend	4.402***	(0.16)
<i>After RAS &amp; PRSS Reimbursement</i>		
Immediate Level Change	0.282	(4.82)
Trend Change	-2.507***	(0.28)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

## 7 What is the impact of the demonstration on emergency department (ED) utilization by Medicaid enrollees with SUD? (EQ 3.1)

### 1.1.10 The demonstration will decrease the rate of ED use and the percentage of ED visits that are non-emergent among Medicaid enrollees with SUD. (EH 3.1.1)

To test this hypothesis, we investigated several measures to understand how the rate of ED use changed post-waiver implementation. We expected the waiver to not only impact SUD-related ED use among beneficiaries with a known SUD diagnosis, but also SUD-related ED use among those who have not been diagnosed. In addition, we expected waiver services to reduce other types of ED use among the SUD population. When analyzing these measures, we also looked at variations of the denominator to detect differences in outcomes for sub-populations. Finally, we ran multi-group ITS analyses to investigate changes in the outcome measures by services received; the only variation of this analysis that met the assumptions required for the model was OUD-related ED use among beneficiaries with OUD between those who did and did not have a claim for PRSS. All variations on these measures are reported in Table E-2 below. **Given the data quality issues outlined in Section 2, we ask readers to interpret these results with appropriate caution.**

Table E-2 ED Measures

Measure	Intervention Date	Analytic Approach	Level Change	Trend Change	Graph
All-Cause ED Visits among Enrollees with SUD	January 2018	Single Group ITS	No statistically significant change.	1.6 per 1,000 enrollees (p<0.01)	<p>The graph displays the number of all-cause ED visits per 1,000 enrollees with SUD from January 2016 to January 2022. The y-axis ranges from 200 to 400. A vertical dashed line at January 2018 indicates the start of methadone reimbursement. The data shows a consistent downward trend, with actual values (black dots) generally following the predicted trend line (solid black line). The predicted trend shows a decrease of approximately 1.6 visits per 1,000 enrollees per year.</p>

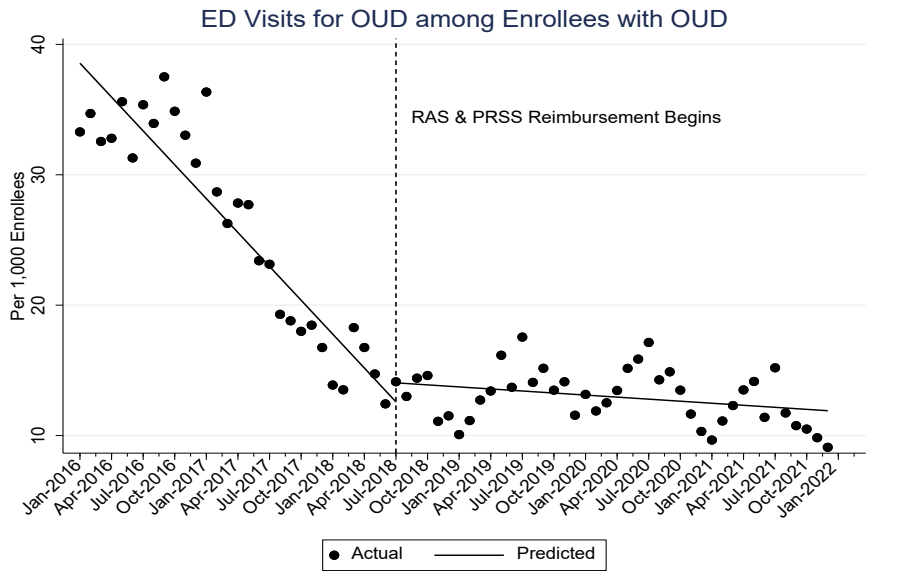
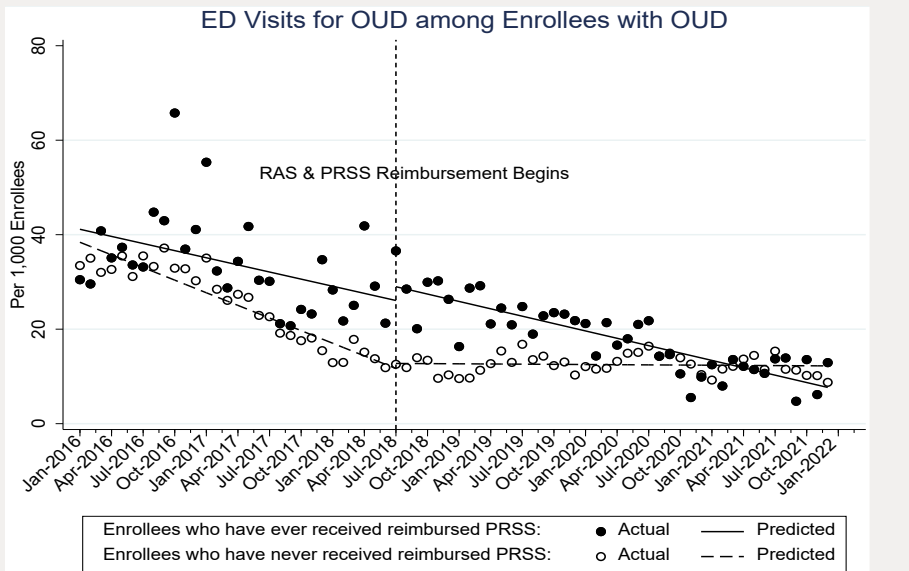
All-Cause ED Visits among Enrollees with SUD	July 2018	Single Group ITS	No statistically significant change.	1.7 per 1,000 enrollees (p<0.001)	
All-Cause ED Visits among Enrollees with OUD	January 2018	Single Group ITS	No statistically significant change.	2.6 per 1,000 enrollees (p<0.001)	

All-Cause ED Visits among Enrollees with OUD	July 2018	Single Group ITS	15.0 per 1,000 enrollees (p<0.01)	2.5 per 1,000 enrollees (p<0.001)	<p>All-Cause ED Visits among Enrollees with OUD</p> <p>Per 1,000 Enrollees</p> <p>RAS &amp; PRSS Reimbursement Begins</p> <p>● Actual — Predicted</p>
All-Cause ED Visits among Enrollees with Other SUD (not OUD)	January 2018	Single Group ITS	No statistically significant change.	-2.6 per 1,000 enrollees (p<0.01)	<p>All-Cause ED Visits among Enrollees with Other SUD</p> <p>Per 1,000 Enrollees</p> <p>Methadone Reimbursement Begins</p> <p>● Actual — Predicted</p>



<p>All-Cause ED Visits among Enrollees with Other SUD (not OUD)</p>	<p>July 2018</p>	<p>Single Group ITS</p>	<p>51.5 per 1,000 enrollees (p&lt;0.01)</p>	<p>-3.6 per 1,000 enrollees (p&lt;0.001)</p>	
<p>ED Visits for SUD among Enrollees with SUD</p>	<p>January 2018</p>	<p>Single Group ITS</p>	<p>-4.0 per 1,000 enrollees (p&lt;0.05)</p>	<p>0.8 per 1,000 enrollees (p&lt;0.001)</p>	

ED Visits for SUD among Enrollees with SUD	July 2018	Single Group ITS	4.4 per 1,000 enrollees (p<0.05)	0.9 per 1,000 enrollees (p<0.001)	
ED Visits for OUD among Enrollees with OUD	January 2018	Single Group ITS	No statistically significant change.	0.8 per 1,000 enrollees (p<0.001)	

ED Visits for OUD among Enrollees with OUD	July 2018	Single Group ITS	No statistically significant change.	0.8 per 1,000 enrollees (p<0.001)	
ED Visits for OUD among Enrollees with OUD with and without PRSS claim	July 2018	Multi-Group ITS	No statistically significant change.	-0.9 per 1,000 enrollees (p<0.001)	

<p>Share of ED Visits that are Non-Emergent among Enrollees with SUD</p>	<p>January 2018</p>	<p>Single Group ITS</p>	<p>3.1% (<math>p &lt; 0.01</math>)</p>	<p>No statistically significant change.</p>	<p>Share of ED Visits that are Non-Emergent among Enrollees with SUD</p> <p>Methadone Reimbursement Begins</p> <p>● Actual — Predicted</p>
<p>Share of ED Visits that are Non-Emergent among Enrollees with SUD</p>	<p>July 2018</p>	<p>Single Group ITS</p>	<p>2.5% (<math>&lt; 0.05</math>)</p>	<p>No statistically significant change.</p>	<p>Share of ED Visits that are Non-Emergent among Enrollees with SUD</p> <p>RAS &amp; PRSS Reimbursement Begins</p> <p>● Actual — Predicted</p>

<p>Share of ED Visits that are Emergent among Enrollees with SUD</p>	<p>January 2018</p>	<p>Single Group ITS</p>	<p>0.6% (<math>p &lt; 0.01</math>)</p>	<p>No statistically significant change.</p>	<p>Share of ED Visits that are Emergent among Enrollees with SUD</p> <p>Methadone Reimbursement Begins</p> <p>● Actual — Predicted</p>
<p>Share of ED Visits that are Emergent among Enrollees with SUD</p>	<p>July 2018</p>	<p>Single Group ITS</p>	<p>No statistically significant change.</p>	<p>No statistically significant change.</p>	<p>Share of ED Visits that are Emergent among Enrollees with SUD</p> <p>RAS &amp; PRSS Reimbursement Begins</p> <p>● Actual — Predicted</p>

ED Visits for SUD among All Enrollees	January 2018	Single Group ITS	No statistically significant change.	No statistically significant change.	
ED Visits for SUD among All Enrollees	July 2018	Single Group ITS	45.8 per 100,000 enrollees (p<0.01)	No statistically significant change.	

ED Visits for OUD among All Enrollees	January 2018	Single Group ITS	No statistically significant change.	No statistically significant change.	
ED Visits for OUD among All Enrollees	July 2018	Single Group ITS	No statistically significant change.	1.1 per 100,000 enrollees (p<0.05)	

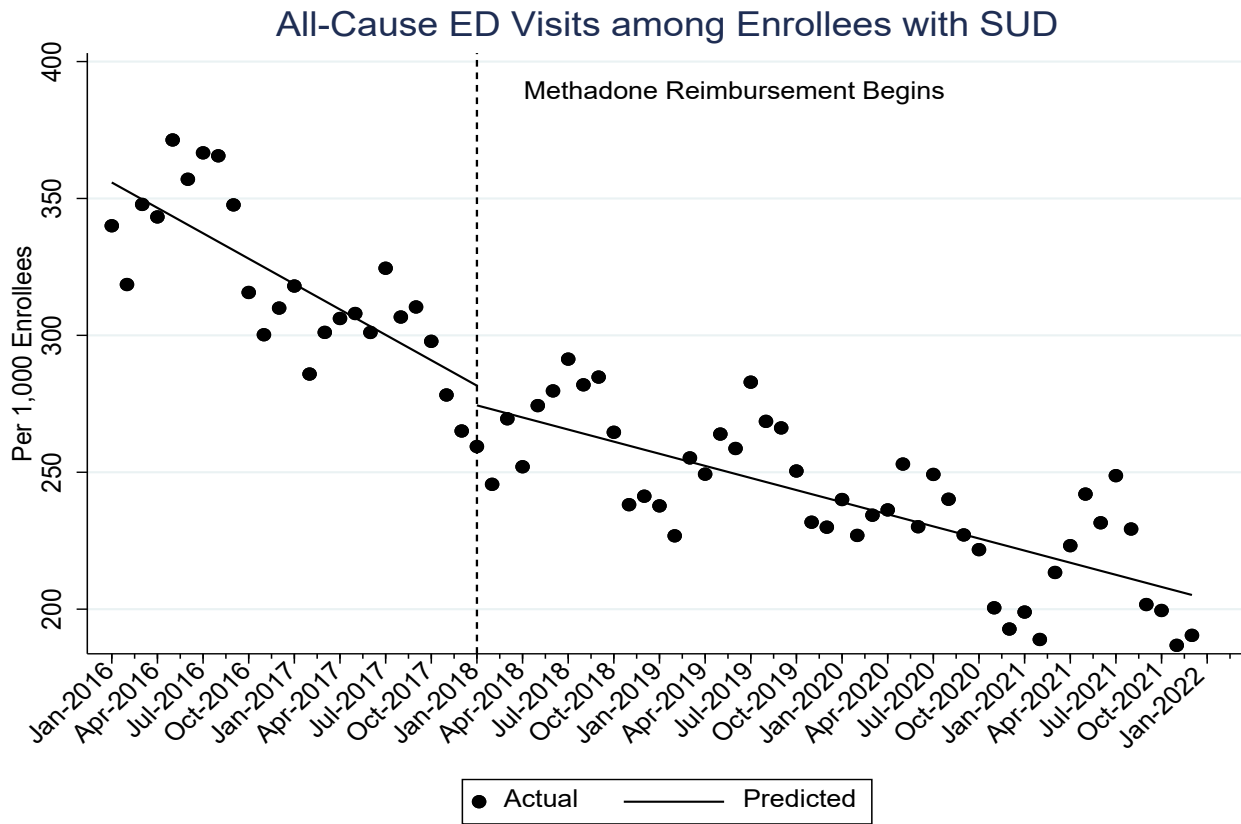
<p>ED Visits for Other SUD (not OUD) among All Enrollees</p>	<p>January 2018</p>	<p>Single Group ITS</p>	<p>No statistically significant change.</p>	<p>No statistically significant change.</p>	
<p>ED Visits for Other SUD (not OUD) among All Enrollees</p>	<p>July 2018</p>	<p>Single Group ITS</p>	<p>36.2 per 100,00 enrollees (p&lt;0.05)</p>	<p>No statistically significant change.</p>	



All-Cause ED use among beneficiaries with SUD

We hypothesized that the waiver demonstration would decrease the rate of ED use among Medicaid enrollees with SUD. After implementation of methadone component of the 1115 waiver, there is a statistically significant increase in the monthly trend for all-cause ED visits. Compared to the pre-intervention trend, the rate of change in the all-cause ED visits is 1.6 per 1,000 SUD enrollees higher in post-intervention ( $p < 0.01$ ). There is no statistically significant immediate level change post-methadone reimbursement implementation. Similarly, after the implementation of RAS and PRSS, there is a statistically significant increase in the monthly trend of all-cause ED visits, an increase of 1.7 per 1,000 SUD enrollees ( $p < 0.001$ ). There is no statistically significant immediate level change post-RAS and PRSS reimbursement implementation.

Figure E-23 All-cause ED Utilization Among Enrollees with SUD- Methadone implementation



Analytic Approach: Single Group ITS

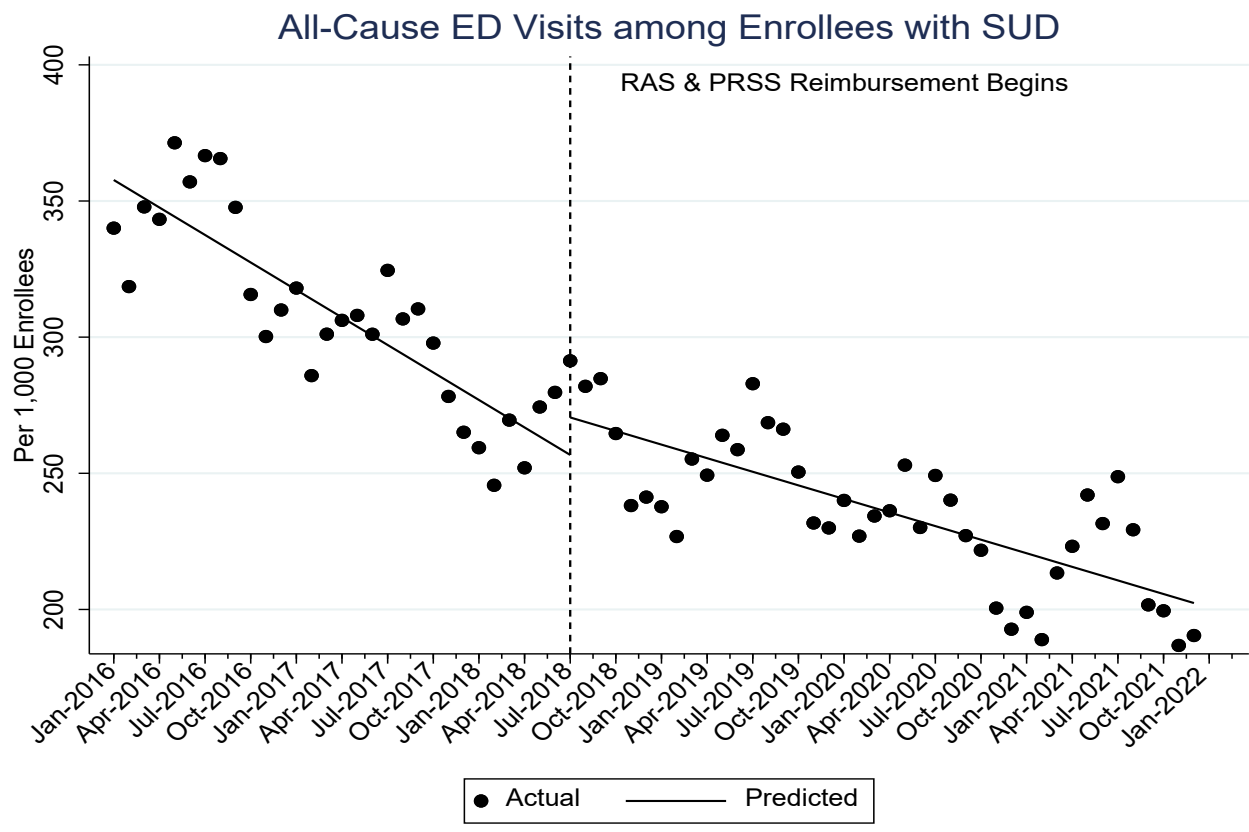
Source: WV Medicaid Claims Data, January 2016-December 2021

