April 1, 2024

Secretary Xavier Becerra
U.S. Department of Health and Human Services
200 Independence Avenue, S.W.
Washington. D.C. 20201

RE: Section 1115 Substance Use Disorder Demonstration Waiver Extension Application

Dear Secretary Becerra:

Attached please find Ohio's submission to extend our Section 1115 Substance Use Disorder Waiver Demonstration. The current Demonstration is authorized through September 30, 2024. This extension application requests authority for Ohio to continue to operate the Demonstration for an additional five years.

Since October 1, 2019, this Demonstration has allowed Ohio to enhance residential treatment services as a crucial component in the continuum of SUD benefits by permitting receipt of federal funding for treatment in Institutions for Mental Diseases (IMDs). The Demonstration has also allowed Ohio to increase support for individuals in the community and home - outside of institutions - and improve access to a continuum of high-quality, evidence-based SUD services based on clinical guidelines set by the American Society of Addiction Medicine (ASAM). Ohio envisions this Demonstration extension as an opportunity to further implement and refine program initiatives to fully realize its goals.

We appreciate your consideration of Ohio's waiver extension application. Please let us know if you have any questions or need any additional information.

Very respectfully yours,

[redacted]

Mike DeWine
Governor

CC: Maureen M. Corcoran, Director, Ohio Department of Medicaid
Leeanne Cornyn, Director, Ohio Department of Mental Health and Addiction Services

Section 1115 Substance Use Disorder Demonstration Waiver

Extension Request

(Project Number 11-W-00330/5)

Submitted by the

Ohio Department of Medicaid

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OVERVIEW

The Ohio Department of Medicaid (ODM) is requesting a five-year extension of its §1115 Substance Use Disorder (SUD) Demonstration. The current Demonstration is authorized for October 1, 2019, through September 30, 2024. This renewal application requests authority for Ohio to continue to operate the Demonstration as approved without changes.

On September 24, 2019, the Centers for Medicare and Medicaid Services (CMS) approved Ohio's SUD §1115 Demonstration to support a comprehensive continuum of care for Medicaid-enrolled individuals with an opioid use disorder (OUD) or other SUD. This Demonstration has allowed Ohio to enhance residential treatment services as a crucial component in the continuum of SUD benefits by permitting receipt of federal funding for treatment in Institutions for Mental Diseases (IMDs). The Demonstration also expands Ohio's efforts to increase support for individuals in the community and home — outside of institutions — and improve access to a continuum of high-quality, evidence-based SUD services based on clinical guidelines set by the American Society of Addiction Medicine (ASAM).

During the initial five-year Demonstration period, ODM has sought to increase adherence to and retention in treatment while at the same time reducing the use of emergency departments (EDs) and inpatient hospital settings through improved access to other continuum of care services. While preliminary findings of the impact of the Demonstration are encouraging, many of the interventions central to the program are still in their early stages. Additionally, the COVID-19 public health emergency (PHE) impacted implementation. Ohio envisions this Demonstration extension as an opportunity to further implement and refine program initiatives to fully realize its goals.

Demonstration Goals and Milestones

Ohio seeks to achieve the following goals through the Demonstration:

1. Increased rates of identification, initiation, and engagement in treatment.
2. Increased adherence to and retention in treatment for OUD and other SUDs.
3. Reductions in overdose deaths, particularly those due to opioids.
4. Reduced utilization of EDs and inpatient (IP) hospital settings for OUD and other SUD treatment where the utilization is preventable or medically inappropriate through improved access to other continuum of care services.
5. Fewer readmissions to the same or higher level of care (LOC) where readmissions are preventable or medically inappropriate for OUD and other SUD.
6. Improved access to care for physical health conditions among beneficiaries with OUD or other SUDs.

The State has the following milestones to measure progress toward these goals:

1. Access to Critical LOCs for Opioid Use Disorder (OUD) and Other SUDs
2. Use of Evidence-based, SUD-specific Patient Placement Criteria

3. Use of Nationally Recognized SUD-specific Program Standards to Set Provider Qualifications for Residential Treatment Facilities
4. Sufficient Provider Capacity at Critical LOC including for medication assisted treatment (MAT) for OUD
5. Implementation of Comprehensive Treatment and Prevention Strategies to Address Opioid Abuse and OUD
6. Improved Care Coordination and Transitions between LOCs

Progress Toward Demonstration Goals and Milestones

Ohio established a strategic approach to advance the Demonstration goals. As highlighted in Table 1, ODM has completed the majority of actions outlined in the SUD Implementation Plan required to meet the six Demonstration milestones. Additionally, work is continuing for those activities for which required actions are ongoing. ODM will continue efforts to further advance progress toward meeting the Demonstration goals during the extension term.

Table 1: Summary of Implementation Plan Actions Needed During Initial Demonstration Period

Milestone	Summary of Implementation Activities Required	Status
Milestone 1	None	Complete
Milestone 2	Review Managed Care Plans' policies for utilization review and prior authorization for compliance.	Complete
	Review plan delivery for program compliance (e.g., treatment plan, provider qualifications, etc.).	Complete
	Collect, review, and analyze utilization management (UM) information for CY2018.	Complete
	Based upon review and analysis, develop changes to the utilization management approach that reflects analysis and ensure compliance with ASAM and Mental Health Parity and Addiction Equity Act (MHPAEA).	Complete
	Develop necessary guidance to plans and providers regarding the new UM process.	Complete
Milestone 3	Update the State requirements to reflect residential requirements for the types of services, hours of clinical care, and credentials of staff for each ASAM residential LOC.	Complete
	Require the plans to comply with updated ASAM residential requirements.	Complete
	Implement a standardized State on-site review process of residential provider qualifications against State requirements for ASAM including the types of services, hours of clinical care and credentials of staff for each ASAM residential LOC.	Complete
	Implement a single statewide vendor to survey Ohio SUD residential providers to assure they meet certain standards and manage provider enrollment on an on-going basis.	Complete
	Require the plans to comply with State processes for credentialing SUD residential providers.	Complete

Milestone	Summary of Implementation Activities Required	Status
	Educate abstinence-based residential providers on benefits of MAT accessibility and begin cultural shift toward acceptance of MAT as a complementary treatment.	Complete
	Require SUD treatment providers to offer access and to facilitate patient access to MAT while in residential settings.	Complete
	Require the FFS delivery system and the plans to monitor access to MAT in residential settings including access to MAT counseling.	Complete
Milestone 4	Create a comprehensive access assessment baseline of all SUD providers and all SUD LOC including MAT capacity.	Complete
	ODM will create access standards for SUD LOC.	Complete
	Require MCPs to update their SUD network development and management plan to specifically focus on SUD provider capacity by LOC, including MAT.	Complete
	Add an indicator for providers accepting new patients to the plan quarterly network adequacy reports.	Ongoing
	Require the plans to adopt access requirements to all ASAM LOC.	Complete
Milestone 5	Continue to onboard new electronic health record (EHR) and pharmacy dispensing system vendors.	Ongoing
	Explore the possibility of analysis to correlate long-term opioid use directly to clinician prescribing patterns in conjunction with the ODM (Action item for the Board of Pharmacy).	Ongoing
	Implement enhanced information within the Ohio Automated Rx Reporting System (OARRS) including: OARRS flags for individuals who are participating in one of Ohio's drug court programs; non-fatal overdose deaths, and naltrexone identification to identify individuals treated for SUD.	Ongoing
	Implement an enforcement plan to minimize the risk of inappropriate overprescribing consistent with prescribing guidelines.	Complete
Milestone 6	Review data and conduct analysis of individuals with SUD.	Ongoing
	Based upon data analysis develop care coordination model(s) specific to identified populations.	Ongoing
	Implement care coordination for identified populations.	Ongoing

Despite this significant progress, the COVID-19 PHE impacted implementation due to diversion of resources required by the PHE and service interruption as providers adopted safety measures. Further, the temporary maintenance of effort (MOE) provisions under the Families First Coronavirus Response Act led to a significant increase in Medicaid enrollment. There were also consistent increases in SUD and OUD diagnoses over the course of the Demonstration, even during periods of enrollment declines. These trends represent an