Table E-3 All-cause ED Utilization Among Enrollees with SUD- Methadone implementation

Outcome	B-coefficient	Standard Error
<i>Before Methadone Reimbursement</i>		
Constant	355.847***	(6.70)
Monthly Trend	-3.092***	(0.46)
<i>After Methadone Reimbursement</i>		
Immediate Level Change	-7.19	(6.71)
Trend Change	1.618**	(0.48)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Figure E-24 All-cause ED Utilization Among Enrollees with SUD- RAS & PRSS implementation



Analytic Approach: Single Group ITS

Source: WV Medicaid Claims Data, January 2016-December 2021

Table E-4 All-cause ED Utilization Among Enrollees with SUD- RAS & PRSS implementation

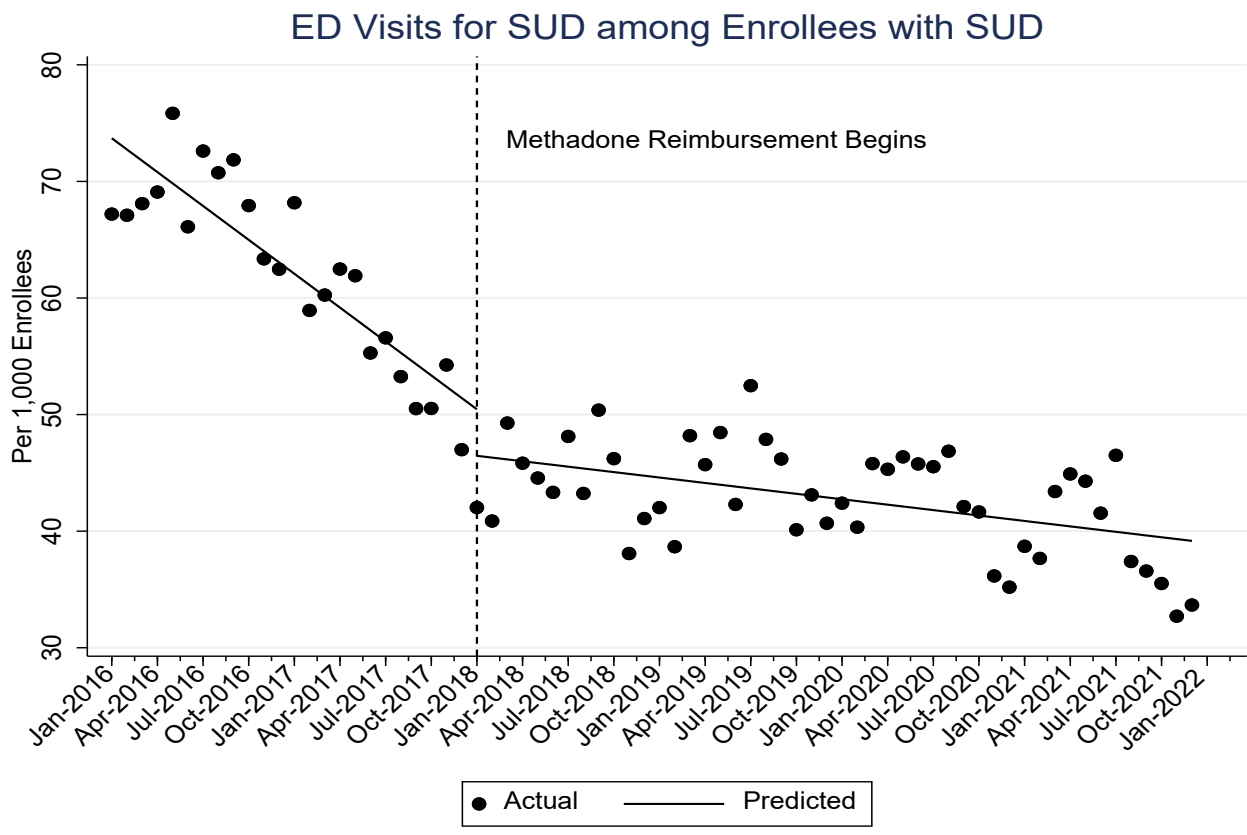
Outcome	B-coefficient	Standard Error
<i>Before RAS&amp; PRSS Reimbursement</i>		
Constant	357.718***	(5.67)
Monthly Trend	-3.365***	(0.33)
<i>After RAS &amp; PRSS Reimbursement</i>		
Immediate Level Change	13.769	(7.23)
Trend Change	1.703***	(0.35)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

SUD-related ED use among beneficiaries with SUD

We hypothesized that the rate of SUD-related ED use would significantly decrease post-waiver implementation. After the implementation of methadone reimbursement, we observe a statistically significant increase in the rate of change of the monthly trend of ED for SUD. Compared to the pre-intervention trend, the monthly trend of the number of ED visits for SUD is 0.8 per 1,000 SUD enrollees higher in post-intervention ( $p < 0.001$ ). There is also a statistically significant immediate level decrease of 3.9 per 1,000 SUD enrollees ( $p < 0.05$ ) post-methadone reimbursement implementation. After the implementation of RAS and PRSS reimbursement, there's a statistically significant increase in the monthly trend of ED visits for SUD of 0.9 per 1,000 SUD enrollees ( $p < 0.001$ ). There is also a statistically significant immediate level decrease of 4.4 per 1,000 SUD enrollees ( $p < 0.05$ ) post- RAS and PRSS reimbursement implementation.

Figure E-25 ED Visits for SUD among Enrollees with SUD- Methadone implementation



Analytic Approach: Single Group ITS

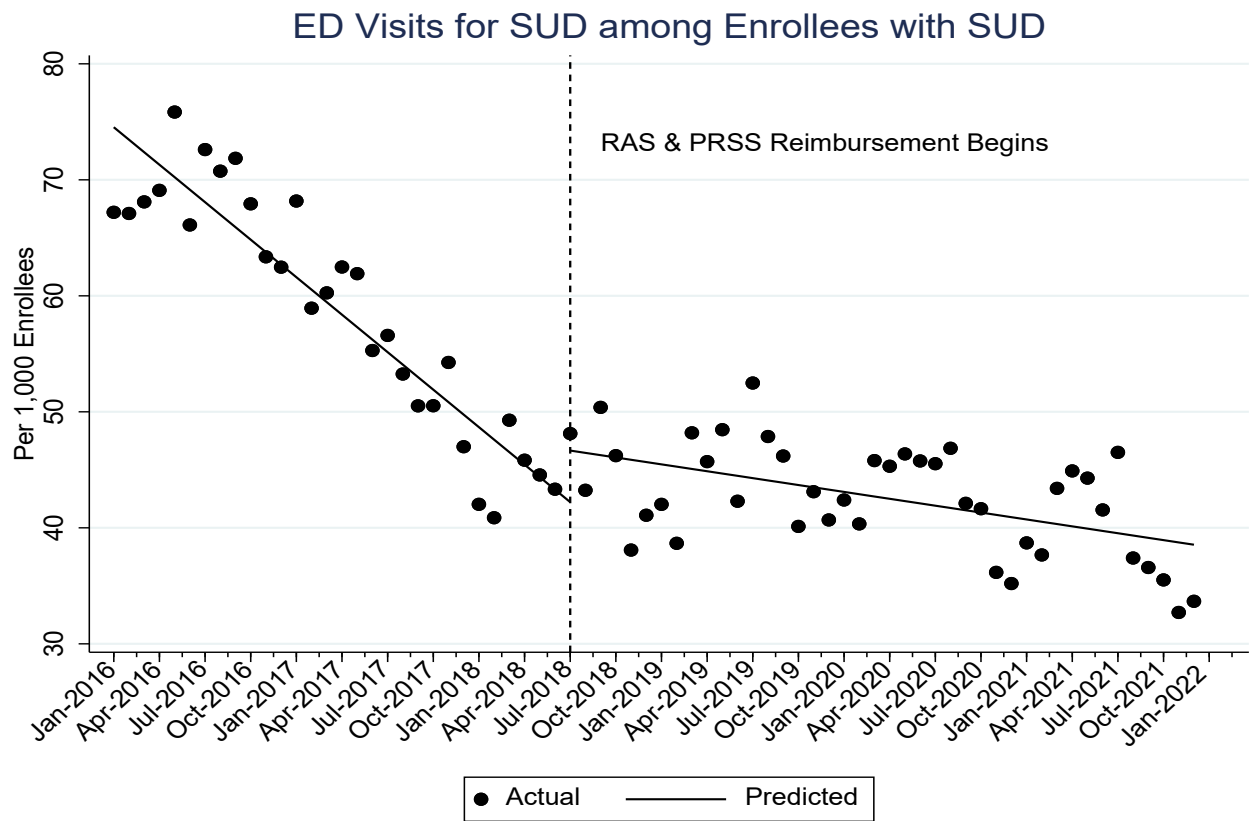
Source: WV Medicaid Claims Data, January 2016-December 2021

Table E-5 ED Visits for SUD among Enrollees with SUD- Methadone implementation

Outcome	B-coefficient	Standard Error
<i>Before Methadone Reimbursement</i>		
Constant	73.707***	(2.43)
Monthly Trend	-0.969***	(0.16)
<i>After Methadone Reimbursement</i>		
Immediate Level Change	-3.990*	(1.85)
Trend Change	0.814***	(0.17)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Figure E-26 ED Visits for SUD among Enrollees with SUD- RAS & PRSS implementation



Analytic Approach: Single Group ITS

Source: WV Medicaid Claims Data, January 2016-December 2021

Table E-6 ED Visits for SUD among Enrollees with SUD- RAS & PRSS implementation

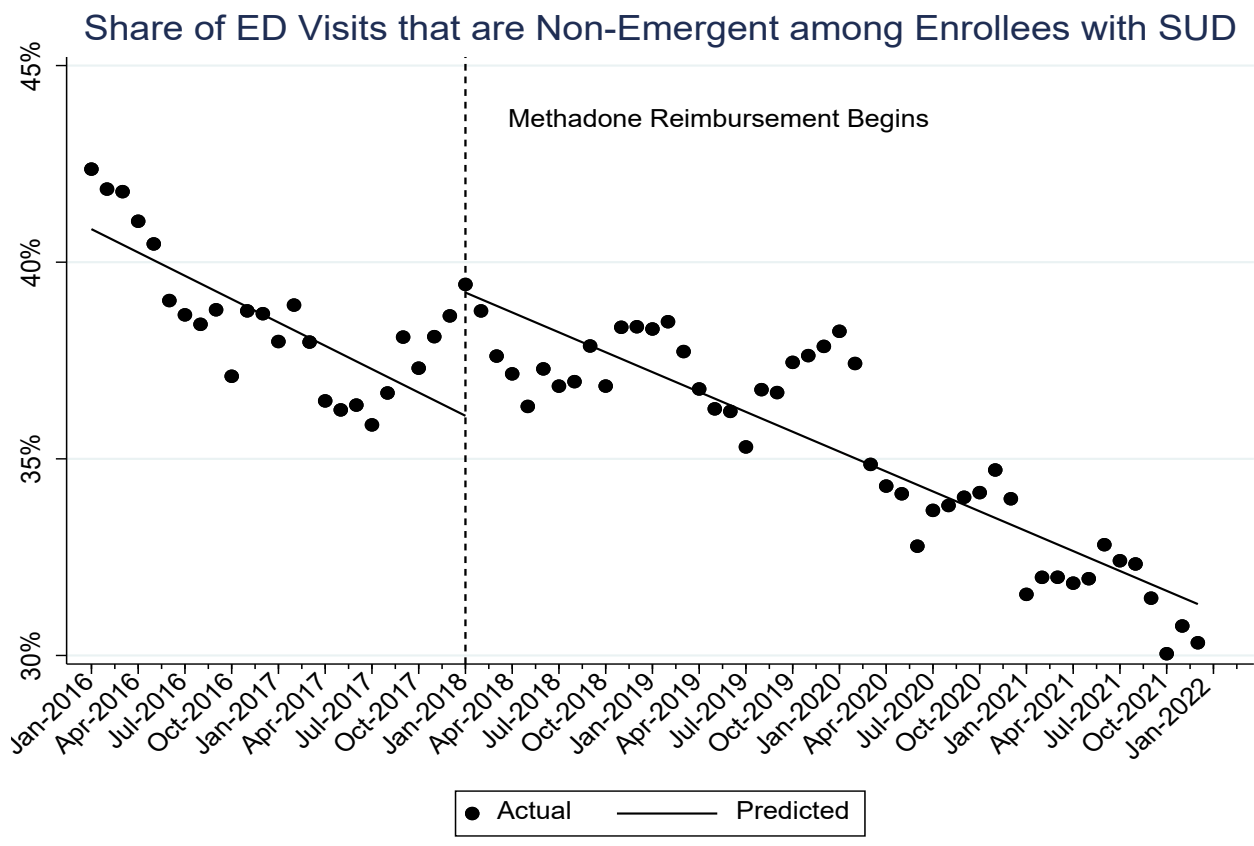
Outcome	B-coefficient	Standard Error
<i>Before RAS &amp; PRSS Reimbursement</i>		
Constant	74.535***	(2.18)
Monthly Trend	-1.077***	(0.11)
<i>After RAS &amp; PRSS Reimbursement</i>		
Immediate Level Change	4.443*	(1.99)
Trend Change	0.879***	(0.12)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Non-emergent ED use

Claims data were also analyzed to determine if non-emergent visits to the emergency department decreased due to the waiver. Non-emergent visits are defined as visits where the patient’s complaint indicated medical care was not needed immediately (within 12 hours), whereas emergent visits are defined as visits where the patient’s complaint did indicate the need for immediate care.<sup>10</sup> There were no statistically significant differences in the trend of total ED visits that were non-emergent among enrollees with SUD, regardless of how the intervention was defined. However, there was an increase of 3.1% ED visits classified as non-emergent immediately following methadone implementation (p<0.01) and 2.5% immediately following RAS and PRSS implementation (p<0.05).

Figure E-27 Share of Non-emergent ED Use Among Enrollees with SUD- Methadone implementation



Analytic Approach: Single Group ITS

Source: WV Medicaid Claims Data, January 2016-December 2021

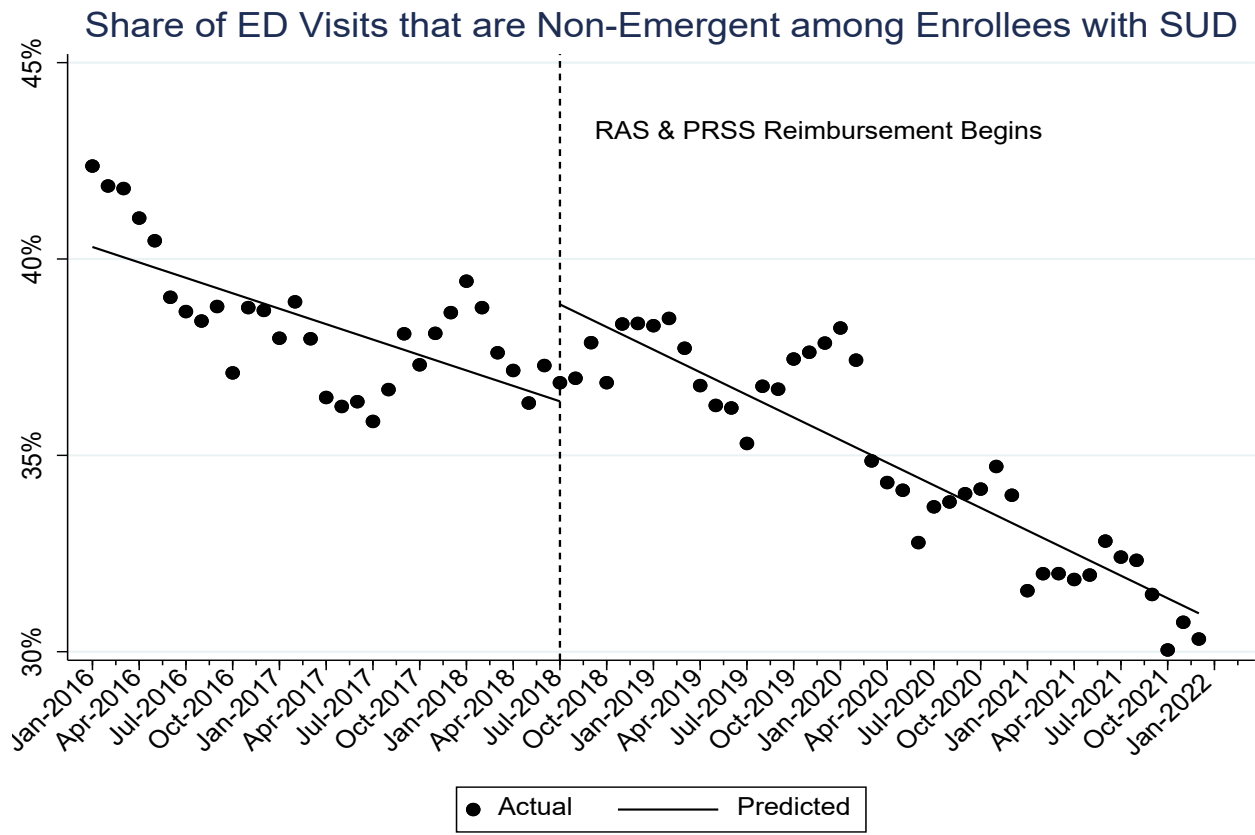
<sup>10</sup> Johnston, K. J., Allen, L., Melanson, T. A., & Pitts, S. R. (2017). A "Patch" to the NYU Emergency Department Visit Algorithm. *Health services research*, 52(4), 1264–1276. <https://doi.org/10.1111/1475-6773.12638>

Table E-7 Share of Non-emergent ED Use Among Enrollees with SUD- Methadone implementation

Outcome	B-coefficient	Standard Error
<i>Before Methadone Reimbursement</i>		
Constant	0.408***	(0.01)
Monthly Trend	-0.002**	(0.00)
<i>After Methadone Reimbursement</i>		
Immediate Level Change	0.031**	(0.01)
Trend Change	0.000	(0.00)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Figure E-28 Share of Non-emergent ED Use Among Enrollees with SUD- RAS & PRSS implementation



Analytic Approach: Single Group ITS

Source: WV Medicaid Claims Data, January 2016-December 2021



Table E-8 Share of Non-emergent ED Use Among Enrollees with SUD- RAS & PRSS implementation

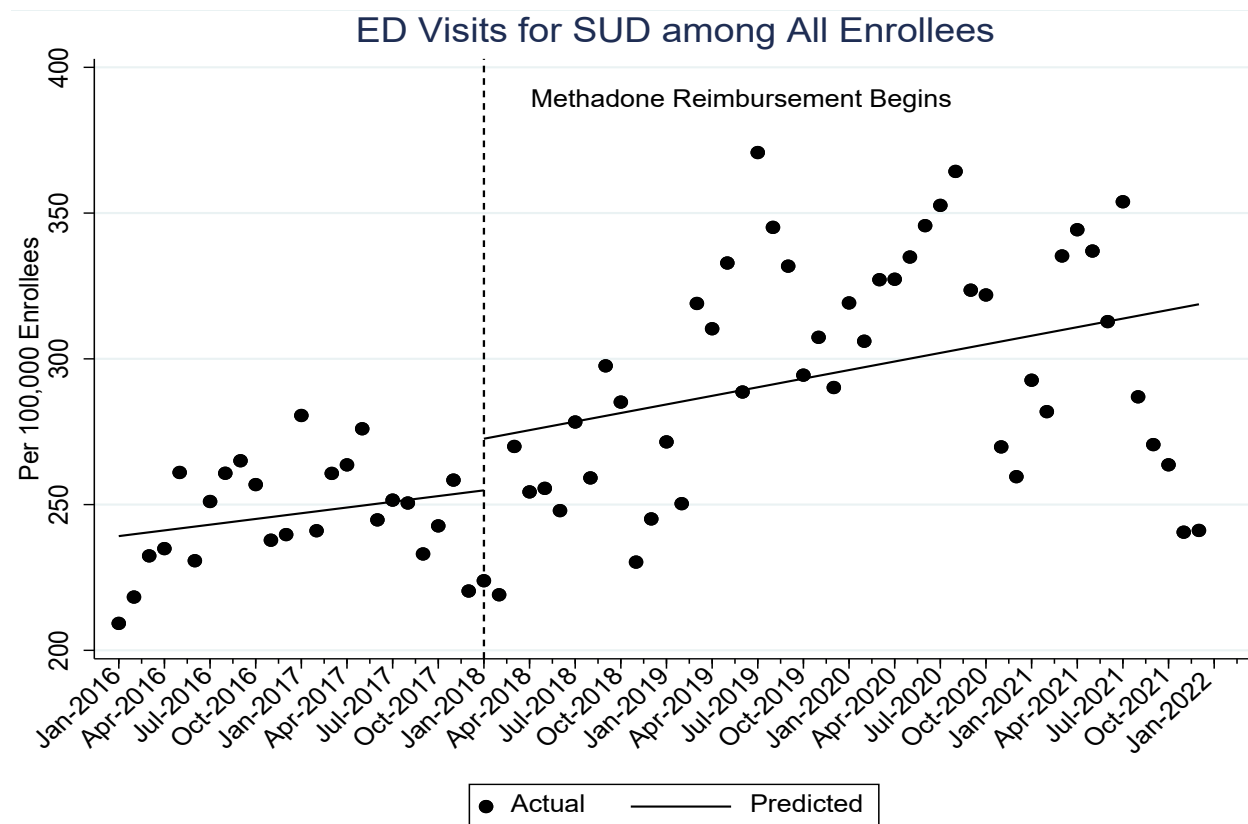
Outcome	B-coefficient	Standard Error
<i>Before RAS&amp; PRSS Reimbursement</i>		
Constant	0.403***	(0.01)
Monthly Trend	-0.001**	(0.00)
<i>After RAS &amp; PRSS Reimbursement</i>		
Immediate Level Change	0.025*	(0.01)
Trend Change	-0.001	(0.00)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

ED Utilization for SUD & OUD among All Enrollees

WVU also investigated changes in ED visits for SUD and OUD among all enrollees, not just those with a related diagnosis. We did not find a statistically significant trend change in the rate of ED visits for SUD among all enrollees post-methadone reimbursement, or post- RAS and PRSS reimbursement. However, post-RAS and PRSS implementation, we observe an immediate increase in ED visits of 45.8 per 100,000 enrollees ( $p < 0.01$ ).

Figure E-29 ED Visits for SUD Among All Enrollees- Methadone implementation



Analytic Approach: Single Group ITS

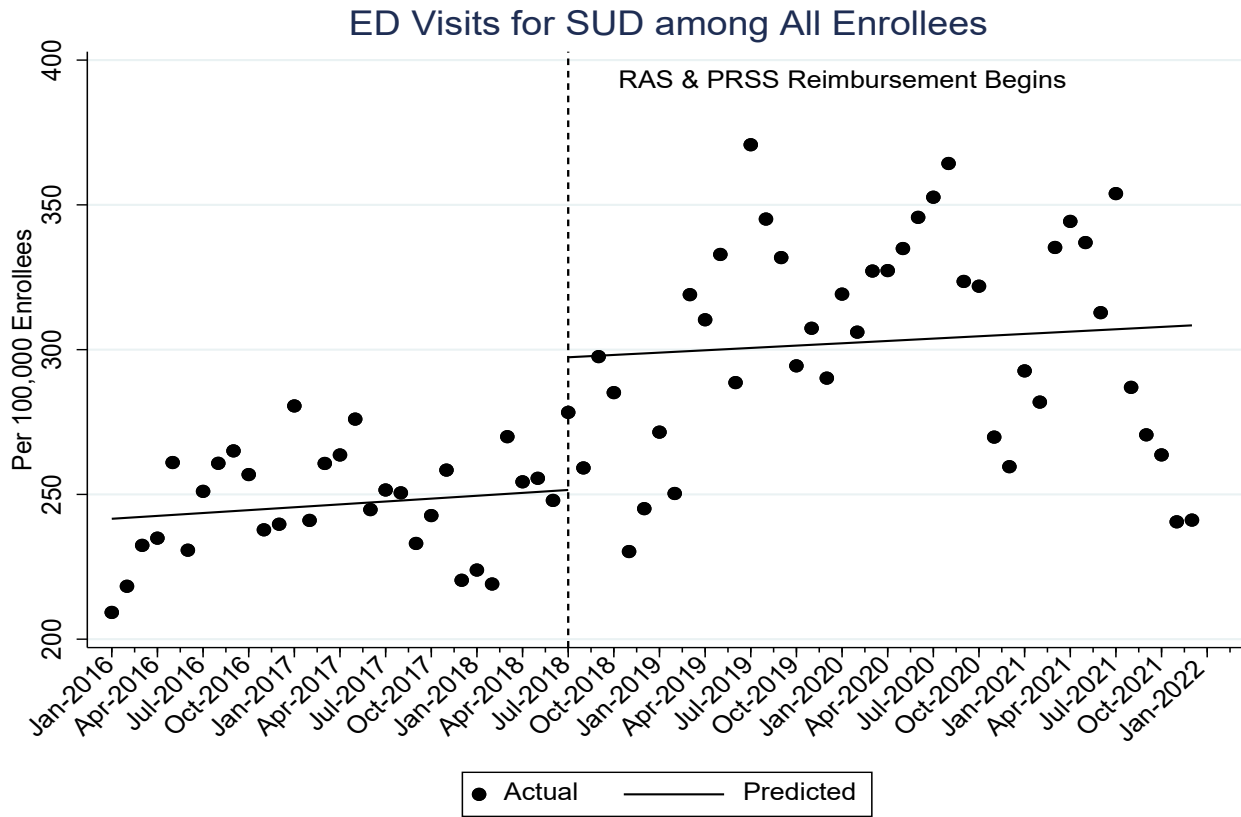
Source: WV Medicaid Claims Data, January 2016-December 2021

Table E-9 ED Visits for SUD Among All Enrollees- Methadone implementation

Outcome	B-coefficient	Standard Error
<i>Before Methadone Reimbursement</i>		
Constant	239.190***	(9.06)
Monthly Trend	0.654	(0.67)
<i>After Methadone Reimbursement</i>		
Immediate Level Change	17.705	(16.66)
Trend Change	0.328	(1.12)

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Figure E-30 ED Visits for SUD Among All Enrollees- RAS & PRSS implementation



Analytic Approach: Single Group ITS

Source: WV Medicaid Claims Data, January 2016-December 2021

Table E-10 ED Visits for SUD Among All Enrollees- RAS & PRSS implementation

Outcome	B-coefficient	Standard Error
<i>Before RAS&amp; PRSS Reimbursement</i>		
Constant	241.586***	(7.76)
Monthly Trend	0.331	(0.42)
<i>After RAS &amp; PRSS Reimbursement</i>		
Immediate Level Change	45.830**	(17.03)
Trend Change	-0.063	(0.95)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

## 8 What is the impact of the demonstration on inpatient hospital use by Medicaid enrollees with SUD? (EQ 3.2)

### 1.1.11 The demonstration will decrease hospital admissions among Medicaid enrollees with SUD. (EH 3.2.1)

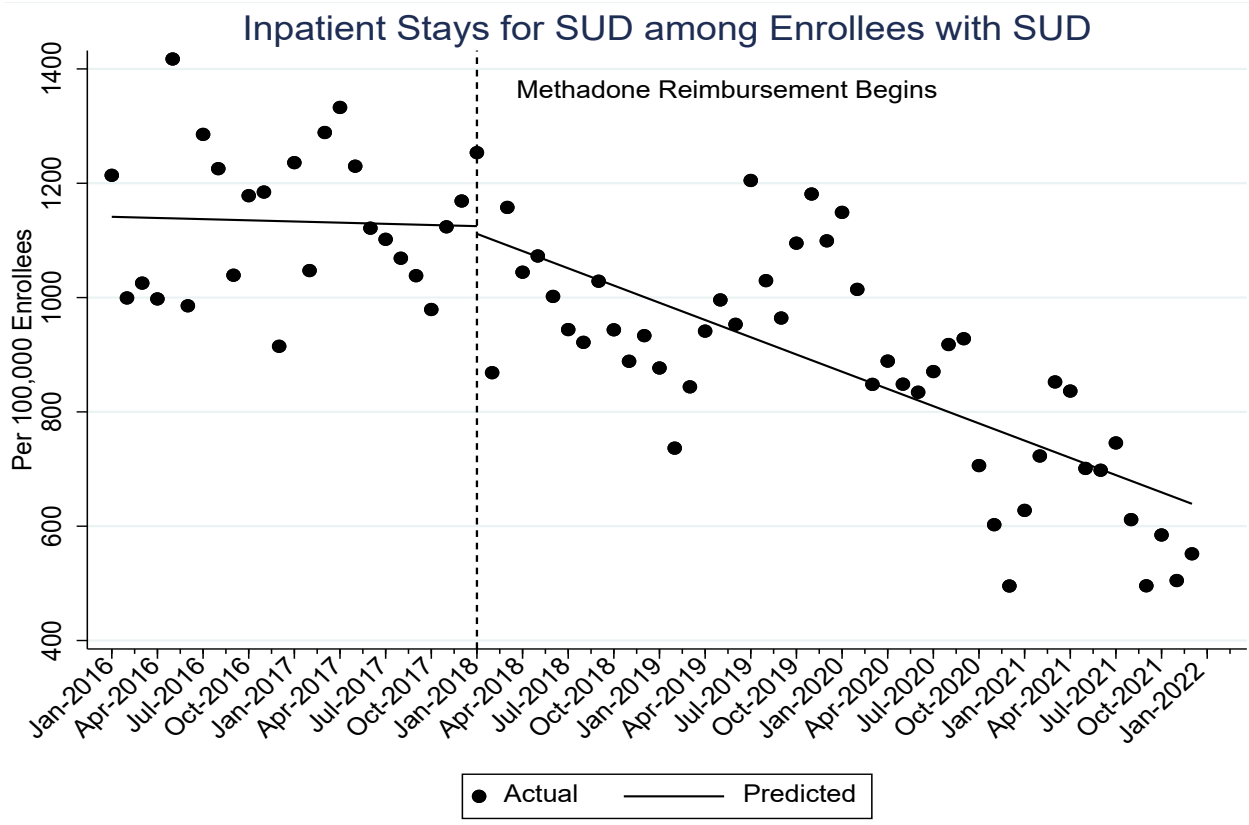
We hypothesized that the availability of waiver services would result in a decrease in hospital admissions among Medicaid enrollees, not only for SUD-related stays but for all causes. **Given the data quality issues outlined in Section 2, we ask readers to interpret them with appropriate caution.**

#### *Inpatient stays for SUD & OUD*

Figure E-31 illustrates a significant decrease in inpatient utilization among enrollees with SUD post-methadone implementation (January 2018). Compared to the pre-intervention trend, the statistically significant decrease in the monthly trend for inpatient stays is 9.4 per 100,000 SUD enrollees lower in post-intervention ( $p < 0.01$ ). There was no statistically significant level change immediately following the intervention. While this shows that covering methadone via the Medicaid waiver reduced inpatient stays, it is unclear whether this is due to the preventive nature of MOUD in reducing serious health complications from substance use that would require inpatient stays, or if the increased access to methadone is simply providing an alternative to seeking SUD treatment in the hospital setting.

After the implementation of RAS and PRSS reimbursement, there's a statistically significant decrease in the monthly trend of inpatient stays for SUD of 7.8 per 100,000 SUD enrollees ( $p < 0.05$ ) (Figure E-32). There was no statistically significant level change immediately following the intervention.