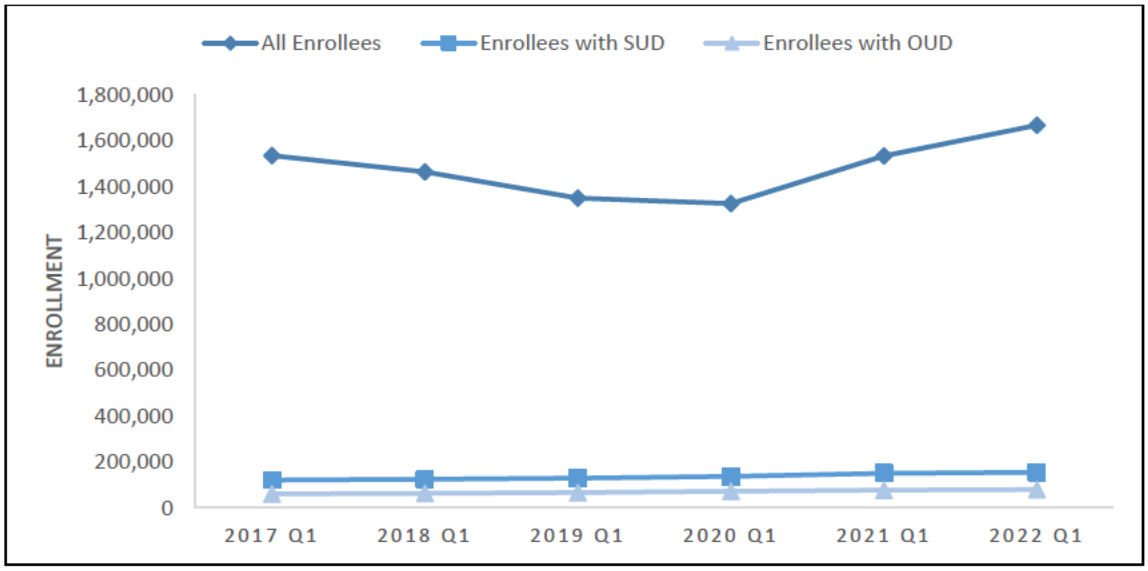
increased burden on Ohio Medicaid and on the SUD treatment infrastructure over much of the duration of the Demonstration.

Table 2: Ohio Medicaid Enrollment, Non-Duals Ages 18-64 (2017-2022)

Quarter	All Enrollees	Enrollees with SUD	Enrollees with OUD
2017 Q1	1,536,292	121,173	61,034
2018 Q1	1,464,901	124,585	63,445
2019 Q1	1,350,768	129,396	66,565
2020 Q1	1,326,858	137,475	72,139
2021 Q1	1,534,627	150,504	76,936
2022 Q1	1,668,529	155,028	79,667

Source: Ohio Medicaid administrative data, accessed September 2023.

Figure 1: Ohio Medicaid Enrollment, Non-Duals Ages 18-64 (2017-2022)



Source: Ohio Medicaid administrative data, accessed September 2023.

Milestone 1. Access to Critical LOCs for Opioid Use Disorder (OUD) and Other SUDs

Prior to implementation of the Demonstration, Ohio had been engaged in ongoing efforts to modernize the delivery of behavioral health services. Effective January 1, 2018, as part of this Medicaid Behavioral Health Redesign, Ohio began coverage of all ASAM LOCs. This enabled community behavioral health treatment providers the ability to expand the array of services offered for mental health and SUD treatment, including new evidence-based practices. Further, it aligned SUD outpatient and residential treatment benefits with ASAM LOC. For example, the redesigned benefit package included new evidence-based services such as Assertive Community Treatment (ACT) for individuals with complex treatment needs and established a unique benefit package for opioid treatment programs. SUD treatment providers were required to assess and provide services using ASAM criteria with the goal of increasing utilization of community-based and non-hospital residential programs and limiting use of

inpatient hospitalizations to situations in which there is a need for safety, stabilization, or acute detoxification (ASAM LOC 4). With implementation of the Demonstration in 2019, Ohio was able to build upon these efforts with new authority to reimburse for SUD treatment services rendered in IMDs.

Over the course of the Demonstration to date, the number of enrollees utilizing services at all ASAM LOCs has increased, except for ASAM Level 0.5, early intervention. ODM remains committed to maintaining coverage of all ASAM LOCs during the Demonstration extension period. Additionally, Ohio intends to explore opportunities to enhance access and utilization of early intervention services.

Milestone 2. Use of ASAM Placement Criteria

During the initial Demonstration term, Ohio took steps to ensure providers utilized SUD specific, multi-dimensional assessment tools so that patients received appropriate LOC that reflected evidence-based clinical treatment guidelines. The Medicaid Behavioral Health Provider Manual, managed care plan (MCP) agreement, and Ohio Administrative Code (OAC) were modified to establish provider responsibilities for screening, assessment, and treatment plan review. ODM conducted reviews of provider and MCP utilization management (UM) processes and used findings to improve UM and prior authorization approaches, including a standardized prior authorization form for all SUD residential and partial hospitalization services. An External Medical Review process for MCP medical necessity denials was also established. During the Demonstration extension term, ODM will be focused on implementation of the Fourth Edition of the ASAM Criteria.

Milestone 3. Use of ASAM Program Standards for Residential Provider Qualifications

OhioMHAS provider certification rules (OAC rule 5122-29-09) in place prior to the Demonstration required residential, withdrawal management, and inpatient SUD treatment services to be provided in accordance with ASAM LOC 3 and associated sublevels. During the initial Demonstration term, the State worked with key stakeholders to refine and update provider qualification requirements based on ASAM criteria, including requiring residential SUD treatment providers to facilitate patient access to MAT while in residential settings. These revised certification standards became effective July 1, 2023. MCPs are also contractually obligated to adhere to ASAM criteria for residential SUD treatment services.

Additionally, the State contracted with an independent entity to conduct residential SUD treatment provider on-site reviews to assess alignment with the new certification criteria. The contractor used information collected prior to and during the review as the basis for providing feedback to each of the 87 providers reviewed regarding any potential gaps and recommendations for coming into alignment with the new requirements. At the conclusion of the provider reviews, the contractor offered formal training to providers as a whole to assist them with preparing for the new OhioMHAS rule. Webinar topics were selected based on areas of common feedback given to SUD residential providers during the individual reviews. The webinars were facilitated by members of the contractor's clinical team who also participated in the individual site visits. The online training consisted of three 90-minute

webinars that were recorded and delivered to ODM and OhioMHAS to share as future training resources for all providers to facilitate awareness of the new requirements.

During the Demonstration extension term, ODM will continue to monitor access to MAT in collaboration with OhioMHAS through their provider certification process and through review of ODM claims data. Additionally, ODM will be working with OhioMHAS and stakeholders to evaluate what changes may be required to align with implementation of the Fourth Edition of the ASAM Criteria.

Milestone 4. Provider Capacity of SUD Treatment Including MAT

The overall number of SUD providers has increased. However, as the number of beneficiaries with an SUD diagnosis has also increased, the ratio of providers to beneficiaries has remained mostly constant since 2018. Access to medications for opioid use disorder (MOUD) providers was increasing prior to Demonstration implementation with no substantial change in the trend found to date. There has been an improved trend in the ratios for specific levels of care.