Figure E-31 Inpatient Stays for SUD- Methadone implementation



Analytic Approach: Single Group ITS

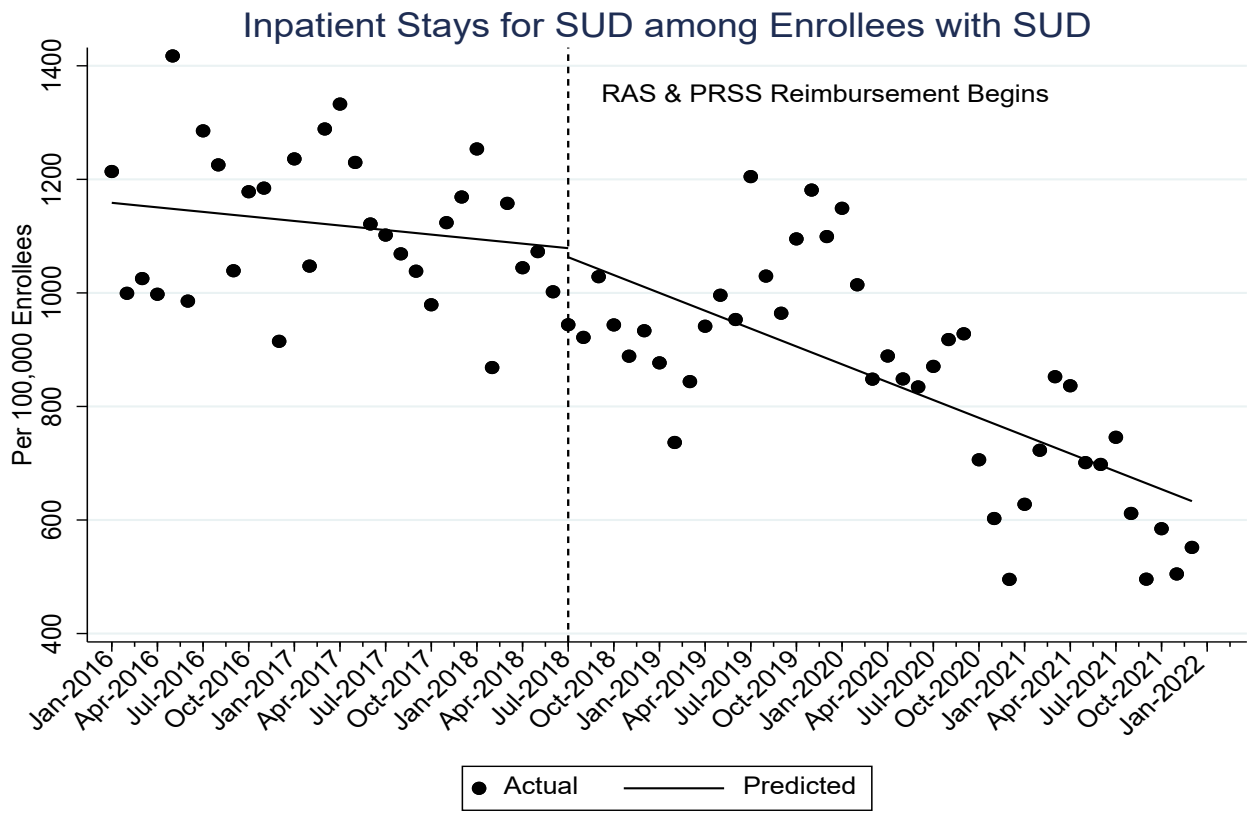
Source: WV Medicaid Claims Data, January 2016-December 2021

Table E-11 Inpatient Stays for SUD- Methadone implementation

Outcome	B-coefficient	Standard Error
<i>Before Methadone Reimbursement</i>		
Constant	1141.322***	(25.54)
Monthly Trend	-0.683	(1.90)
<i>After Methadone Reimbursement</i>		
Immediate Level Change	-13.411	(61.97)
Trend Change	-9.367**	(2.75)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Figure E-32 Inpatient Stays for SUD- RAS & PRSS implementation



Analytic Approach: Single Group ITS  
 Source: WV Medicaid Claims Data, January 2016-December 2021

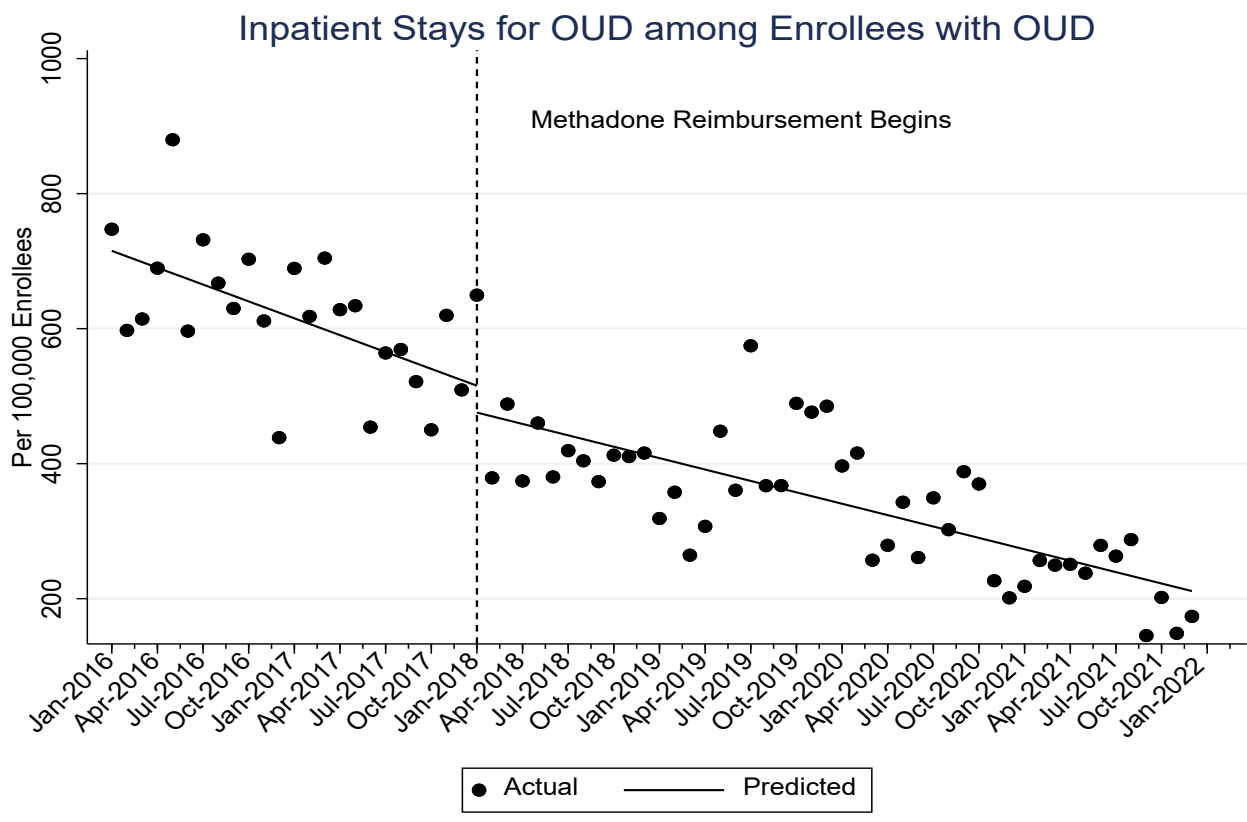
Table E-12 Inpatient Stays for SUD- RAS & PRSS implementation

Outcome	B-coefficient	Standard Error
<i>Before RAS &amp; PRSS Reimbursement</i>		
Constant	1158.698***	(29.51)
Monthly Trend	-2.664	(1.56)
<i>After RAS &amp; PRSS Reimbursement</i>		
Immediate Level Change	-15.874	(74.38)
Trend Change	-7.817*	(3.59)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

We also investigated the rate of change of inpatient stays for OUD among enrollees with OUD. Post-methadone reimbursement, there's a statistically significant increase in the monthly trend of inpatient stays for OUD. Compared to the pre-intervention trend, the rate of change in the number of inpatient stays for OUD is 2.7 per 100,000 OUD enrollees higher in post-intervention ( $p < 0.05$ ). Post-RAS and PRSS reimbursement, there's a statistically significant increase in the monthly trend of inpatient stays for OUD. Compared to the pre-intervention trend, the rate of change in the number of inpatient stays for OUD is 4.1 per 100,000 OUD enrollees higher in post-intervention ( $p < 0.05$ ). There was no statistically significant level change immediately following the intervention, both when defined as the implementation methadone reimbursement and when defined as the implementation of RAS and PRSS reimbursement.

Figure E-33 Inpatient Stays for OUD- Methadone implementation



Analytic Approach: Single Group ITS

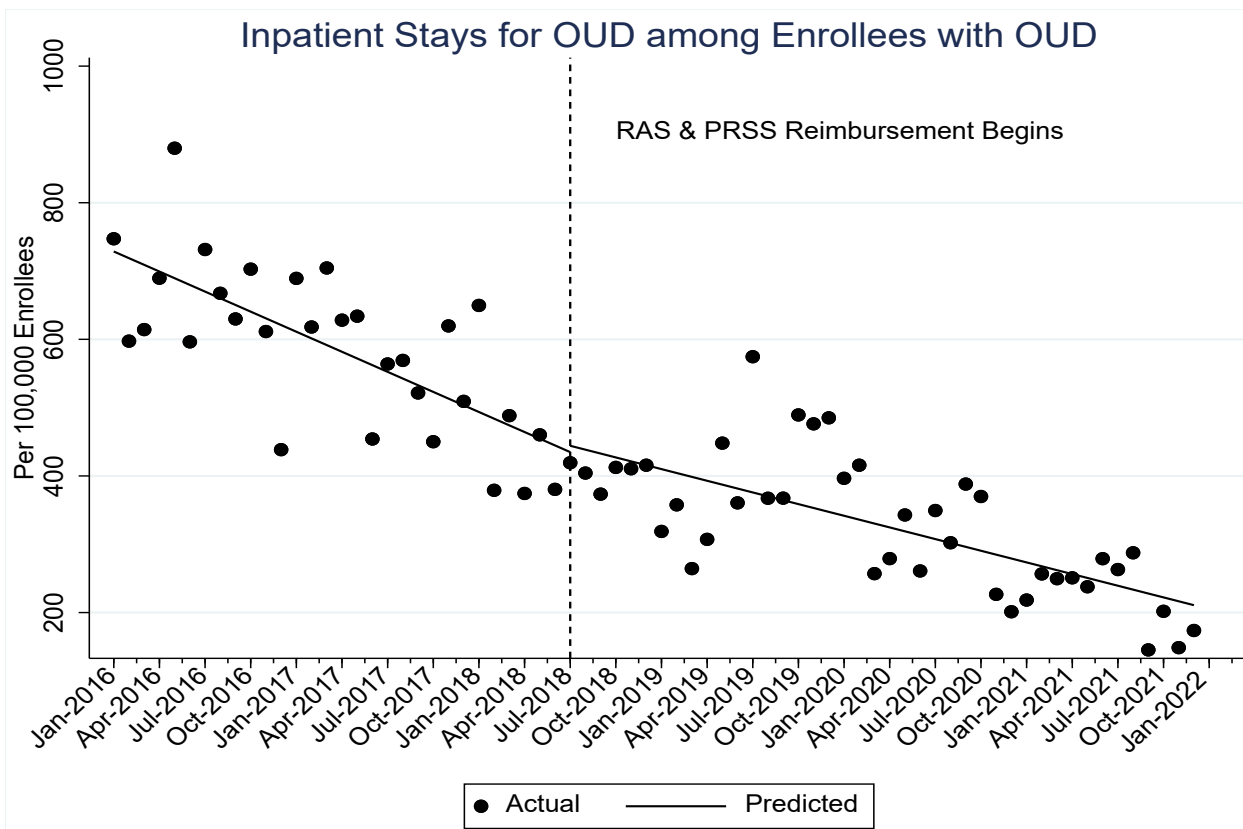
Source: WV Medicaid Claims Data, January 2016-December 2021

Table E-13 Inpatient Stays for OUD- Methadone implementation

Outcome	B-coefficient	Standard Error
<i>Before Methadone Reimbursement</i>		
Constant	715.277***	(13.91)
Monthly Trend	-8.326***	(0.87)
<i>After Methadone Reimbursement</i>		
Immediate Level Change	-39.73	(27.42)
Trend Change	2.699*	(1.13)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Figure E-34 Inpatient Stays for OUD- RAS & PRSS Implementation



Analytic Approach: Single Group ITS

Source: WV Medicaid Claims Data, January 2016-December 2021



Table E-14 Inpatient Stays for OUD- RAS & PRSS Implementation

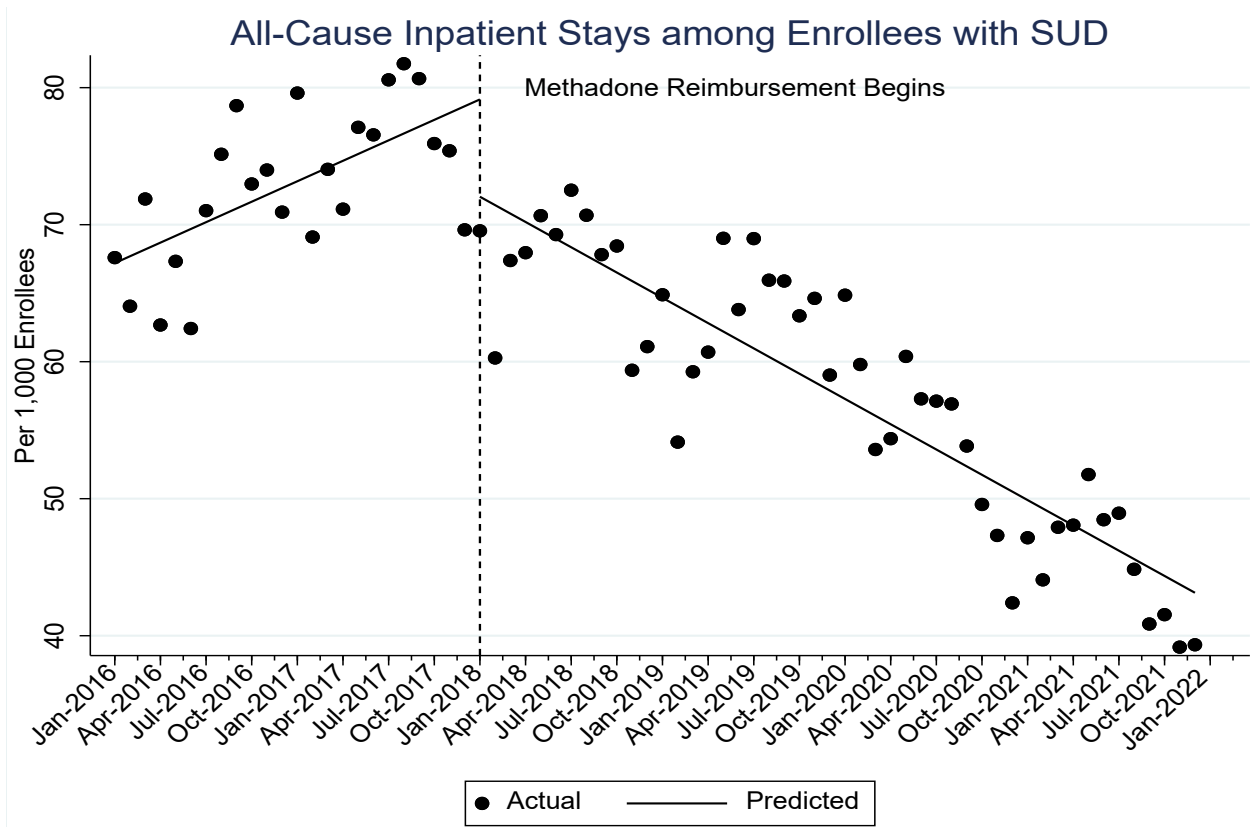
Outcome	B-coefficient	Standard Error
<i>Before RAS&amp; PRSS Reimbursement</i>		
Constant	728.656***	(16.86)
Monthly Trend	-9.791***	(1.01)
<i>After RAS &amp; PRSS Reimbursement</i>		
Immediate Level Change	9.258	(27.13)
Trend Change	4.099*	(1.72)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

All-Cause Inpatient Stays

After the implementation of methadone reimbursement, there's a statistically significant decrease in the rate of change of the monthly trend of all cause inpatient stay. Compared to the pre-intervention trend, the monthly trend of number of all cause inpatient stays is 1.1 per 1,000 SUD enrollees lower in post-intervention ( $p < 0.001$ ). The level of inpatient stays statistically significantly decreased by 7.1 per 1000 SUD enrollees immediately following the intervention ( $p < 0.001$ ).