Figure 2: SUD Provider Availability Ratio

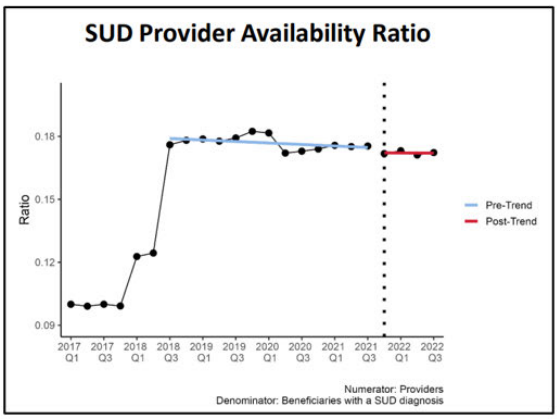


Figure 3: MOUD Provider Availability Ratio

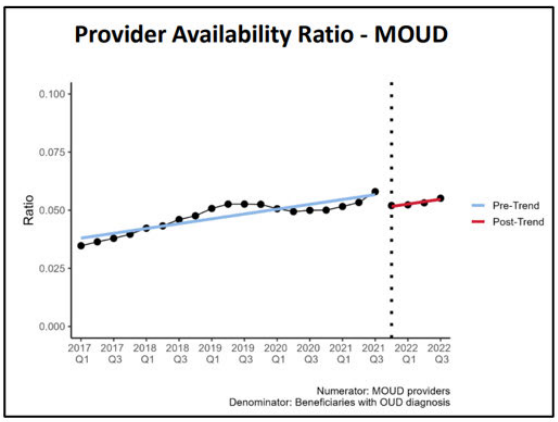
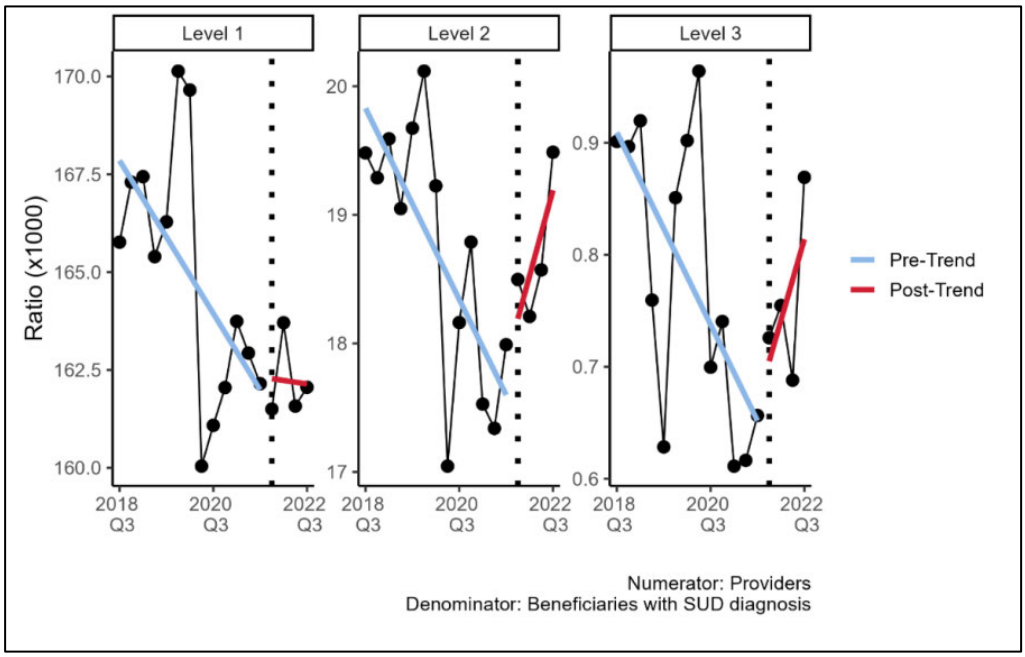


Figure 4: SUD Provider Availability Ratio by Level of Care



Overall, utilization of MOUD has steadily increased, but at a slower pace since 2022. MOUD utilization during residential treatment stays increased from around 50% in 2018 to over 60% in 2022.

Figure 5: MOUD Usage

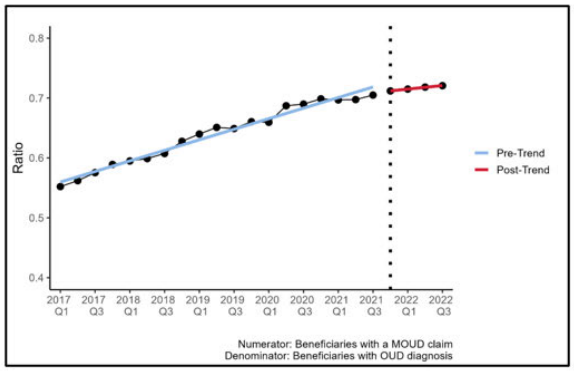
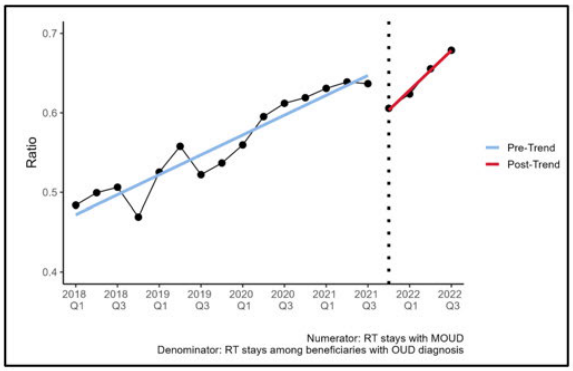


Figure 6: Residential Treatment Stays with MOUD



During the Demonstration extension term, ODM will continue to monitor adequacy of provider availability across all levels of care. This will include monitoring MCP network development and management plans and identifying opportunities to conduct more refined analysis for access at the service location level and for special populations. ODM will explore opportunities to expand access based on findings from this ongoing analysis.

Milestone 5. Implementation of OUD Comprehensive Treatment and Prevention Strategies

There has been a decrease in opioid prescribing over the course of the initial Demonstration term.

Figure 7: Use of Opioids from Multiple Providers

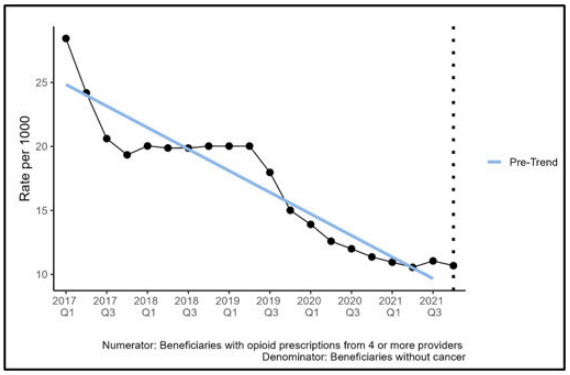
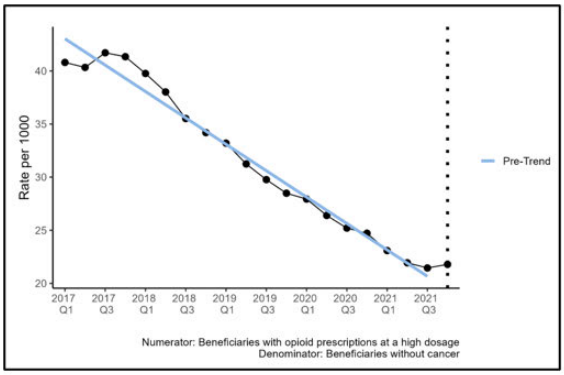


Figure 8: Use of Opioids at High Dosage



Additionally, there has been decreased utilization of ED and inpatient stays for SUD in recent quarters.

Figure 9: Emergency Department Utilization for SUD

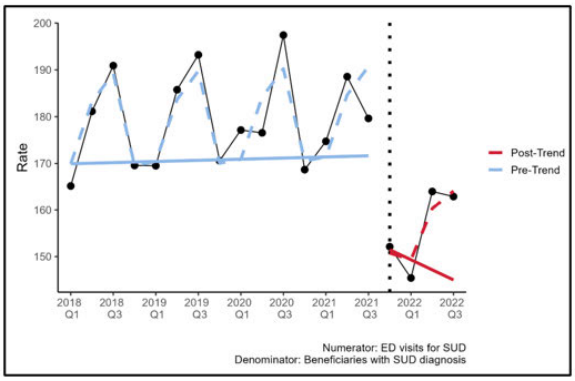
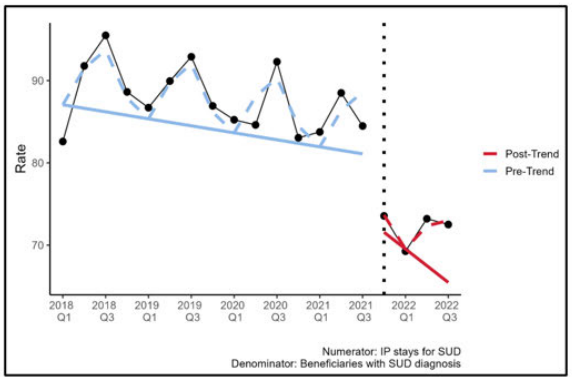


Figure 10: Inpatient Discharges for SUD



Ohio first mandated use of the Ohio Automated Rx Reporting System (OARRS), the State's prescription drug monitoring program (PDMP) by prescribers in 2011. OARRS is a tool to track the dispensing and furnishing of controlled prescription drugs. OARRS is designed to monitor this information for suspected abuse or diversion (i.e., channeling drugs into illegal use), and can give a prescriber or pharmacist critical information regarding a patient's controlled substance prescription history. This information can help prescribers and pharmacists identify high-risk patients who would benefit from early interventions.