Figure E-35 All-Cause Inpatient Stays among Enrollees with SUD- Methadone implementation



Analytic Approach: Single Group ITS

Source: WV Medicaid Claims Data, January 2016-December 2021

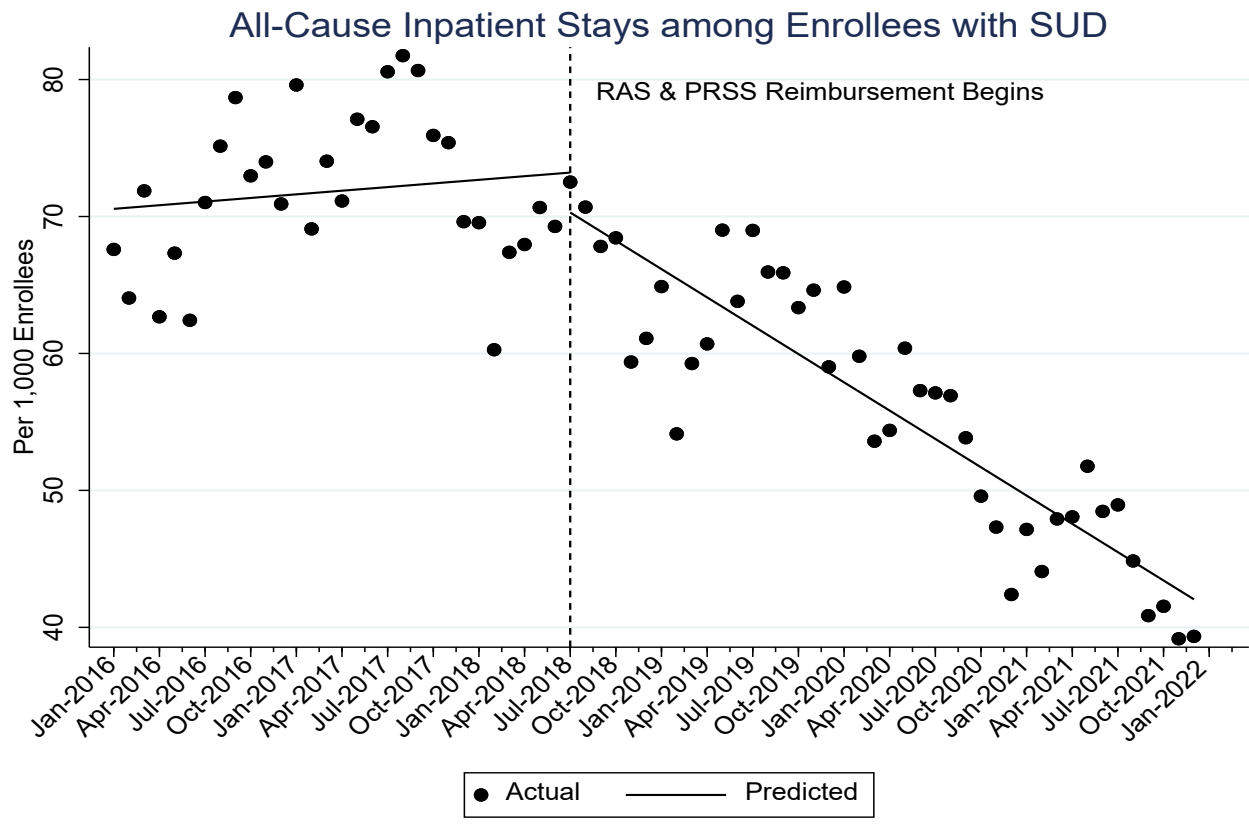
Table E-15 All-Cause Inpatient Stays among Enrollees with SUD- Methadone implementation

Outcome	B-coefficient	Standard Error
<i>Before Methadone Reimbursement</i>		
Constant	67.197***	(1.22)
Monthly Trend	0.498***	(0.10)
<i>After Methadone Reimbursement</i>		
Immediate Level Change	-7.101***	(1.79)
Trend Change	-1.113***	(0.13)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

After the implementation of RAS and PRSS reimbursement, there's a statistically significant decrease in the rate of change of the monthly trend of all cause inpatient stay. Compared to the pre-intervention trend, the monthly trend of number of all cause inpatient stay is 0.7 per 1,000 SUD enrollees lower in post-intervention (p<0.001). There was no statistically significant level change immediately following the intervention.

Figure E-36 All-Cause Inpatient Stays among Enrollees with SUD- RAS & PRSS implementation



Analytic Approach: Single Group ITS

Source: WV Medicaid Claims Data, January 2016-December 2021

Table E-16 All-Cause Inpatient Stays among Enrollees with SUD- RAS & PRSS implementation

Outcome	B-coefficient	Standard Error
<i>Before RAS &amp; PRSS Reimbursement</i>		
Constant	70.560***	(2.72)
Monthly Trend	0.088	(0.17)
<i>After RAS &amp; PRSS Reimbursement</i>		
Immediate Level Change	-2.914	(2.83)
Trend Change	-0.777***	(0.20)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

9 What is the impact of the demonstration on the integration of physical and behavioral health care among Medicaid enrollees with SUD and comorbid conditions? (EQ 4.1)

1.1.12 The demonstration will increase the rate of Medicaid enrollees with SUD-related physical health conditions who are also receiving behavioral care. (EH 4.1.1)

The evaluation team is continuing to finalize the measures related to this hypothesis. They will be included in the final evaluation report.

## 10 What is the impact of the demonstration on care transitions among Medicaid enrollees with SUD? (EQ 4.2)

### 1.1.13 The demonstration will improve communication among providers who transition patients to other providers. (EH 4.2.1)

Focus group data were also analyzed to determine the degree to which RAS treatment providers expressed communication difficulties with other providers (EQ 4.2, EH 4.2.1). In 2020, fourteen participants stated that communication has improved among providers since the waiver implementation. Further, eleven participants specifically noted that transitions through different levels of care were made easier and twelve participants noted that the billing process as improved. In particular, peer recovery support specialists were identified as a part of the waiver that has facilitated easier communication and transitions among providers:

*“As a therapist, I don't always have time, either, to make all those phone calls and to do all that because I've got another person in crisis waiting outside. So I can get PRSS to say, “Hey, work with them. Call. See if we can get a bed. See what we can get going. Let's get this rolling.” So that's [a] ... I don't know any other term but seamless, way that we can do things and it flows because we have this connection to multiple agencies now.”*

This finding remained the same between 2020 and 2021. Across all focus groups, participants expressed overwhelming support for peer recovery support services. In 2021, thirty-eight statements relayed that peers are an essential component of treatment and the importance of their lived experiences was emphasized.

*“We wouldn't be able to be open without them.”*

*“They are really able to meet people where they're at. Sometimes people show a resistance to trusting people that haven't been there themselves. So it really helps to bridge that divide.”*

However, some barriers were identified related to communication among providers, especially related to communication between facilities and insurance providers. Overall, 21 participants in 2020 noted issues with treatment ending due to coverage constraints and six participants expressed frustration with authorization requirements. These frustrations are illustrated in the following quotes:

*“Just regarding back to communication when guys are getting denied and were up for a peer-to-peer review and they're deciding on whether or not to continue again. I've literally had a reviewer ask me, “Is this gentleman suicidal?” And when I say no, he says, “Well that's a shame.” And I've had a reviewer say, “Well is this person on Suboxone?” And I say, “No.” And then we are asked why and I say it's because it was his drug of choice, and he said, “Well, I can't continue funding, if he's not taking Suboxone and Antabuse. And Antabuse is on a national low.”*

*“It's frustrating. We have found that it's continuing to actually get more difficult. Even just here in the last month we've had a change with another provider that*

*would cover the full 28 days of our program. They're sending it to a doctor review after 14 days, and that doctor is declining services, continued services. We have another provider we get about 8 to 11 days of coverage, sometimes less than that depending on what's going on with the patient upon admission."*

*"Well, now they're talking about how they can come to a 3.5 program for seven days, and then they're good to go to transitional living. The transitional living is not treatment. That is just a roof over your head. Transitional [living] is needed. It is. But if I'm sending someone there after having just five days of therapy, these consumers don't trust us to open up in group until at least 14 days, give or take, and that's with us have a peer recovery support specialist whose goal and job is to bridge that gap between the clinician and the consumer. Then we send them off to a transitional home after seven days, and that's just setting them up for failure."*

In 2021, thirty-nine statements were made explaining that facilities did not experience any general difficulties related to provider communication and patient transition. Fifteen statements mentioned some type of difficulty, but these were unique to each facility. Furthermore, six statements expressed an increase in communication and transition since the waiver implementation:

*"... it raised awareness and yeah, and really started the conversation of what's the next step."*

However, a similar theme relating to communication between facilities and insurance providers emerged. In fact, insurance difficulties were related to communication, care transitions, and treatment quality in seventy separate statements. Participants regularly expressed that they were not able to have the full length of treatment covered for their patients and authorization was especially difficult to obtain for those who had previous treatment experience:

*"Before the SUD waiver, everyone had 28 days. And then now, like I said, we have an idea of how many days based upon which MCO and we're very transparent with the patients on that because they have to know they have to move in a rapid rate."*

Additionally, participants often experienced insurance pushing for patients to be in a lower level of care, and authorization was difficult to obtain if patients needed to be in a higher level of care.

*"We live in a state of confusion and then that's where they kind of get pushed down, pushed out quicker. And that's where kind of Participant 2 spoke on of somebody having to be ready to be in sober living, to get a job, and attend those outpatient services after eight days."*

Understandably, difficulties due to COVID-19 were mentioned by many participants across both years. Focus group participants in 2020 identified related issues with transitioning patients between levels of care, reduced bed availability, difficulties transitioning to telehealth, and increased relapse and overdose risk among patients. In the 2021 focus groups, participants noted that testing and isolation requirements were negatively impacting patients' treatment experiences and willingness to enter treatment. Several factors contributed to the increase in relapse and overdose rates, such as stimulus checks being used to purchase substances, boredom, and loss of a job or loved one. Telehealth

difficulties continued to be an issue in 2021. Participants often said that telehealth led to a loss of connection, both literally and metaphorically:

*“And our population access to internet or cell phone, computers can be an issue as well.”*

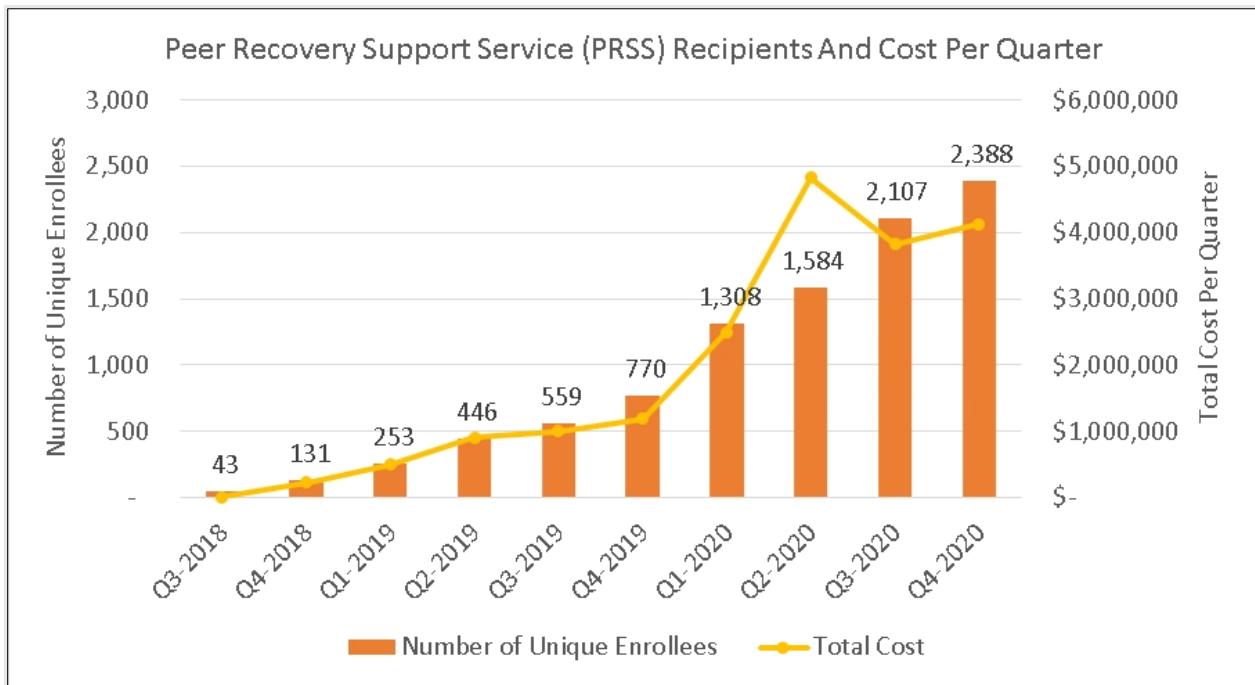
*“I think it would create a barrier for anybody. But I know these guys, since it’s inpatient, it becomes a home which when you take away our accessible resources and our sources of beneficial communication, I think it’s natural for them to have some sort of resistance to you.”*

*“But I think what really lacks is intimacy and connection, which for me, as a therapist, those things are really important. So if I’m not able to connect on that level, it creates a massive barrier to change.”*

## 11 Cost Analysis

The figures below provide quarterly costs for each of the waiver components- methadone, PRSS, and RAS services. These do not include administrative costs, as the WVU team is awaiting FMAP information required to calculate these costs. Instead, these are claim costs for each service. Total costs for all three services have increased from \$1,217,370 in Q1-2018 (representing only methadone claims) to \$15,860,025 in Q4-2020, which corresponds with large increases in unique enrollees receiving treatment. For example, unique enrollees receiving PRSS services grew from 43 in Q3-2018 to 2,388 in Q4-2020. Methadone utilization nearly doubled between Q1-2018 and Q4-2020, and enrollees receiving RAS treatment increased from 50 to 1,533 in that same time period.

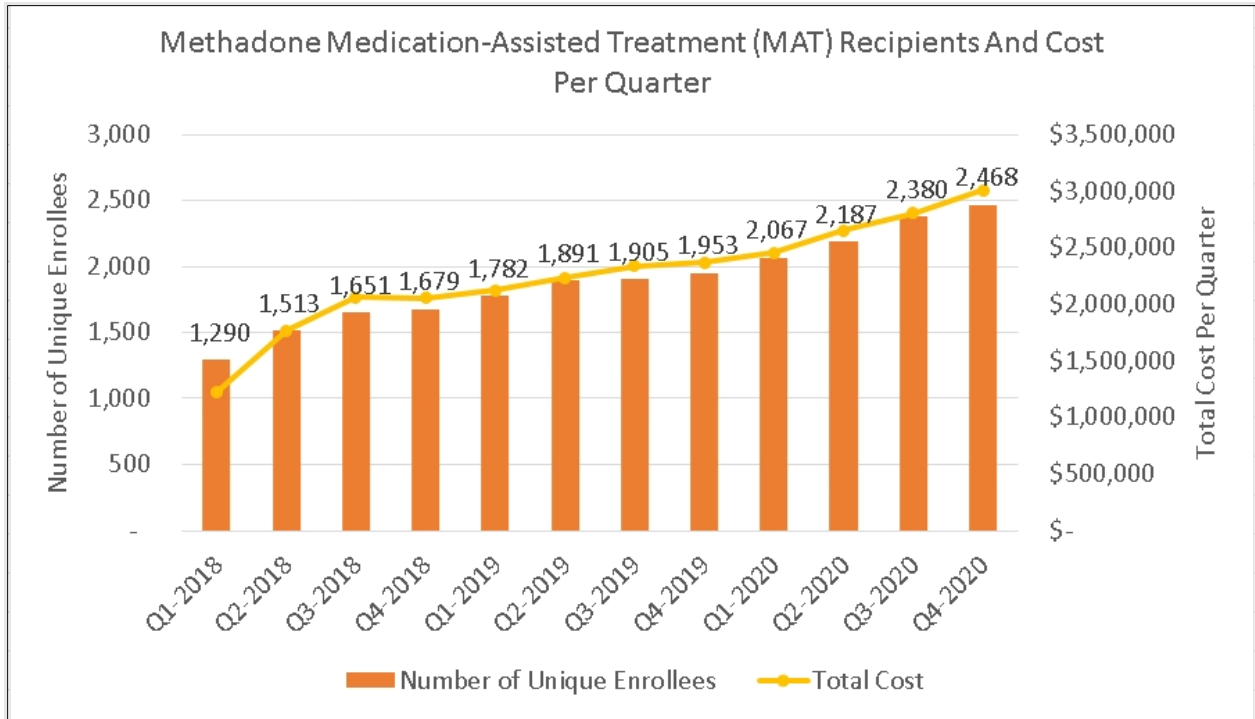
Figure E-37 PRSS Recipients and Cost Per Quarter



Source: WV Medicaid Claims Data, January 2016-December 2020

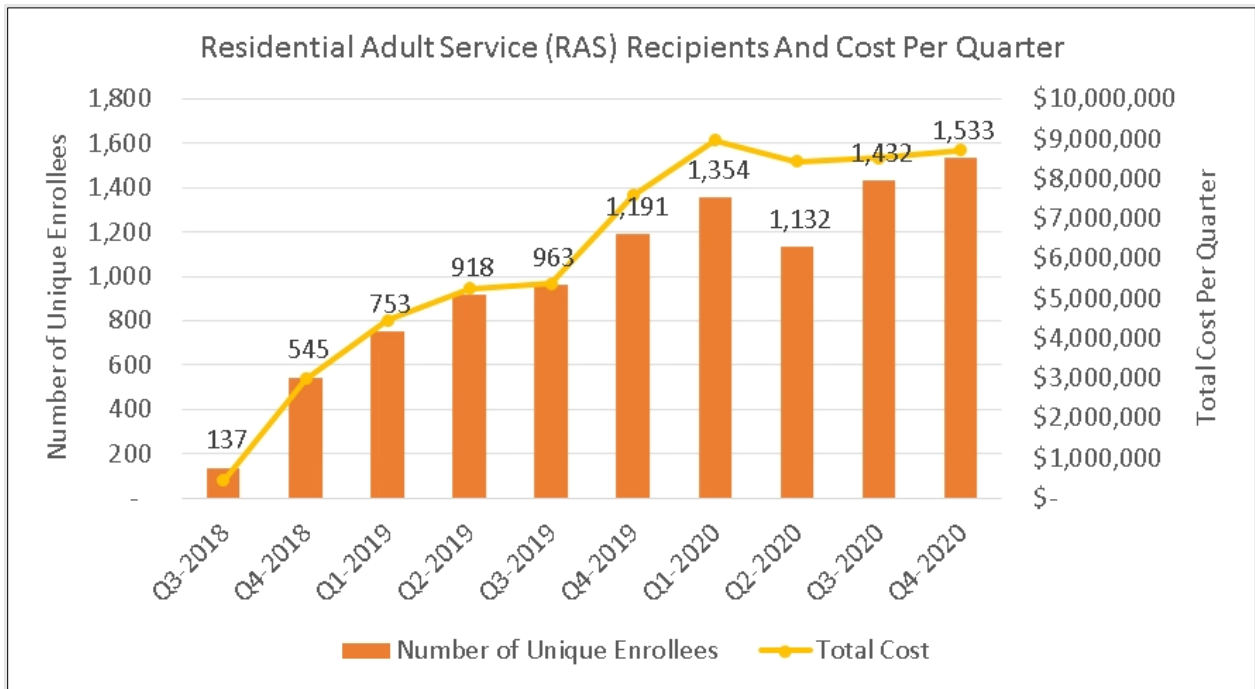


Figure E-38 Methadone Recipients and Cost Per Quarter



Source: WV Medicaid Claims Data, January 2016-December 2020

Figure E-39 RAS Recipients and Cost Per Quarter



Source: WV Medicaid Claims Data, January 2016-December 2020

## 12 Changes to evaluation plan for extension

Currently, BMS is applying for an extension of these waiver services and expanding to include additional services. The new waiver application is intended to:

- Continue existing waiver services to collect additional data on outcomes.
- Engage high-risk individuals in vulnerable settings.
  - Expand peer support to more settings (e.g., emergency departments [EDs]).
  - Provide continuity of care for justice-involved individuals with SUD.
  - Offer involuntary secure withdrawal management and stabilization (SWMS) for individuals deemed a danger to themselves or others—or other eligibility criteria to be determined in state code—by a designated crisis responder.
  - Support a more holistic and integrated approach to treatment, education, and outreach for HIV/HCV in relation to substance use.
- Address SDOH to cultivate self-reliance and support continued recovery through recovery housing offering clinical-level treatment services to SUD members, supported housing, and supported employment.
- Offer contingency management, through the Treatment of Users with Stimulant Use Disorder (TRUST) comprehensive outpatient model, as an additional evidence-based practice for individuals with stimulant use disorder.
- Provide multidisciplinary Quick Response Teams that are in contact with an individual 24-72 hours after an overdose event or SUD related emergency.
- Reimburse short-term (i.e., average length of stay no longer than 30 days), medically necessary residential and inpatient treatment services within settings that qualify as IMDs for Medicaid-eligible adults with serious mental illness (SMI).
- Expansion of allowable length of stays in IMDs at the ASAM 3.7 level of care for individuals with SUD and co-occurring complex medical conditions for up to 60 days.