Ohio has continued integration of electronic health records (EHRs) and dispensing data with OARRS during the initial Demonstration period. OARRS is highly integrated into both EHRs and

Pharmacy Management Systems, with most healthcare providers in Ohio using integrated systems for access. There are 1,371 entities that are integrated with OARRS, this includes 68 major health systems and outpatient clinics, 361 independent pharmacies, 12 pharmacy chains, 885 physician offices, and one dentist office.

Additionally, non-PDMP based data was added to OARRS in 2021. A drug court indicator flag was added as a strategy to bridge the information gap between the criminal justice system and healthcare providers. The indicator flag appears on a patient's OARRS report for active drug court participants when a clinician queries OARRS. An opioid treatment indicator was also added to indicate if a patient is a current participant in an opioid treatment program (OTP) and is receiving controlled substance medications for the treatment of an OUD. These enhancements serve as a mechanism to provide prescribers and pharmacists with information to support clinical decisions and promote coordination of care.

Over the course of the Demonstration extension term, Ohio will continue efforts to onboard new EHR and pharmacy dispensing system vendors. Additional OARRS enhancements will also be explored. For example, prompts to encourage healthcare providers to provide an overdose reversal medication to patients prescribed high dose opioid medication, have an SUD, or history of a nonfatal overdose and indicators to identify patients who may have discontinued MOUD. Efforts will also be undertaken to increase the percentage of OTP patients reported to OARRS to facilitate coordination of care between healthcare providers.

Milestone 6. Improved Care Coordination and Transition Between LOCs

During the initial Demonstration term, Ohio implemented several initiatives focused on improved care coordination. On July 1, 2022, the OhioRISE (Resilience through Integrated Systems and Excellence) program was launched. This is a specialized managed care program for youth through age 20 enrolled in Medicaid with complex behavioral health and multisystem needs. A primary component of OhioRISE is comprehensive, community-driven, care coordination across healthcare, behavioral health care, SUD care, education, families, and other local entities to ensure individual care needs are met.

Additionally, on February 1, 2023, implementation of the Next Generation managed care plans occurred which includes enhancements to the overall managed care coordination model. The new four-tiered approach considers the individuals' involvement with other systems and providers to complement and support care coordination models at the practice level. When individuals are not connected to local or practice level care coordinators, the MCP provides a care coordinator, when needed. Further, in March 2023, Ohio was awarded a planning grant to develop a proposal to participate in the Certified Community Behavioral Health Clinic (CCBHC) demonstration program. These activities will continue over the course of the Demonstration extension, permitting additional time to realize benefits of these enhanced care coordination models.

DESCRIPTION OF CURRENT PROGRAM

Ohio is seeking to maintain the existing delivery system, eligibility requirements, benefit coverage, and cost sharing as established during the initial Demonstration period.

Delivery System

This Demonstration extension will not modify current fee-for-service and managed care delivery system arrangements.

Eligibility

Under the Demonstration extension there is no change to Medicaid eligibility requirements. Standards and methodologies for eligibility remain set forth under the State Plan.

Benefits

Ohio Medicaid enrollees will continue to have access to a comprehensive package of evidence-based OUD/SUD treatment and withdrawal management services ranging from medically supervised withdrawal management to on-going chronic care for these conditions in cost-effective community-based settings. The State will continue to provide the benefits outlined in Table 3 over the course of the Demonstration extension term.

Table 3: Demonstration Benefits

Benefit	Medicaid Authority	Expenditure Authority
Outpatient services	State plan (Individual services covered)	Services provided to individuals in IMDs
Intensive outpatient services	State plan (Individual services covered)	Services provided to individuals in IMDs
Partial hospitalization services	State plan (Individual services covered)	Services provided to individuals in IMDs
Inpatient services	State plan (Individual services covered)	Services provided to individuals in IMDs
Residential treatment services	State plan (Individual services covered)	Services provided to individuals in IMDs
Medically Monitored Withdrawal Management	State plan (Individual services covered)	Services provided to individuals in IMDs
Medication-Assisted Treatment (MAT)	State plan (Individual services covered)	Services provided to individuals in IMDs

Cost Sharing

This Demonstration extension will not modify current cost sharing arrangements. Cost-sharing requirements under the Demonstration will not differ from the approved State Plan requirements.

WAIVER AND EXPENDITURE AUTHORITIES

Ohio requests extension of the following expenditure authority granted under the original Demonstration:

> *Residential Treatment for Individuals with Substance Use Disorder (SUD).* Expenditures for otherwise covered services furnished to otherwise eligible individuals who are primarily receiving treatment and withdrawal management services for SUD who are short-term residents in facilities that meet the definition of an IMD.

QUALITY ASSURANCE

ODM has a robust oversight plan for continually monitoring quality of and access to care provided under the Demonstration. This includes strategies such as an annual external quality review (EQR) of MCPs, conducted in accordance with 42 CFR § 438.358, and oversight through regular monitoring and reporting requirements.

As highlighted in the most recent EQR (SFY 2022), all five MCPs performed as follows on key SUD-related metrics:

- Rates at or above the Quality Compass 75th percentile for Initiation and Engagement of Alcohol and Other Drug (AOD) Abuse or Dependence Treatment, Initiation of AOD Treatment, Total
- Rates at or above the Quality Compass 50th percentile for:
    - Follow-Up After Emergency Department Visit for AOD Abuse or Dependence, 30-Day Follow-Up, Total
    - Follow-Up After Emergency Department Visit for AOD Abuse or Dependence, 7-Day Follow-Up, Total
    - Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment, Engagement, Ages 13–17
    - Use of Opioids from Multiple Providers – Multiple Pharmacies

Additionally, in SFY 2020, a focused study of MAT specialty provider access was conducted as part of the EQR. Survey responses were used to assess access to providers and the validity of MCP Provider Network (MCPN) data across three domains:

- Provider Access: Information on whether the provider was administering MAT services, was still contracted with the specified MCP, and whether the provider was accepting new patients.
- Appointment Availability: Information on the soonest-available appointment.
- MCPN Data Accuracy: The degree to which survey responses aligned with MCPN data for providers' telephone number, location, MCP contract status, and new patient acceptance status.

Key findings included:

- Overall, 83.76% of telephone numbers and 89.45% of addresses were validated successfully.
- Although many offices indicated either the office was closed due to COVID-19 or that wait times were difficult to measure, 87.08% of respondents indicated that the wait times were fewer than or equal to 30 days. The average wait time across all MCPs was 22 days and the median was 11 days.

Additionally, contracts with the MCPs establish a series of requirements to permit ODM to monitor the adequacy of each plan's SUD provider network. This includes time and distance standards for SUD residential and outpatient services as well as county-based minimum requirements for the number of MAT providers. Table 4 outlines recent performance of the MCPs on these measures.

Table 4: Percent Compliant with Network Adequacy Measures

Provider Type	Q2 2023	Q3 2024	Q4 2024
SUD Residential	100%	100%	98.7%
SUD Outpatient	100%	100%	100%
MAT Providers	97.3%	97.6%	96.9%

FINANCIAL DATA & BUDGET NEUTRALITY

Milliman, Inc. (Milliman) was engaged by the State of Ohio, Department of Medicaid (ODM) to develop the response to the Budget Neutrality portion of the Section 1115 Medicaid Demonstration Waiver Extension Application (1115 Waiver) for substance use disorder (SUD) residential services. Budget neutrality is a comparison of without waiver-expenditures (WOW) to with-waiver expenditures (WW). CMS recommends two potential methodologies of demonstrating budget neutrality:

1. Per Capita Method: Assessment of the per member per month (PMPM) cost of the Demonstration; and,
2. Aggregate Method: Assessment of both the number of members and PMPM cost of the Demonstration.