Upon approval of this waiver extension application, the WVU team plans to expand the measures currently used to evaluate the current waiver in order to capture changes related to new services under the extension. Table E-17 outlines these measures and WVU's proposed methods for evaluating each one. These plans should be considered a draft and not final.

Table E-17 Proposed Evaluation Plan for Waiver Extension

Waiver Extension Service/New Demonstration Goal	Change to Evaluation Plan	Proposed Measurement Method
Decrease utilization of high-cost ED and hospital services with SUD and/or SMI.	This demonstration goal will replace Demonstration Goal 3: "Decrease emergency department and hospital services by enrollees with SUD."	Use the same measurement method as the replaced demonstration goal.
Reimburse short-term residential and inpatient treatment services for adults with SMI at IMDs	Include SMI in Demonstration Goal 4: "Improve care coordination and care transitions for Medicaid enrollees with SUD <i>and/or SMI</i> ."	In addition to HCV and HIV, additional physical health conditions consistent with SMI will be examined separately.
Provide Medicaid coverage to eligible individuals incarcerated in state prisons starting 30 days prior to release	Measure non-emergent ED utilization post-incarceration. Measure number of individuals reinstated in Medicaid within 30 days of incarceration release.	Contingent upon WV DHHR implementing a way to track previously incarcerated enrollees in claims data, these measures can be completed using Medicaid claims data.
Provide integrated access treatment, education, and outreach for HIV/HCV in relation to substance use.	Measure number of individuals receiving HIV/HCV education.	Use CPT codes to flag HIV/HCV testing encounters. Contingent upon data quality issues being addressed, code modifiers can be used to flag educational encounters among these visits.
Provide supported housing and supported employment to enrollees with SUD.	Measure number and rate of enrollees with SUD receiving supported housing and/or supported employment.	Use HCPCS codes for supported housing (H0043, H0044) and supported employment (H2023) to analyze changes in utilization.
Implement the TRUST comprehensive outpatient model for contingency management	Measure the number and rate of enrollees with SUD that have utilized contingency management services.	Contingent on Medicaid claims data changes, this measure can be completed using Medicaid claims data.
Provide multidisciplinary Quick Response Teams	Measure the number and rate of enrollees with SUD that are contacted by a QRT within 72 hours of a SUD-related emergency.	Contingent on Medicaid claims data changes, this measure can be completed using Medicaid claims data.

Waiver Extension Service/New Demonstration Goal	Change to Evaluation Plan	Proposed Measurement Method
Expand allowable length of stays in IMDs at the ASAM 3.7 level of care for individuals with SUD and co-occurring complex medical conditions for up to 60 days	Include separate measure for length of RAS stays among ASAM level 3.7.	Number and rate of ASAM level 3.7 visits exceeding 30 days.

## F. Conclusions

Based on the data described in this report, the evaluation team concludes at this point the following about the waiver:

- The waiver substantially increased the supply of residential facilities, bed, and peer specialists. In particular, PRSS have served as a valuable resource for providers, especially in helping make care transitions more “seamless.” Connecting patients to residential beds is still subject to barriers, including MCO approval.
- While uptake of the individual waiver services rose over time, the observed rise in overall SUD treatment use occurs in the context of a larger trend of increased SUD utilization. At the time of this report, we cannot claim that the waiver was responsible for these increases, even though they occurred during the waiver period. It appears that quality of SUD treatment (e.g. engagement) may have worsened during the waiver period, though for several of our outcomes, this is also due to broader declines in care quality.
- Poor data quality has increased the time we will need to fully describe the impact of the waiver in terms of health care outcomes. In the meantime, the evaluation team and the State are working together to improve data quality in order to provide the most rigorous evaluation possible. We strongly recommend that the State consider data quality improvements as a major cornerstone of its waiver extension plan.
- Costs of delivering the waiver services rose as expected with the introduction of the waiver; we did not conduct any cost effectiveness analysis as part of the evaluation.

In addition, results for the following measures have not yet been finalized, due to ongoing data improvements. These measures will be included in the final report:

- Rate of Continuation of Treatment (EQ 1.1, EH 1.1.1)
- HIV morbidity (EQ 1.2, EH 1.2.1)
- Hepatitis C morbidity (EQ 1.2, EH 1.2.1)
- Access to preventive / ambulatory health services for adult Medicaid beneficiaries with SUD (EQ 1.2, EH 1.2.1)

- Treatment initiation and engagement for enrollees with SUD and HCV comorbidities (EQ 4.1, EH 4.1.1)
- Treatment initiation and engagement for enrollees with SUD and HIV comorbidities (EQ 4.1, EH 4.1.1)

Though the program made important progress toward some identified demonstration objectives, BMS was not able to fully achieve the goals set forth in the 1115 waiver due to the onset of the COVID-19 public health emergency, which began midway through the demonstration period. BMS and involved provider agencies faced a notable workforce shortage prior to the start of the COVID-19 pandemic, a problem made significantly worse over the past several years by the circumstances the pandemic created. The workforce available to provide waiver services has been notably and negatively impacted due both to lives lost to COVID-19 and to providers leaving the healthcare field at significant rates due to COVID-19 reasons. In light of the serious, unforeseen implications of the COVID-19 pandemic during the demonstration period, BMS does not feel that the 1115 waiver was or could be executed in a complete, correct manner as was intended when the waiver was implemented.

## G. Interpretations, Policy Implications, and Interactions with Other State Initiatives

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West Virginia recognizes both the successes and areas for continued improvement that emerge from the data presented in this report. The existing 1115 SUD Waiver has established a continuum of care for individuals diagnosed with SUD from which the State can expand upon and build from in the coming years. Importantly, the 1115 waiver is one component of broader efforts, both existing and planned, in the State's efforts to support individuals with SUD diagnoses.

The 1115 waiver coordinates with WV's State Plan services for SUD treatment, building on the services that existed prior to the waiver implementation in order to create a continuum of care for members in need of treatment services and support at differing levels of care. As discussed in detail above, the waiver interrelates with the 1915c CSED waiver by covering automatic enrollment of CSEDW participants in MHP.

In addition to aspects of the BMS structure for this work, the waiver fits into a broader WV strategy for addressing SUD response planning as one of several mechanisms by which the State is working to serve and help WV Medicaid members with SUD diagnoses. The waiver operates in tandem with the State's Ryan Brown-funded treatment programs and with several initiatives resulting from SAMHSA grants, such as the State Opioid Response (SOR) grant and the Block Grant.

The SOR grant, which the State received in 2019 to support its opioid response efforts, expands the availability of MAT and evidence-based services that identify and engage individuals in treatment and provide supports to help keep them in treatment and long-term recovery, as well as expands access to prevention services. The SAMHSA Block Grant provides WV funding to plan, implement, and evaluate activities that prevent and treat substance abuse and promote public health.

Finally, WV operates a Drug Free Moms and Babies (DFMB) pilot program, an integrated comprehensive medical and behavioral health program for pregnant and postpartum women with substance use

disorder, which has been operational for several years. A State Pilot Grant Program for Treatment for Pregnant and Postpartum Women (PPW-PLT) SAMHSA awarded to the State in 2021 has allowed WV to expand the program, as well as establish a State Project Director position within DHHR's Bureau for Behavioral Health to coordinate an effective State continuum of care specifically supporting women's behavioral healthcare. The DFMB program requires the presence of a peer supporting women in the program, tying this program's operations to the 1115 waiver.

At the time of this report, WV is developing a State Plan Amendment (SPA) to expand the DFMB program. BMS is also developing a SPA relating to the implementation of a Medicaid-run and funded mobile crisis intervention services program for individuals with a suspected substance use or behavioral health emergency. This work is currently in the planning phase, conducted with funding from a CMS American Rescue Plan (ARP) grant award the State received in 2021. The Medicaid mobile crisis program has a planned effective date of January 1, 2023. The State is also in the process of further evolving the Centers of Excellence (COE) for substance abuse and addiction treatment program and is developing a SPA for this program.

Each of these programs directly connects to and reinforces the SUD waiver's services and programmatic goals. Detailed information about the breadth of what WV is doing to address SUD and how the 1115 waiver is braided as part of a broader State effort can be found in the State's [Substance Use Response Plan](#).

In consideration of how this report's findings can inform future policy considerations and developments for both the State and at a national level, the following implications from the report are of note:

- The activities of the waiver to this point emphasize the importance of having connected information sources.  
When providers at facilities across the care continuum have more information readily accessible, they are able to offer members better care coordination and therefore better quality of care. An example from this drawn from waiver activities thus far is Methadone availability in clinics; when clinics and providers at these facilities have all information connected, they are able to access both the information and supplies needed to provide optimal quality of care.
- Inclusion of PRSS as a component of the waiver demonstration had a resounding positive impact on waiver members, as indicated by both quantitative and anecdotal interview data highlighted in this report.  
West Virginia is leveraging this success in seeking to expand PRSS to new settings with the 1115 waiver renewal. At a wider level, there should be a concerted and coordinated effort to work to expand the accessibility and types of peer support available to individuals with SUD or who are experiencing a behavioral health crisis. This could include diversifying settings in which individuals providing peer support operate, as well as aligning peer support certification processes.
- Standardization of the PRSS experience and certification requirements would benefit states as they continue to develop and expand PRSS programs in various substance use and behavioral health settings.  
This policy consideration stems from West Virginia's experience with PRSS during the waiver period to this point. Lessons learned from the implementation of PRSS under the waiver are

discussed in Section I. Given the overwhelming positive impact the inclusion of PRSS has had, it is in WV's (and presumably other states') interest to help ensure optimal execution of service delivery and standards.

- Within SUD treatment service care continuums, there is continued need for concentrated efforts improving care coordination of SUD treatment services.

The data described in this report highlights that the waiver significantly improved availability of services, such as those provided in residential facilities. Barriers to treatment have arisen more in areas' engagement and coordination than on availability, and in some cases, there remains a disconnection between levels of care. Smooth transitions between levels of care can continually be improved upon. West Virginia and other states can consider these challenges and continue to develop waiver and other treatment programs that make connections to care and care coordination a priority.

It should again be noted that the COVID-19 public health emergency, which began in the middle of this waiver demonstration period, significantly affected both the individual members served by the waiver, the State, and evaluation team's ability to obtain quality data to accurately assess the impact the demonstration has had. At both a State and national level, the COVID-19 PHE has illuminated the need for intentional and specific long-range planning in preparation for the next time such an event occurs.

Finally, in Section D: Methodology, we described a violation of the difference-in-differences assumptions due to a policy enacted in State A during the post-waiver period that resulted in better outcomes for their state and potentially hid effects of the waiver in WV. This policy presents an opportunity for WV to learn a new strategy from a similar state. While we cannot provide specifics due to the anonymity of State A, we can describe the policy as a concerted effort to expand covered networks of buprenorphine providers in the state. This effort involved coordination between the state Medicaid agency and MCOs to provide more provider options for enrollees with SUD seeking medication. Early data suggests it is effective in reducing OUD prevalence in the State. BMS will consider similar strategies for reducing OUD prevalence in WV.

BMS will make more policy-driven decisions based on more complete data provided by coming years of the waiver, beyond the years which have occurred at the time of this Interim Report. Once a full demonstration period, and as a result a full data cycle, has been completed, BMS will consider and leverage what has happened during this five-year period to inform policy target areas and drive policy decisions in future years of the waiver and the State's broader substance use response planning.

## H. Lessons Learned & Recommendations

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BMS is committed to learning from the results of the 1115 demonstration to date to inform both the remainder of this demonstration period and the waiver extension and values the chance to collaboratively inform other Medicaid programs and interested stakeholders of lessons learned to build collective knowledge and advance the broader Medicaid mission. Key learnings and their implications for the future are discussed in detail here.

As evidenced by the data presented in this report, BMS saw notable success in providing increased access to SUD treatment services under the waiver program. A central goal of the demonstration was to

increase access to and utilization of appropriate treatment services in accordance with ASAM or other nationally recognized criteria. The waiver program to date has made positive changes in terms of access to care, which is the first critical juncture in achieving this goal. The results of this evaluation highlight the way in which changes, and successes are incremental. The step-based success model stands to remind Medicaid policymakers, advocates, and other stakeholders that successful strategies are those which can be planned and executed incrementally. While BMS did not fully recognize this overarching goal in every aspect of the waiver, the program made important changes that inform and provide the basis for opportunities to continue making forward progress on the second half of this goal, increasing utilization of services available.

A central and critical lesson learned from the process of conducting the Interim Evaluation Report is that BMS has faced data quality challenges, which then consequentially impacted the evaluators' ability to accurately and fully evaluate demonstration activities. Poor data quality in certain cases impacted the evaluation team's ability to synthesize data to provide results, and for all results negatively impacted levels of confidence in the findings generated. BMS recognizes the challenges that poor data quality has created and remains committed to data quality improvement. Going forward, data quality improvement efforts will continue to use of national quality measures, aligning with CMS' NCQA, the American Medical Association<sup>®</sup> (AMA) Physician Consortium for Performance Improvement<sup>®</sup> (PCPI) and other nationally recognized standards.

In full understanding of the importance evaluation activities have for the program and the spirit of the 1115 waiver, BMS will continually develop and adhere to data improvement efforts for this demonstration. One targeted branch of these efforts that BMS hypothesizes will help ensure improving data quality is increasing collaboration and communication activities with entities connected to waiver service delivery. Several of the data quality issues the evaluating team encountered when analyzing data for the Interim Evaluation Report were rooted in providers misunderstanding billing procedures and therefore billing claims incorrectly. This led to a lack of clarity as to which data represented a given evaluation measure, and which data was incorrectly integrated. BMS will enhance provider communication and education on billing procedures and codes to help ensure that all providers are aware of how to properly bill for services provided. As a result, future evaluations will not have to contend with determining whether data is correctly or incorrectly included in a particular data set.

In addition, BMS will more often conduct outreach as necessary throughout the waiver period if BMS recognizes data that seems out of alignment with quality standards. As detailed in the BMS provider manual, the agency may outreach to members and providers as appropriate based on findings within the data from the measures, claims data reviews, inquiries from other providers, inquiries from members, suggestions from the MCOs, the External Quality Review vendor, and initiatives from the BMS senior management. This ongoing outreach will help ensure data quality is a topic of ongoing discussions between BMS, providers, and members, and will better inform data improvement efforts in real time so that adjustments can be made throughout the waiver period rather than only because of formal evaluations.

Recognizing the centrality of monitoring and evaluation activities to the 1115 waiver model, West Virginia recommends that other states implement similar structures and procedures to continually assess data quality. Consistent awareness of the data being gathered on a given program will lead to



more accurate data, which in turn contribute to more accurate and comprehensive evaluations from which states can learn from and use to improve both program outcomes and data quality efforts.