Budget neutrality for the 1115 Waiver will be demonstrated using the per capita method. The budget neutrality projections were developed using CMS budget neutrality requirements. The SUD residential budget neutrality worksheets prepared by Milliman are attached as Attachment 1.

Milliman has relied upon certain data and information provided by ODM, including historical claims, eligibility, and CMS Performance Management Database and Analytics (PMDA) System reports, in the development of the estimates contained in the Budget Neutrality Worksheets. Milliman has relied upon ODM for the accuracy of the data and accepted it without audit. To the extent that the data provided is not accurate, the results of this analysis may need to be modified to reflect revised information.

Differences between projections and actual amounts depend on the extent to which future experience conforms to the assumptions made for this analysis. It is certain that actual experience will not conform exactly to the assumptions used in this analysis. Actual amounts will differ from projected amounts to the extent that actual experience deviates from expected experience. It should be emphasized that the values in the budget neutrality worksheets are a projection of future costs based on a set of assumptions. Results will differ if actual experience is different from the assumptions contained in this analysis.

DEMONSTRATION EVALUATION

The Ohio Colleges of Medicine Government Resource Center (GRC) serves as the independent evaluator for the Demonstration. On November 9, 2020, CMS approved the State's Evaluation Design and GRC has completed the Interim Evaluation in accordance with the Demonstration special terms and conditions (STCs). The Interim Evaluation is included as Attachment 2.

The Interim Evaluation utilizes a combination of quantitative and qualitative methods to assess the effects of the Demonstration. Quantitative measures aligned with each of the hypotheses outlined in Table 4 were constructed primarily from Medicaid claims and eligibility data. An interrupted time series approach was used to assess changes in the level and trend of the measures from a pre-implementation time period to a post-implementation time period. Qualitative data collection and analysis complements the quantitative analysis, allowing for more in-depth examinations of the mechanisms that impact the Demonstration goals and a more comprehensive understanding of the lived experiences of individuals receiving treatment.

Table 5: Evaluation Research Questions & Hypotheses

Research Questions	Hypotheses
Q1 Does the Demonstration increase access to SUD treatment services?	H1.a The Demonstration will increase the ratio of SUD providers to beneficiaries enrolled in Medicaid and qualified to deliver SUD services.
	H1.b The Demonstration will increase the ratio of providers to beneficiaries at each of the levels of care.
	H1.c The Demonstration will increase the ratio of providers to beneficiaries in geographic areas that are underserved at baseline.
Q2 Does the Demonstration increase utilization of SUD treatment by enrollees with SUD?	H2.a The Demonstration will reduce the time between initial diagnosis and treatment.
	H2.b The Demonstration will increase the rate of MAT usage.
Q3 Does the Demonstration improve coordination and management of care?	H3.a The Demonstration will increase the proportion of IP stays which have a timely follow- up visit with a corresponding primary diagnosis of SUD.
	H3.b The Demonstration will increase the proportion of residential treatment (RT) visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.

Research Questions	Hypotheses
	H3.c The Demonstration will increase the proportion of ED visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.
	H3.d The Demonstration will decrease high-risk prescribing practices (i.e., high dose, multiple prescribers and pharmacies, concurrent use of benzodiazepines).
Q4 Does the Demonstration reduce the utilization of ED and IP hospital settings for OUD and other SUD treatment?	H4.a The Demonstration will decrease the rate of ED and IP visits within the beneficiary population for SUD.
	H4.b The Demonstration will decrease the rate of readmissions to ED and IP settings.
Q5 Does the Demonstration improve adherence to SUD treatment?	H5.a The Demonstration will increase continuity of pharmaceutical care.
Q6 Do beneficiaries receiving SUD services experience an improved quality of care?	H6.a The Demonstration will increase the percentage of beneficiaries with SUD who receive screening and care for co-morbid conditions.
	H6.b The Demonstration will increase early engagement in SUD treatment.
Q7 Does the Demonstration reduce rates of opioid-related overdose deaths?	H7.a The Demonstration will decrease the rate of overdose deaths, including those due to opioids.
Q8 How do costs related to the Demonstration waiver change throughout the pre- and post-Demonstration periods?	H8.a The Demonstration will decrease or have no effect on total costs. The Demonstration will increase SUDIMD, SUD-other, and non-SUD costs, but decrease IP non-ED outpatient, ED outpatient, pharmacy, and long-term care costs.

The preliminary findings of the Evaluation are encouraging. There was evidence of improvement in many of the primary and secondary drivers and outcomes that were the focus of the Demonstration. However, many of the interventions that are central to Ohio's Demonstration are still in the early stages of implementation. Additional time in the post-implementation phase will permit a comprehensive assessment of cost, quality, and outcomes associated with the Demonstration.

1. Access to SUD treatment providers
    - The trend in the overall ratio of SUD providers to beneficiaries did not substantially change during the post-intervention period, but there was an improved trend in the ratio of providers to beneficiaries for specific levels of care (LOC) 1, 2, and 3.
    - In underserved areas, there was a significant immediate improvement in access to SUD providers that was associated with the intervention, but also an estimated downward trend in the post-intervention period.

- Access to MOUD providers increased over time during both the preintervention and post-intervention periods. There was no significant change associated with the intervention.

2. Utilization of SUD treatment
    - MOUD utilization increased steadily during the pre-implementation period and continued to improve, though at a slower pace, in the post-implementation period.
    - MAT/MOUD utilization during residential treatment stays showed a brief decline at the start of the post-intervention period, followed by an estimated trend of more rapid improvement than the post-intervention period.
    - Initiation of SUD treatment for new episodes was on a slight downward trend during the pre-intervention period. Additional time points are needed to observe the impact of the Demonstration.
3. Coordination and management of care
    - Measures related to timely follow-up care showed either no change in trend relative to pre-intervention period or negative trends, though limited post-implementation time points are available.
    - Additional time for data collection will be needed to assess changes for measures related to high-risk prescribing practices.
4. ED and inpatient utilization
    - ED and inpatient utilization for SUD decreased significantly in the post-implementation period. Additional time for data collection is needed to assess changes in readmission rates.
5. Adherence of SUD treatment
    - Post-intervention data are not yet available to observe potential changes in continuity of care.
6. Improved quality of care
    - Post-intervention data are not yet available to observe the impact of the Demonstration on preventable ambulatory care and screening for Human Immunodeficiency Virus/ Hepatitis C Virus/Hepatitis B Virus (HIV/HCV/HBC).
    - Early engagement in SUD treatment was on a slight downward trend during the pre-intervention period. Additional time points are needed to observe the impact of the Demonstration.
7. Reduction in overdose deaths
    - While the interim findings are only available for the first four timepoints of the post-intervention period, the results suggest that there was a significant immediate decrease in the rate of overdose deaths and opioid overdose deaths associated with the start of the post-intervention period, but that the rates for the subsequent timepoints available for analysis show an increase at a similar trajectory as the pre-intervention period.
8. Impact on cost of care

- The interim findings suggest that there was a decrease in the trend of total cost of care per member-month during the post-implementation period. In particular, there was an estimated immediate decrease in total ED and IP costs per member-month that aligned with the timing of the Demonstration.
- There was also an estimated decrease in the trend of ED and IP costs over time in the post-implementation period suggesting that ED and IP costs continued to decline post-intervention.
- The interim results showed an estimated decrease in the trend over time for outpatient treatment costs in the post-intervention period and a decrease in non-SUD treatment costs associated with the Demonstration.

Evaluation of the current Demonstration period (10/1/2019 – 9/30/2024) will be completed according to the approved Evaluation Design. A new Evaluation Design will be created for the extended Demonstration period (10/1/2024 – 9/30/2029) and approved by CMS before implementation.

PUBLIC NOTICE

Summary of Public Notices and Public Hearings

In accordance with 42 CFR 431.408 ODM completed the following activities associated with the state public notice process for its SUD 1115 waiver extension application:

- The abbreviated public notice was posted on February 29, 2024, to the Register of Ohio. The *Register of Ohio* is established under the Register of Ohio Act (Ohio Revised Code sections 103.051 to 103.054 and 119.037 to 119.039) and other related Ohio statutes enacted by Am. Sub. S.B. 11 of the 123rd General Assembly. This service provides public notice and information about state agency rule-making proceedings, including notices of public hearings required under the Ohio Administrative Procedure Act (Ohio Revised Code Chapter 119.).
- Additionally, the public notice process, public input process, planned hearings, the demonstration application, a link to the relevant Medicaid demonstration page on the CMS Web site, and abbreviated public notices were posted to the ODM's webpage Substance Use Disorder 1115 Demonstration Extension (ohio.gov). The initial posting was on February 1, 2024 then subsequently updated on February 14, 2024 and February 29, 2024 to add additional public hearings and extend the original comment period.
- Ohio's 30 day public comment period dates and the ODM SUD 1115 mailbox MCD_SUD1115@medicaid.ohio.gov to submit stakeholder comments were shared via each of the multiple communication methods. Ohio's comment period began on February 1, 2024 and closed on March 30, 2024.
- Public hearings were held on the following dates:
  - February 20, 2024, at the SUD 1115 Waiver Stakeholder Advisory Committee meeting; both virtual and in-person attendance options

- February 29, 2024, at the February meeting of ODM's Medical Care Advisory Committee; both virtual and in-person attendance options
- March 6, 2024, and March 7, 2024 – Open public hearing with both virtual and in-person attendance options
- Paper copies of the Draft Waiver Extension Application were available at all four public hearings.

In-person attendance was offered for all public hearings at the ODM offices, 50 W. Town Street, Columbus Ohio 43215.

In addition to the public notice activity described above, ODM used electronic mailing lists to communicate information including the Abbreviated Public Notices, four public hearings, the public comment period, the email address for ODM's SUD 1115 mailbox and postal and street addresses for comments. Information was shared via stakeholder newsletters, the ODM "Behavioral Health Bulletin" Newsletter, and the Ohio Department of Mental Health and Addiction Services' "News Now" stakeholder newsletter. Mailing lists for both newsletters are open to any interested party and are maintained by ODM and OhioMHAS.

Ohio has no federally recognized tribes, therefore, a separate public notice and input process for tribes is not required.

Copies of the full and abbreviated public notices are available in Attachment 3.

Annual Post Award Forums

As required in 42 CFR 431.420(c), post award forums have been held to provide the opportunity for the public to comment on the progress of the demonstration. Notification of each forum was announced via an Ohio Medicaid behavioral health informational newsletter which was sent to stakeholders, and also published on the Ohio Medicaid website at least 30 days prior to the occurrence of each forum.

The first forum occurred virtually on July 16, 2020, preceded by an announcement on June 11, 2020. Ohio staff provided a brief overview and status report of the demonstration and invited stakeholders to offer input regarding Ohio's SUD services and waiver implementation. Five individuals offered testimony. Themes included:

- An increased focus was recommended on how residential providers can demonstrate their qualifications to offer co-occurring enhanced capacity for the treatment of individuals with dual diagnoses.
- A SUD provider organization in Dayton urged the continuation of Ohio's SUD 1115 waiver beyond 2024 in order to allow SUD residential services in settings with greater than 16 beds. The provider urged this to meet the residential treatment needs of Medicaid enrollees with SUDs.
- A health care provider identified the need to coordinate the many activities under Ohio's SUD 1115 waiver with planned changes in procurement of Medicaid managed

care plans as well as activities occurring in county Boards of Alcohol, Drug Addiction and Mental Health.

The second forum occurred virtually on August 9, 2021, with an announcement on July 8, 2021. Ohio staff provided a brief overview and status report of the demonstration for the first two years. During the public comment opportunity, one individual, a treatment provider, offered comments which included thanks to the state for undertaking the SUD 1115 waiver because it increased focus on the importance of SUD treatment.

The third forum occurred virtually on August 16, 2022, with an announcement on July 15, 2022. It included updates on recent activities related to the waiver as well as upcoming and ongoing activities. Two individuals provided comments. One, who represented an addiction treatment center, expressed support for renewal of the demonstration and spoke of a current benefit of the demonstration. The other individual, who represented several health care clients, asked about the timeline regarding ODM's decision to request a renewal of the demonstration. ODM responded that any update regarding such a request would be provided as soon as it is available.

The fourth, and latest forum, occurred virtually on August 15, 2023, with an announcement on July 14, 2023. wo individuals had questions. One asked if Ohio Medicaid was considering renewing the demonstration. ODM responded that work was ongoing to prepare materials for an extension and that ODM would use the stakeholder process to provide updates and solicit input throughout the process. The second commenter represented the Ohio Substance Use Disorders Center of Excellence (SUD COE) and encouraged attendees to complete a survey regarding training needs and requests of SUD treatment providers. As the issues posed during the annual forum took the form of a question and request not specifically tied to the Demonstration parameters, no changes to this extension application were made in response.

Stakeholder Advisory Committee

In addition to the required Annual Public Forums to solicit public input from stakeholders, the Ohio Department of Medicaid has also utilized a Stakeholder Advisory Committee to serve as an ongoing advisory body throughout the demonstration implementation. The Committee was formed in December 2019 through collaborative recruitment by ODM and the Ohio Department of Mental Health and Addiction Services (OhioMHAS). The Committee is made up of individuals representing a variety of perspectives in Ohio's substance use disorder stakeholder community including:

- SUD treatment providers at every ASAM level of care, including hospitals;
- associations representing SUD providers; and
- consumer advocacy/recovery organizations.

This committee has contributed significant work and offered insightful advice regarding the accomplishments of Ohio's SUD 1115 waiver demonstration to date. ODM plans to continue utilizing this advisory committee during the next five years.

Public Comments and Feedback on Ohio's Demonstration Request

In response to public notices and hearings, the ODM received feedback during the public comment period. Overall, the comments were positive and supportive. ODM received recognition for the work and accomplishments achieved in the current demonstration and received suggestions for areas needing ongoing growth or progress. The following is a summary of the public comments by general topic area.

Areas of Support

Commenters acknowledged the progress made during the initial demonstration period. Individuals were pleased to have the opportunity to participate in Ohio's Stakeholder Advisory Committee, noting it was a 'tremendously collaborative workgroup". Other comments acknowledged the increase in provider capacity, supported continued waiver activities, and described from a personal perspective the wish for the waiver to continue after personal experiences related to SUD.

Areas for Ongoing Growth or Progress

ODM received several suggestions to expand the waiver to include Medicaid coverage for inmates during the 90 days prior to leaving prisons, jails, and detention facilities. Commenters noted that this is an opportunity under 1115 authority that was not available in 2019 when Ohio submitted the initial SUD 1115 waiver application. In response to this feedback, ODM acknowledges that this criminal justice 1115 opportunity exists and is supported by several Ohio organizations. ODM is examining and considering this opportunity but will not be requesting as a part of the current SUD 1115 extension application.

ODM received a request to add home delivered meals as a service available under the SUD 1115 waiver. ODM does not plan to include home delivered meals as a service within the SUD 1115 waiver extension. ODM will continue to provide coverage for medically necessary nutrition services through the Medicaid state plan and home and community-based waiver services. Additionally, Ohio's Managed Care Entities (MCEs) provide support to assist with member needs related to social determinants of health.

ODM received a request to require Joint Commission accreditation for CCBHCs. Ohio is currently developing its CCHBC model and will consider this recommendation as part of that work which is being conducted outside of this SUD 1115 demonstration authority.

ODM was applauded for the inclusion of HIV screening as a post-intervention impact measurement in the demonstration evaluation criteria. The commenter noted that, "HIV testing is an often-overlooked part of substance use disorder (SUD) treatment efforts, and HIV diagnoses among people with SUD may be missed without routine HIV testing." The commenter encouraged ODM to maintain this measurement during the waiver extension period, and to consider adding an activity to increase access to HIV pre-exposure prophylaxis (PrEP) counseling in accordance with CDC guidelines. ODM is reviewing the available data to determine if more detail can be offered in future monitoring reports.