As mentioned in Section H, BMS has learned from the evaluation data that care transitions between levels of care remains an area for continuous improvement. The waiver has helped in this area, as some providers acknowledged they felt the waiver improved communication and overall coordination. Still, other data points to disconnects in care transition. With this in mind, BMS will continue to prioritize care coordination and smooth transitions along the treatment continuum of care as core objectives of the existing and renewed demonstration.

Additionally, the preliminary years of the waiver have illuminated that PRSS delivery would benefit from a standardized certification for peer providers. BMS is currently undertaking a peer certification process to resolve educational and ethical issues encountered during the years of the waiver to date. Beginning October 1, 2022, the BMS will require the West Virginia Certification Board for Addiction & Prevention Professionals (WVCBAPP) Peer Recovery certification as credentials for all existing and new PRSS to be reimbursed for PRSS services. BMS will terminate its own certification process on September 30, 2022, and only those individuals possessing the WVCBAPP's Peer Recovery certification on October 1, 2022, will be eligible for reimbursement. BMS is providing this two-year period to assist those individuals having a BMS certification to transition to the WVCBAPP certification.

Finally, as has been mentioned several times throughout this report, the impact that the COVID-19 public health emergency has had on the waiver program and resulting impacts on enrolled members cannot be understated. As was the case for states across the country, BMS, providers, and all who work in healthcare alike pivoted to prioritize COVID-19 prevention and mitigation efforts. This emergent, dominant priority was necessary to keep people alive and safe facing the public health crisis. As a result of the focus and allocation of resources the COVID-19 response has required, degrees of attention and prioritization the 1115 waiver and other Medicaid programs held prior to the public health emergency were allocated to COVID-19 response.

The COVID-19 pandemic fundamentally changed the lives of too many Americans and has uprooted or collapsed many aspects of the healthcare system through its multiyear duration. Aside from the destruction it has caused and gaps in the system it has revealed, the pandemic also holds important lessons that Medicaid and the healthcare system at large can and should critically consider. The pandemic has revealed the general lack of and need for long-term planning for future public health emergencies; the current public health emergency is not the last the country will face, and there is an outstanding need to be better prepared for the next. Long-term planning should occur on both the micro level (such as ensuring healthcare facilities are well equipped with personal protective equipment) and the macro, national level (such as policies dictating funding streams to draw from when an emergency response requires it).

## I. Attachments

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### [Appendix A: Evaluation Measures Table](#)

Table I-1 Evaluation Design Table

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
Demonstration Goal 1: Improve quality of care and population health outcomes for Medicaid enrollees with SUD.						
Evaluation Question 1.1: What is the impact of the demonstration on quality of care for Medicaid enrollees?						
Evaluation Hypothesis 1.1.1: The demonstration will improve the quality of SUD services delivered to Medicaid enrollees.						
Intermediate Outcome	Initiation of alcohol and other drug (AOD) dependence treatment	2019 Medicaid Adult Core Set, NQF #0004	<p>Initiation: Count of beneficiaries who initiated treatment through an inpatient AOD admission, outpatient visit, intensive outpatient encounter or partial hospitalization, telehealth, or medication treatment within 14 days of the diagnosis.</p> <p>If the Index Episode was an inpatient discharge (or an ED/observation visit that resulted in an inpatient stay), the inpatient stay is considered initiation of treatment and the beneficiary is compliant.</p> <p>If the Index Episode was not an inpatient discharge, the beneficiary must initiate the treatment on the start date of the Index Episode or in the 13 days after the Index Episode (14 total days). Any of the following code combinations meet criteria for initiation:</p> <ul style="list-style-type: none"> <li>An acute or nonacute inpatient admission with a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set. To identify acute and nonacute inpatient admissions:</li> </ul> <p>1. Identify all acute and nonacute inpatient stays (Inpatient Stay Value Set).</p>	<p>Beneficiaries who were diagnosed with a new episode of alcohol or drug dependency during the first 10 and ½ months (January 1 – November 14) of the measurement year</p> <ul style="list-style-type: none"> <li>The total AOD abuse or dependence rate is not a sum of the diagnosis cohorts. Count beneficiaries in the total denominator rate if they had at least one alcohol, opioid, or other drug abuse or dependence diagnosis during the measurement period.</li> <li>Report beneficiaries with multiple diagnoses on the Index Episode claim only once for the total rate for the denominator.</li> <li>Exclude beneficiaries from the denominator for both rates (initiation of AOD treatment and engagement of AOD treatment) if the initiation of treatment event is an inpatient stay with a discharge date after November 27 of the measurement year.</li> <li>Beneficiaries in hospice are excluded from the eligible population.</li> </ul>	Medicaid Claims	Difference-in-differences

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
			<p>2. Identify the admission date for the stay.</p> <ul style="list-style-type: none"> <li>• IET Stand Alone Visits Value Set with a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set, with or without a telehealth modifier (Telehealth Modifier Value Set)</li> <li>• Observation Value Set with a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set</li> <li>• IET Visits Group 1 Value Set with IET POS Group 1 Value Set and a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set with or without a telehealth modifier (Telehealth Modifier Value Set)</li> <li>• IET Visits Group 2 Value Set with IET POS Group 2 Value Set and a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set with or without a telehealth modifier (Telehealth Modifier Value Set)A telephone visit (Telephone Visits Value Set) with a diagnosis</li> </ul>			

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
			<p>matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set</p> <ul style="list-style-type: none"> <li>• An online assessment (Online Assessments Value Set) with a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set</li> <li>• If the Index Episode was for a diagnosis of alcohol abuse or dependence (Alcohol Abuse and Dependence Value Set) a medication treatment dispensing event (Medication Treatment for Alcohol Abuse or Dependence Medications List, see link to Medication List Directory in Guidance for Reporting above) or medication treatment during a visit (AOD Medication Treatment Value Set)</li> <li>• If the Index Episode was for a diagnosis of opioid abuse or dependence (Opioid Abuse and Dependence Value Set) a medication treatment dispensing event (Medication Treatment for Opioid Abuse or Dependence Medications List, see link to Medication List Directory in Guidance for Reporting above) or medication treatment during a visit (AOD Medication Treatment Value Set)</li> </ul>			
Intermediate Outcome	Engagement of alcohol and other	2019 Medicaid Adult Core Set, NQF #0004	Engagement: Count of beneficiaries who initiated treatment and who had two or	Beneficiaries who were diagnosed with a new episode of alcohol or drug	Medicaid Claims	Difference-in-differences

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
	drug dependence treatment		<p>more additional AOD services or medication treatment within 34 days of the initiation visit.</p> <p>Step 1. Identify all beneficiaries compliant for the Initiation of AOD Treatment numerator. For beneficiaries who initiated treatment via an inpatient admission, the 34-day period for the two engagement visits begins the day after discharge.</p> <p>Step 2. Identify beneficiaries whose initiation of AOD treatment was a medication treatment event (AOD Medication Treatment Value Set; Medication Treatment for Alcohol Abuse or Dependence Medications List; Medication Treatment for Opioid Abuse or Dependence Medications List). These beneficiaries are numerator compliant if they have two or more engagement events where only one can be an engagement medication treatment event.</p> <p>Step 3. Identify the remaining beneficiaries whose initiation of AOD treatment was not a medication treatment event (beneficiaries not identified in step 2). These beneficiaries are numerator compliant if they meet either of the following:</p> <ul style="list-style-type: none"> <li>• At least two engagement visits</li> <li>• At least one engagement medication treatment event</li> </ul> <p>Two engagement visits can be on the same date of service but they must be with different providers in order to count as two events. An engagement visit on the same date of service as an engagement medication treatment event meets</p>	<p>dependency during the first 10 and ½ months (January 1 – November 14) of the measurement year</p> <ul style="list-style-type: none"> <li>• The total AOD abuse or dependence rate is not a sum of the diagnosis cohorts. Count beneficiaries in the total denominator rate if they had at least one alcohol, opioid, or other drug abuse or dependence diagnosis during the measurement period. Report beneficiaries with multiple diagnoses on the Index Episode claim only once for the total rate for the denominator.</li> <li>• Exclude beneficiaries from the denominator for both rates (initiation of AOD treatment and engagement of AOD treatment) if the initiation of treatment event is an inpatient stay with a discharge date after November 27 of the measurement year.</li> <li>• Beneficiaries in hospice are excluded from the eligible population.</li> </ul>		

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
			<p>criteria (there is no requirement that they be with different providers).</p> <p>Any of the following meet criteria for an engagement visit:</p> <ul style="list-style-type: none"> <li>• An acute or nonacute inpatient admission with a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set. To identify acute and nonacute inpatient admissions:</li> </ul> <ol style="list-style-type: none"> <li>1. Identify all acute and nonacute inpatient stays (Inpatient Stay Value Set).</li> <li>2. Identify the admission date for the stay.</li> </ol> <ul style="list-style-type: none"> <li>• IET Stand Alone Visits Value Set with a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set, with or without a telehealth modifier (Telehealth Modifier Value Set)</li> <li>• Observation Value Set with a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set</li> <li>• IET Visits Group 1 Value Set with IET POS Group 1 Value Set with a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid</li> </ul>			

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
			<p>Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set, with or without a telehealth modifier (Telehealth Modifier Value Set)</p> <ul style="list-style-type: none"> <li>• IET Visits Group 2 Value Set with IET POS Group 2 Value Set with a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set, with or without a telehealth modifier (Telehealth Modifier Value Set)</li> <li>• A telephone visit (Telephone Visits Value Set) with a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set</li> <li>• An online assessment (Online Assessments Value Set) with a diagnosis matching the IESD diagnosis cohort using one of the following: Alcohol Abuse and Dependence Value Set, Opioid Abuse and Dependence Value Set, Other Drug Abuse and Dependence Value Set</li> </ul> <p>Either of the following meets criteria for an engagement medication treatment event:•  If the IESD diagnosis was a diagnosis of alcohol abuse or dependence (Alcohol Abuse and Dependence Value Set), one or more medication treatment dispensing events or medication treatment during a visit (AOD Medication Treatment Value Set),</p>			

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
			<p>beginning on the day after the initiation encounter through 34 days after the initiation event (total of 34 days), meets criteria for Alcohol Abuse and Dependence Treatment.</p> <ul style="list-style-type: none"> <li>If the IESD diagnosis was a diagnosis of opioid abuse or dependence (Opioid Abuse and Dependence Value Set), one or more medication dispensing events (Medication Treatment for Opioid Abuse or Dependence Medications List) or medication treatment during a visit (AOD Medication Treatment Value Set), beginning on the day after the initiation encounter through 34 days after the initiation event (total of 34 days), meets criteria for Opioid Abuse and Dependence Treatment.</li> </ul>			
Intermediate Outcome	Medication Assisted Treatment use	Mathematica Policy Research Technical Specifications for Monitoring Metrics	<p>The number of unique beneficiaries (de-duplicated total) who have a claim for a MAT dispensing event for SUD during the measurement period</p> <p>Step 1. Identify claims with a code from the following HEDIS 2018 medications lists:</p> <ul style="list-style-type: none"> <li>MAT for Alcohol Abuse or Dependence Medications List</li> <li>MAT for Opioid Abuse or Dependence Medications List</li> </ul> <p>Step 2. Determine the total number of unique beneficiaries (de-duplicated) with claims that meet the criteria in Step 1.</p>	All Medicaid beneficiaries with SUD, enrolled for any amount of time during the measurement period	Medicaid claims	Difference-in-differences



	Continuity of pharmacotherapy for OUD	NQF #3175	Number of participants who have at least 180 days of continuous pharmacotherapy with a medication prescribed for OUD without a gap of more than seven days	Individuals who had a diagnosis of OUD and at least one claim for an OUD medication	Claims data	Difference-in-differences
	Percentage of beneficiaries with an SUD diagnosis (including beneficiaries with an OUD diagnosis) who used SUD services per month	None	Number of enrollees who receive a service during the measurement period by service type	Number of enrollees	Claims data	Descriptive statistics, Difference-in-differences
	Time to treatment	NBHQF Goal 1	Sum of (date of clinical assessment- date of 1 <sup>st</sup> contact)	Number of clinical assessments	Claims data	Descriptive statistics, difference-in-differences
	Rate of continuation of treatment	NBHQF Goal 1	Sum of (date of first treatment service-date of clinical assessment)	Number of enrollees receiving treatment	Claims data	Descriptive statistics, difference-in-differences
	Length of engagement in treatment	NBHQF Goal 1	Number of clients completing 4 <sup>th</sup> treatment session within 30 days	Number of enrollees receiving treatment	Claims data	Descriptive statistics, difference-in-differences
<b>Evaluation Hypothesis 1.1.2: The demonstration will increase provider knowledge of appropriate SUD treatment options.</b>						
Activities	Provider knowledge		Degree to which focus group members (providers) demonstrate changes in ability to correctly		Focus group data	

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
			identify the expanded treatment mechanisms as a result of state-run trainings			
<b>Evaluation Question 1.2: What is the impact of the demonstration on population health outcomes among Medicaid enrollees?</b>						
<b>Evaluation Hypothesis 1.2.1: The demonstration will decrease morbidity and mortality among Medicaid enrollees and their children.</b>						
Program Goal	Mortality rate among beneficiaries with SUD		Number of all-cause deaths among beneficiaries diagnosed with SUD during the measurement period	All Medicaid beneficiaries with SUD, enrolled for any amount of time during the measurement period	Medicaid claims data supplemented with Death certificate data	Difference-in-differences  Interrupted time series for death certificate data
Program Goal	Drug-related mortality (due to any drug and also due to opioids alone)	Mathematica Policy Research Technical Specifications for Monitoring Metrics	<p>Number of drug poisoning deaths during the measurement period.</p> <p>As recommended by Mathematica, we will report the cause of overdose death as specifically as possible using underlying and contributing cause of death codes where available (for example, prescription vs. illicit opioid)</p> <p>Identify beneficiaries with the following ICD-10 underlying cause of death codes:</p> <ul style="list-style-type: none"> <li>• X40 – X44 (unintentional drug poisonings)</li> <li>• X60-X64 (suicidal drug poisonings)</li> <li>• X85 (homicide drug poisoning)</li> <li>• Y10-Y14 (drug poisoning of undetermined intent)</li> </ul> <p>Opioid-related drug overdoses can be reported separately as follows: Among all drug poisoning deaths identify those with the following ICD-10 contributing cause of death codes::</p> <ul style="list-style-type: none"> <li>• T40.1 (heroin)</li> <li>• T40.2 (natural and semisynthetic opioids)</li> <li>• T40.3 (methadone)</li> </ul>	All Medicaid beneficiaries with SUD, enrolled for at least one month (30 consecutive days) during the measurement period.  Number of beneficiaries/1000	Medicaid claims data, supplemented with vital statistics mortality data, which contain underlying and contributing cause of death codes. Prior to 2018 these data only include underlying cause of death codes. For all deaths occurring after 1/1/18, these data include both underlying and contributing cause of death codes	Difference-in-differences  Interrupted time series for death certificate data

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
			<ul style="list-style-type: none"> <li>• T40.4 (synthetic opioids other than methadone)"</li> </ul>			
Program Goal	<p>Medicaid Beneficiaries with SUD Diagnosis (monthly and annually)</p> <p>[Note: this is to measure SUD morbidity, not treatment rates.]</p>	Mathematica Policy Research Technical Specifications for Monitoring Metrics	<p>The number of unique beneficiaries (de-duplicated total) enrolled in the measurement period who receive MAT or have qualifying facility, or professional claims with a SUD diagnosis and a SUD-related treatment during the measurement period and/or in the 11 months before the measurement period</p> <p>Step 1. Identify claims for MAT, defined in one of the following HEDIS 2018 IET value sets or medications lists:</p> <ul style="list-style-type: none"> <li>• Medication Assisted Treatment Value Set</li> <li>• MAT for Alcohol Abuse or Dependence Medications List</li> <li>• MAT for Opioid Abuse or Dependence Medications List</li> </ul> <p>Step 2. Identify claims with a diagnosis code (any diagnosis on the claim) listed under one of the following HEDIS 2018 Value Sets:</p> <ul style="list-style-type: none"> <li>• Alcohol Abuse and Dependence</li> <li>• Opioid Abuse and Dependence</li> <li>• Other Drug Abuse and Dependence</li> </ul> <p>In addition to a diagnosis code above, the claim must also have a procedure code from any of the following HEDIS 2018 IET value set for identifying SUD treatment:</p> <ul style="list-style-type: none"> <li>• IET Stand Alone Visits</li> <li>• IET Visits Group 1 with IET POS Group 1</li> <li>• IET Visits Group 2 with IET POS Group 2</li> <li>• Detoxification</li> <li>• ED</li> </ul>	All Medicaid beneficiaries, enrolled for any amount of time during the measurement period	Medicaid claims	Difference-in-differences