Provider capacity

Several comments were received related to provider capacity. One stated that Ohio has experienced a diminished treatment capacity for adolescent care and treatment, particularly at residential ASAM level 3.5, over the last few years. ODM plans to examine this specifically as part of the next statewide SUD treatment capacity assessment. This commenter also encouraged ODM to attempt to achieve waiver goals as early as possible in the five-year timeframe. Another commenter expressed concerns about a potential lack of continuity of SUD services. He shared anecdotes of Ohio entities utilizing open beds in nursing facilities to offer SUD medication assisted treatment without continuity of care after discharge. The commenter suggested that ODM review Medicaid data to determine if those activities are occurring and to ensure that Medicaid enrollees treated in institutional settings are transitioned to the least restrictive environment for outpatient, community-based treatment. Finally, a commenter, who is a member of ODM's SUD 1115 Stakeholder Advisory Committee, noted that one of the best parts of the waiver demonstration was the annual statewide SUD treatment capacity assessment which has shown continuous growth in Ohio's SUD treatment capacity since 2019. She noted, though, that in spite of the continuous growth, Ohio still has geographic areas without enough SUD treatment capacity to meet the demand.

ODM has already completed on-site reviews of all SUD residential treatment facilities during the current demonstration, will continue to analyze the results of the annual treatment capacity assessment and, if needed, identify strategies to increase treatment capacity and address gaps.

Budget neutrality

During one of its public hearings, ODM received a question about how budget neutrality fared during the current demonstration. Information about Ohio's budget neutrality experience is described in this application.

Utilization management

During the public hearing held at ODM's Medical Care Advisory Committee (MCAC) meeting, a discussion occurred regarding prior authorization and utilization management. One person asked about the circumstances in which an individual might be denied services and the external medical review process, and another asked if the prior authorization reviews were retrospective or if they apply to initiating medications for opioid use disorder (MOUD).

ODM staff explained the PA process, including the opportunity for appeals and external medical review. Additionally, ODM staff explained that there is no prior authorization requirement for MOUD. During the demonstration period, Ohio formed a subcommittee of the (SUD 1115) Stakeholder Advisory Committee dedicated solely to utilization management. Prior authorization and utilization management will continue to be a focus of ongoing work in the waiver demonstration extension period.

Outcomes

ODM received a comment asking, that while ODM saw many areas of improvement during the initial demonstration period, why has there been no reduction in the Ohio's overdose death rate.

ODM staff noted that although much has been done to impact the opioid epidemic in Ohio, there are factors outside the purview of the SUD 1115 waiver that contribute to the rate of opiate overdoses. Of note were the impact of fentanyl-laced drugs and pharmaceuticals, and the illegal drug activity. Ohio based agencies dedicated to investigation and law enforcement will continue to work on those areas of concern.

Finally, ODM received a question about percentage increases in access and continuity of treatment cited associated with Milestone 6 – Improved Care Coordination and Transitions between LOCs. The commenter noted that the percent increases would be more meaningful if expressed in terms of the actual raw numbers rather than just the percentages. ODM staff responded that the full detail regarding all evaluation measures were detailed in the online SUD 1115 Midpoint Assessment - November 2022 and SUD 1115 Interim Evaluation Report - September 2023.

ATTACHMENT 1 – BUDGET NEUTRALITY

The 1115 Waiver SUD residential services budget neutrality worksheets are below. The rest of this section documents the supporting data and methodology included in the worksheets using guidance provided by CMS.

I. Without- and With-Waiver Projections for Historical Medicaid Populations

A. Historic Data

We have provided actual historical data in two separate Medicaid eligibility groups (MEGs):

- **SUD Residential Services MEG 1: Managed Care** – Incudes eligible recipients who are enrolled in the Medicaid Managed Care (MMC), MyCare Ohio (MyCare), and/or OhioRISE programs.
- **SUD Residential Services MEG 2**: **Fee For Service (FFS)** – Includes all non-dual and dual eligible recipients who are not enrolled in any of the MMC, MyCare, and OhioRISE programs.

These MEGs correspond to those that were incorporated in the previous demonstration period, and the Historical Data worksheet within Appendix A reflects the reported Waiver member months and expenditures as of the demonstration year (DY) 05 quarter 4 PMDA workbook, submitted by ODM to CMS.

This historical data includes member months for all Medicaid eligible beneficiaries receiving SUD treatment in residential settings, or members aged 21-64 receiving SUD treatment in an Institution for Mental Disease (IMD). This historical data included member months where a beneficiary received SUD residential treatment at any point in the month, regardless of the length of stay. For each of these member months, we have reflected all (both SUD and non-SUD) of their corresponding Medicaid eligible expenditures within the month. This includes the capitation payments attributed to the beneficiaries enrolled in managed care and residing in an SUD residential treatment facility for any length of stay in the month, along with any FFS and Single Pharmacy Benefit Manager (SPBM) claims that were incurred outside of managed care. For the FFS MEG, it solely reflects the FFS and SPBM claims for these beneficiaries not enrolled in managed care.

B. Adjusted DY 06

The previous demonstration period began October 1, 2019 and is set to end on September 30, 2024. Following an amendment to the original budget neutrality projections, the original 5-year demonstration approach was split into 6 demonstration years (DYs). As a result, we have labeled the first demonstration year under the new demonstration period as DY 07. Key time periods in workbook are included below:

- Historical Data Period: October 1, 2019 through September 2023 (DY 01 – DY 05)
- Adjusted DY 06 Base Year: October 1, 2023 through September 30, 2024 (DY 06)

- Demonstration Period: October 2024 through September 2029 (DY 07 – DY 11)

In the sections below, we have outlined the methodology utilized to develop the Adjusted DY 06 Base Year estimates that are used as the starting point for projections attributable to the new demonstration period. The *Trend Rate 1* column on the WOW worksheet reflects the percentage impact of these adjustments.

i. Managed Care MEG – Eligible Member Months

When analyzing the managed care MEG experience as reported for DY 05, eligible member months appeared to be materially understated likely due to lack of claims runout compared to prior DYs. As a result, we relied on the combination of DY 03 and DY 04 (October 2021 through September 2022, combined) as the basis for attributing eligible member months to the Adjusted DY 06 Base Year.

ii. Managed Care MEG – PMPM Cost

The PMPM cost underlying the managed care MEG is made up of two components: the associated capitation payments and the FFS/SPBM claims cost outside of managed care for the eligible member months.

To estimate the capitation portion of the Managed Care MEG PMPM cost, we applied calendar year (CY) 2024 MMC, MyCare, and OhioRISE capitation rates to the distribution of member months identified in DY 03 and DY 04 to arrive at the estimated CY 2024 capitation payments PMPM for the managed care MEG. We then trended the CY 2024 capitation PMPM back from the midpoint of CY 2024 (July 1, 2024) to the midpoint of the Adjusted DY 06 Base Year (April 1, 2024) using the annualized president's budget trend rate of 4.5% to arrive at the estimated PMPM attributable to capitation payments.

The CY 2024 capitation rates included multiple material adjustments for program changes that have occurred or anticipated to occur relative to the time periods included in the Historic Data worksheet. Descriptions of key adjustments are included below:

Implementation of the Single Pharmacy Benefit Manager

Effective October 1, 2022, ODM began utilizing the SPBM for pharmacy services for members enrolled in the MMC program. Pharmacy services covered under the SPBM include:

- Retail pharmacy, identified in the encounter data as claim types P & Q;
- Professional claims dispensed via pharmacy providers, identified in the encounter data as billing provider type 70, except for the following:
    - Medical and surgical supplies,

- Equipment, excluding the limited DME benefit items listed in the Appendix to OAC 5160-9-02,
- Home health / home infusion services,
- Durable medical equipment, and;
- Nursing services.

Services covered via the SPBM are no longer covered under the MMC capitation rates. Note that Medicaid pharmacy services for MyCare members will continue to be covered under the capitation rates.

With the SPBM having been implemented on October 1, 2022, the associated pharmacy claims covered under the SPBM transitioned from the capitation portion of the managed care PMPM cost to the FFS/SPBM portion. As a result, pharmacy cost for the Managed Care MEG now reflects SUD residential members' actual claim costs rather than the portion of the population-composite capitation rates that was attributable to pharmacy services.

Population Acuity

As a result of the COVID-19 pandemic, the federal government declared a public health emergency (PHE). One component of the PHE was the continuous Medicaid eligibility requirement, which materially decreased member movement out of the MMC program. With the PHE ending effective May 11, 2023, member dis-enrollment has now increased materially. A population acuity adjustment was applied in the development of the CY 2024 MMC capitation rates to reflect the acuity level of the population estimated to be enrolled in CY 2024 compared to the base period of July 1, 2021 through June 30, 2022. We assumed additional cost impact for incremental acuity changes anticipated between CY 2024 and the next demonstration period.