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
			<ul style="list-style-type: none"> <li>Inpatient Stay</li> <li>Telephone Visits</li> <li>Online Assessments</li> </ul> <p>Step 3. Determine the total number of unique beneficiaries (de-duplicated) with claims that meet the criteria in Step 1 or Step 2.</p>			
Program Goal	Neonatal abstinence syndrome morbidity		Number of infants meeting NAS criteria, born to Medicaid enrollees during measurement period	Infants born to Medicaid enrollees during the measurement period	Medicaid claims WV Birth Score Data	Difference-in-differences
Program Goal	HIV morbidity		Number of Medicaid enrollees with a diagnosis of HIV during the measurement period	All Medicaid beneficiaries enrolled for any amount of time during the measurement period  [We are looking at the whole Medicaid population as a denominator, because transmission is not limited to needles.]	Medicaid claims	Difference-in-differences
Program Goal	Hepatitis C morbidity		Number of Medicaid enrollees with a diagnosis of Hepatitis C during the measurement period	All Medicaid beneficiaries enrolled for any amount of time during the measurement period  [We are looking at the whole Medicaid population as a denominator, because transmission is not limited to needles.]	Medicaid claims	Difference-in-differences
	Access to preventive / ambulatory health services for adult Medicaid beneficiaries with SUD	NCQA	Number of beneficiaries with SUD who had an ambulatory or preventive care visit during the measurement period	Number of beneficiaries with an SUD diagnosis	Claims data	Descriptive statistics, difference-in-differences

	Plan All-cause readmissions	None	At least one acute unplanned readmission for any diagnosis within 30 days of the date of discharge from the index hospital stay, that is on or between the second day of the measurement year and the end of the measurement year	Medicaid beneficiaries age 18 and older with a discharge from an acute inpatient stay (index hospital stay) on or between January 1 and December 1 of the measurement year	Claims data	Descriptive statistics, difference-in-differences
<b>Demonstration Goal 2: Increase enrollee access to and use of appropriate SUD treatment services based on the ASAM Criteria..</b>						
<b>Evaluation Question 2.1: What is the impact of the demonstration on access to SUD treatment among Medicaid enrollees?</b>						
<b>Evaluation Hypothesis 2.1.1: The demonstration will increase the supply of residential, MAT, and PRSS care available for Medicaid enrollees.</b>						
Output	Supply of SUD providers	N/A	Providers who were enrolled in Medicaid and delivered SUD treatment services during the measurement period. This will be calculated as the count of distinct providers who either prescribed MAT or delivered behavioral health treatment services with a primary diagnosis of SUD listed on the professional claim	Total number of providers enrolled with Medicaid during the measurement period	Medicaid claims and provider enrollment data	Interrupted time series
Output	Supply of SUD residential treatment facilities	N/A	Number of residential SUD treatment facilities that have been credentialed to deliver services consistent with ASAM Levels 3.1, 3.5, and/or 3.7		Monthly internal reports submitted to the Bureau for Medical Services	Interrupted time series
Output	Supply of SUD residential treatment beds	N/A	Number of residential SUD treatment beds that have been certified as delivering care consistent with ASAM Levels 3.1, 3.5, and/or 3.7		Monthly internal reports submitted to the Bureau for Medical Services	Interrupted time series

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
Intermediate Outcome	Buprenorphine prescriber availability		The total number of Medicaid enrolled providers who have a DEA x-license and have also been approved by BMS to prescribe buprenorphine	N/A	BMS approved buprenorphine prescriber list	Interrupted time series
Output	Peer recovery support specialist availability		Percentage of peer recovery coaches that are certified through a West Virginia Department of Health and Human Resources-approved training program that provides peer support providers with a basic set of competencies necessary to perform the peer support function.		Monthly internal reports submitted to BMS	Interrupted time series
<b>Evaluation Question 2.2: What is the impact of the demonstration on use of SUD treatment among Medicaid enrollees?</b>						
<b>Evaluation Hypothesis 2.2.1: The demonstration will increase the use of residential, MAT, and PRSS care available by Medicaid enrollees.</b>						
Intermediate Outcome	Outpatient services for SUD treatment	Measure Set/Endorsement: Mathematica Policy Research Technical Specifications for Monitoring Metrics	<p>The number of unique beneficiaries (de-duplicated total) with a service or pharmacy claim for outpatient services for SUD (such as outpatient counseling or motivational enhancement therapies, step-down care, and monitoring for stable patients) during the measurement period</p> <p>Step 1. Identify claims with a diagnosis code (any diagnosis on the claim) listed under one of the following HEDIS 2018 Value Sets:</p> <ul style="list-style-type: none"> <li>Alcohol Abuse and Dependence</li> <li>Opioid Abuse and Dependence</li> <li>Other Drug Abuse and Dependence</li> </ul> <p>Step 2. Retain claims with a procedure code from any of the following IAD HEDIS 2018 Value Sets:</p> <ul style="list-style-type: none"> <li>IAD Stand-Alone Outpatient Value Set</li> <li>Observation Value Set</li> <li>BH Visit Setting Unspecified Value Set with a corresponding</li> </ul>	All Medicaid beneficiaries with SUD, enrolled for any amount of time during the measurement period		Difference-in-differences

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
			<p>code from Outpatient POS Value Set</p> <ul style="list-style-type: none"> <li>BH Visit Setting Unspecified Value Set with a corresponding code from POS 53 Value Set</li> </ul> <p>o States should ensure that the visit was in an outpatient setting including any of the above services billed with a code from the Telehealth Modifier Value Set.</p> <p>Step 3. Exclude any claims with a code in the Detoxification HEDIS 2018 Value Set.</p> <p>Step 4. Determine the total number of unique beneficiaries (de-duplicated) with claims that meet the criteria in Steps 1, 2 and 3.</p>			
Intermediate Outcome	Residential services for SUD treatment	N/A	<p>The total number of unique beneficiaries (de-duplicated total) who receive residential treatment services consistent with ASAM Levels 3.1, 3.5, and/or 3.7</p> <p>Step 1. Identify claims for residential treatment using CPT codes:</p> <ul style="list-style-type: none"> <li>H2036 U1 HF : ASAM Level 3.1 residential services</li> <li>H2036 U5 HF : ASAM Level 3.5 residential services</li> <li>H2036 U7 HF : ASAM Level 3.7 residential services</li> </ul> <p>Step 2. Determine the total number of unique beneficiaries (de-duplicated) with claims that meet the criteria in Steps 1.</p>	All Medicaid beneficiaries with SUD, enrolled for any amount of time during the measurement period	Medicaid Claims	Difference-in-differences

Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
Intermediate Outcome	Methadone use among beneficiaries with OUD  (Adapted from "Use of pharmacotherapy for opioid use disorder (OUD)")	NQF #3400  (Steward: CMS)	Beneficiaries ages 18 to 64 with an OUD who filled a prescription for or were administered or ordered a methadone prescription for the disorder during the measure year.	Number of Medicaid beneficiaries with at least one encounter with a diagnosis of opioid abuse, dependence, or remission (primary or other) at any time during the measurement year.	Medicaid claims	Difference-in-differences
Output	Peer recovery support specialist use		Number of Medicaid enrollees with SUD diagnosis (appropriate for peer recovery treatment) receiving peer recovery treatment	Number of Medicaid enrollees with SUD diagnosis (appropriate for peer recovery treatment)	Medicaid Claims	Time series
<b>Demonstration Goal 3: Decrease emergency department and hospital services by enrollees with SUD.</b>						
<b>Evaluation Question 3.1: What is the impact of the demonstration on emergency department (ED) utilization by Medicaid enrollees with SUD?</b>						
<b>Evaluation Hypothesis 3.1.1: The demonstration will decrease the rate of ED use and the percentage of ED visits that are non-emergent among Medicaid enrollees with SUD.</b>						
Intermediate Outcome	All-cause ED use among beneficiaries with SUD	Adapted from Mathematica Policy Research Technical Specifications for Monitoring Metrics, Metric #23	Number of ED visits among during the measurement period  Step 1. Identify all claims for ED visits during the measurement period. Count each visit to an ED once, regardless of the intensity or duration of the visit.  Step 2. Identify the date of service for each visit identified in Step 1. Retain only visits with dates of service that fall within the measurement period. Count multiple ED visits on the same date of service as one visit.	All Medicaid beneficiaries with SUD, enrolled for any amount of time during the measurement period	Medicaid claims	Difference-in-differences
Intermediate Outcome	ED Utilization for SUD per 1,000 Medicaid Beneficiaries with SUD	Measure Set/Endorsement: Mathematica Policy Research Technical Specifications for Monitoring Metrics	The number of ED visits for SUD during the measurement period  Step 1. Identify all claims for ED visits during the measurement period using the HEDIS 2018 ED Value Set. Count each visit to an ED once, regardless of the intensity or duration of the visit.	All Medicaid beneficiaries with SUD, enrolled for at least one month (30 consecutive days) during the measurement period.	Medicaid claims	Difference-in-differences



Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
			<p>Step 2. Identify the date of service for each visit identified in Step 1. Retain only visits with dates of service that fall within the measurement period. Count multiple ED visits on the same date of service as one visit.</p> <p>Step 3. Identify the subset of claims with a diagnosis code (any diagnosis on the claim) listed under one of the following HEDIS 2018 Value Sets:</p> <ul style="list-style-type: none"> <li>• Alcohol Abuse and Dependence</li> <li>• Opioid Abuse and Dependence</li> <li>• Other Drug Abuse and Dependence</li> </ul> <p>Step 4. Calculate the number of visits using all visits identified in Steps 1, 2 and 3.</p>			
Intermediate Outcome	Non-SUD non-emergent ED use	NYU ED Algorithm	<p>Percentage of ED visits classified as non-emergent using the NYU ED Algorithm. The algorithm reports a percentage of total visits.</p> <p>Note: Because all drug and alcohol visits are carved out from the algorithm, we are only able to measure non-drug related ED visits.</p>	Because the algorithm reports a percentage of total visits, we do not include a denominator here. Instead, we highlight our population of interest, on whose claims we will run the algorithm: All Medicaid beneficiaries with SUD, enrolled for any amount of time during the measurement period	Medicaid claims	Difference-in-differences
Intermediate Outcome	Emergency department visits for SUD-related diagnoses and specifically for OUD	None (from page B.8 from CMS SMI/SED and SUD evaluation design guidance, Appendix B)	The number of ED visits for SUD during the measurement period	Beneficiaries enrolled in Medicaid for at least one month (30 consecutive days) during the measurement period	Medicaid claims	Difference-in-differences
<b>Evaluation Question 3.2: What is the impact of the demonstration on inpatient hospital use by Medicaid enrollees with SUD?</b>						

<b>Evaluation Hypothesis 3.2.1: The demonstration will decrease hospital admissions among Medicaid enrollees with SUD.</b>						
Intermediate Outcome	Inpatient stays for SUD (and specifically for OUD)	Mathematica Policy Research Technical Specifications for Monitoring Metrics	Number of beneficiaries with an inpatient admission for SUD (and specifically for OUD)	Total number of beneficiaries/1,000 member months		Difference-in-differences
<b>Demonstration Goal 4: Improve care coordination and care transitions for Medicaid enrollees with SUD</b>						
<b>Evaluation Question 4.1: What is the impact of the demonstration on the integration of physical and behavioral health care among Medicaid enrollees with SUD and comorbid conditions?</b>						
<b>Evaluation Hypothesis 4.1.1: The demonstration will increase the rate of Medicaid enrollees with SUD-related physical health conditions who are also receiving behavioral care.</b>						
Output	Separate analyses for each of the following measures, as defined above:  Medication Assisted Treatment  Initiation of Alcohol and Other Drug Treatment  Engagement of Alcohol and Other Drug Treatment	See above	See above	Medicaid enrollees with SUD diagnosis and co-morbid hepatitis C	Medicaid Claims	Difference-in-differences analysis

Output	Separate analyses for each of the following measures, as defined above:  Medication Assisted Treatment  Initiation of Alcohol and Other Drug Treatment	See above	See above	Medicaid enrollees with SUD diagnosis and co-morbid HIV	Medicaid Claims	Difference-in-differences analysis
Logic Model Component	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
	Engagement of Alcohol and Other Drug Treatment					
<b>Evaluation Question 4.2: What is the impact of the demonstration on care transitions among Medicaid enrollees with SUD?</b>						
<b>Evaluation Hypothesis 4.2.1: The demonstration will improve communication among providers who transition patients to other providers.</b>						
Activities	Communication among providers		Degree to which focus group members (providers) express in levels of communication difficulties with other providers.		Focus group data	

Table I-2 Changes to Evaluation Plan Measures Table as of November 2021

Measure(s)	Original Definition/Analysis	Current Definition/Analysis
All measures that include definition for SUD, OUD, or AUD	Only included codes from HEDIS value set.	Also includes overdose codes related to each substance.
Percent of beneficiaries with SUD diagnosis who used SUD services per month	Denominator was total number of enrollees. Numerator in WV vs. State A comparison included methadone.	Denominator is now number of enrollees with SUD. Numerator in WV vs. State A comparison no longer includes methadone (not covered by State A Medicaid).
Time to treatment	--	Removed from measures table because the date of first contact was not available in the claims data.
Mortality rate among beneficiarie with SUD	Difference-in-differences between WV and State A.	In-state difference-in-differences of all-cause mortality rate among those with SUD diagnosis and all-cause mortality rate among those without a SUD diagnosis.
Drug-related mortality	Difference-in-differences between WV and State A.	In-state difference-in-differences of drug-related and non-drug-related mortality rates, as well as and opioid and other drug mortality rates.
Outpatient services for SUD treatment	Did not include procedure codes for methadone, buprenorphine, naltrexone, and PRSS in the numerator.	Includes procedure codes for methadone, buprenorphine, naltrexone, and PRSS in the numerator.
Residential services for SUD treatment	Numerator used the H2036 code with the following modifiers to identify claims : <ul style="list-style-type: none"> <li>• U1 HF : ASAM Level 3.1 residential services</li> <li>• U5 HF : ASAM Level 3.5 residential services</li> </ul>	Numerator uses the H2036 code without modifiers because the modifiers inaccurate in the claims data.

Measure(s)	Original Definition/Analysis	Current Definition/Analysis
	<ul style="list-style-type: none"> <li>U7 HF : ASAM Level 3.7 residential services</li> </ul>	
Inpatient stays for SUD (and specifically for OUD)	One measure defined as number of beneficiaries with an inpatient admission for SUD (and specifically for OUD) over the total number of beneficiaries/1,000 member months.	Three separate measures, defined as: <ul style="list-style-type: none"> <li>Number of all-cause inpatient stays over the number of beneficiaries with SUD.</li> <li>Number of SUD-related inpatient stays over the number of beneficiaries with SUD.</li> <li>Number of OUD-related inpatient stays over the number of beneficiarie with OUD.</li> </ul>

## Medicaid 1115 SUD Waiver Evaluation Provider Interview Guide

### Introductory Script

"Thank you again for taking the time to discuss the impact of the Medicaid 1115 substance use disorder (SUD) waiver demonstration on care transitions among Medicaid enrollees with SUD. Over the next hour I will be asking you a series of questions about your experience with transitioning your Medicaid patients with substance use disorder to other providers. Everything we discuss will remain confidential, and I will not identify you or your facility by name in any publications that may result from this qualitative research evaluation. As a reminder, participation in this study is entirely voluntary and you can choose to stop at any time without penalty. This research study has been reviewed and acknowledged by the WVU Institutional Review Board."

"Would you like to begin the interview?"

If NO: "I understand. Thank you again for letting me visit today. Have a nice day."

If YES: "Great! To help me remember everything we discuss, I would like to audio record our interview, which will be transcribed and analyzed. Would it be okay if I audio recorded our interview today?"

If NO: "I understand. Would it be okay if I wrote some notes during our interview?"

If YES: "Great! Let's get started. I'm going to turn the audio recorder on now." [Turn on audio recorder]

### Guiding Questions

1. Can you tell me a little bit about the 1115 substance use disorder (SUD) waiver the state has implemented? [Probe for knowledge of waiver specifics (i.e., expanded treatment beds, peer recovery coaches, methadone clinics)]
2. Can you tell me a little bit about your experience with communication among providers about the care of Medicaid patients with substance use disorder? [Probe for difficulties or challenges (i.e., knowledge of eligibility criteria and/or available facilities, lack of direct referral process, time taken to complete the referral/**any changes from before 1115 waiver implementation**/facilitators (i.e., EHR systems or IT solutions)/ 42 CFR Part 2)
3. To help me better understand the context, can you tell me a little bit about situations that have typically influenced or affected your experiences with transitioning patients to other providers after the 1115 waiver implementation? [Probe for communication difficulties/**changes (positive and negative) from the 1115 waiver implementation**; relapse temptations or challenges among PRSS]
4. Can you tell me a little bit about how the COVID 19 pandemic has affected SUD treatment? [Probe for lessons learned; bed restrictions from 1115 waiver disaster emergency declaration; telehealth implementation to facilitate provider communication, specific platforms used, length of sessions, retention rates, difficulties encountered, impact on care communication, etc.]
5. Can you talk a little bit about the impact of multiple rural hospital closures on SUD treatment services?

"Thank you sincerely for your time today. Once the data are analyzed, could I speak with you again regarding the results to get your thoughts. Have a nice day." Where do you want your gift cards mailed?