Fee Schedule Changes

Since the end of DY 05, ODM has implemented or is expected to implement material changes to various fee schedules, including both facility and non-facility services. The CY 2024 capitation rates used as part of developing the Adjusted DY 06 Base Year reflect the estimated impact of the new fee schedules.

For additional information regarding CY 2024 capitation rate development, please refer to the Medicaid Managed Care, MyCare Ohio, and OhioRISE Provider Agreement summaries.

Many of the items impacting projected capitation amounts in the Adjusted DY 06 Base Year also impact projected FFS cost, such as fee schedule changes and claims trend anticipated to occur. To estimate the FFS/SPBM portion of the Managed Care MEG for the Adjusted DY 06 Base Year, we reviewed and considered emerging FFS claims experience for managed care members.

The total estimated DY 06 PMPM cost for the managed care MEG was developed by adding the capitation PMPM cost and the trended FFS/SPBM PMPM cost.

iii. Fee-for-Service MEG – Eligible Member Months

Effective February 1, 2023, three managed care organizations (MCOs) began newly operating in the MMC program as part of ODM's Next Generation of managed care. In advance of the start of the Next Gen program, from February 2022 through January 2023, ODM assigned newly enrolled members to FFS rather than MMC as they would have been previously. These members were then assigned to the new MCOs upon go-live in February 2023.

As a result of this program change, DY 03, DY 04, and DY 05 FFS MEG eligible member months emerged higher than we would expect for DY 06 and into the new demonstration period. We relied on DY 02 (October 2020 through September 2021) as the basis for attributing eligible member months to the FFS MEG for the Adjusted DY 06 Base Year.

iv. Fee-for-Service MEG – PMPM Cost

As discussed in Section I.B.ii., we anticipate material PMPM cost increases between DY 05 and the next demonstration period due to fee schedule changes implemented by ODM. In addition to the increased members in FFS due to new MCOs, the reported expenditures in DY 05 are likely understated due to lack of claims run-out relative to prior DYs. Therefore, we estimated Adjusted DY 06 Base Year PMPM cost for the FFS MEG based on a review of DY 02 claims experience and with consideration of trend and fee schedule changes anticipated to occur. The *Trend Rate 1* column reflects the impact of projected PMPM cost changes relative to DY 05 reported values.

Table 1 below contains a summary of the observed and projected member months and PMPM cost for DY 05 through DY 11.

TABLE 1 - 1115 BUDGET NEUTRALITY PROJECTIONS BY MEG

MEG	DY 05	ADJUSTED DY 06 BASE	DY 07	DY 08	DY 09	DY 10	DY 11
Managed Care							
Member Months	39,718	61,027	62,858	64,744	66,686	68,686	70,747
PMPM Cost	$ 882.60	$ 1,264.95	$ 1,321.87	$ 1,381.36	$ 1,443.52	$ 1,508.48	$ 1,576.36
Expenditures	$ 35,055,300	$ 77,196,125	$ 83,090,049	$ 89,433,974	$ 96,262,258	$ 103,611,881	$ 111,522,648
FFS							
Member Months	4,290	4,419	3,200	3,296	3,395	3,497	3,602
PMPM Cost	$ 4,289.36	$ 4,482.38	$ 6,283.59	$ 6,566.35	$ 6,861.84	$ 7,170.62	$ 7,493.30
Expenditures	$ 18,401,354	$ 19,806,297	$ 20,108,815	$ 21,644,123	$ 23,296,652	$ 25,075,352	$ 26,989,855
Total Expenditures	**$ 53,456,654**	**$ 97,002,422**	**$ 103,198,864**	**$ 111,078,097**	**$ 119,558,910**	**$ 128,687,233**	**$ 138,512,503**

c. Without-Waiver Projections

We believe the historical PMPM cost trend rates displayed in the Historic Data worksheet are not appropriate as a basis for determining future trend assumptions due to the impact of aforementioned program changes such as the implementation of the SPBM, fee schedule changes, and the assignment of new members to FFS in 2022-2023. Based on discussions with ODM regarding potential ramp-up in SUD facility treatment under the behavioral health redesign and new SUD facility providers coming online to provide SUD treatment, we are assuming a 3.0% annual caseload trend over the five-year demonstration for each MEG. In addition, we used a projected annualized PMPM cost trend reflecting the estimated President's budget trend for each MEG (4.5% for Managed Care and FFS).

D. With-Waiver Projections

Based on CMS guidance regarding the hypothetical nature of this Waiver, the WOW and WW scenarios were set equal.

E. Disproportionate Share Hospital (DSH) Expenditure Offset

Not applicable.

F. Summary of Budget Neutrality

Attachment 2 includes the SUD residential 1115 Waiver budget neutrality workbook, which includes the following applicable worksheets:

- Historic Data
- WOW
- WW
- Summary

G. Additional Information to Demonstrate Budget Neutrality

We do not believe there is any other information necessary for CMS to complete its analysis of the budget neutrality submission.

H. Financial Analysis of Changes

We do not anticipate a material financial impact related to changes in this Waiver extension relative to the previous demonstration. Program changes expected to impact projected cost relative to historical periods are outlined earlier in this section.

5 YEARS OF HISTORIC DATA

SPECIFY TIME PERIOD AND ELIGIBILITY GROUP DEPICTED:

Managed Care MEG	DY 01	DY 02	DY 03	DY 04	DY 05	4-YEARS
TOTAL EXPENDITURES	$ 43,081,330	$ 44,303,830	$ 35,684,382	$ 12,784,641	$ 35,055,300	$ 170,909,483
ELIGIBLE MEMBER MONTHS	55,732	59,783	46,183	14,844	39,718	
PMPM COST	$ 773.01	$ 741.08	$ 772.67	$ 861.27	$ 882.60	

TREND RATES		% CHANGE				ANNUALIZED
TOTAL EXPENDITURE		2.84%	-19.46%	-64.17%	174.20%	-6.64%
ELIGIBLE MEMBER MONTHS		7.27%	-22.75%	-67.86%	167.57%	-10.68%
PMPM COST		-4.13%	4.26%	11.47%	2.48%	4.52%

FFS MEG	DY 01	DY 02	DY 03	DY 04	DY 05	4-YEARS
TOTAL EXPENDITURES	$ 11,989,670	$ 13,199,940	$ 15,973,490	$ 11,734,363	$ 18,401,354	$ 71,298,817
ELIGIBLE MEMBER MONTHS	3,324	3,107	3,598	2,325	4,290	
PMPM COST	$ 3,607.00	$ 4,248.45	$ 4,439.55	$ 5,047.04	$ 4,289.36	

TREND RATES		% CHANGE				ANNUALIZED
TOTAL EXPENDITURE		10.09%	21.01%	-26.54%	56.82%	15.35%
ELIGIBLE MEMBER MONTHS		-6.53%	15.80%	-35.38%	84.52%	8.88%
PMPM COST		17.78%	4.50%	13.68%	-15.01%	5.95%

DEMONSTRATION WITHOUT WAIVER (WOW) BUDGET PROJECTION: COVERAGE COSTS FOR POPULATIONS

ELIGIBILITY GROUP	TREND RATE 1	MONTHS OF AGING	ADJUSTED BASE YEAR DY 06	TREND RATE 2	DEMONSTRATION YEARS (DY) DY 07	DY 08	DY 09	DY 10	DY 11	TOTAL WOW
Managed Care MEG Pop Type:	Medicaid									
Eligible Member Months	53.7%	12	61,027	3.0%	62,858	64,744	66,686	68,686	70,747	
PMPM Cost	43.3%	12	$ 1,264.95	4.5%	$ 1,321.87	$ 1,381.35	$ 1,443.51	$ 1,508.47	$ 1,576.35	
Total Expenditure					$ 83,089,853	$ 89,433,495	$ 96,261,692	$ 103,611,413	$ 111,522,063	$ 483,918,517
FFS MEG Pop Type:	Medicaid									
Eligible Member Months	-27.6%	12	3,107	3.0%	3,200	3,296	3,395	3,497	3,602	
PMPM Cost	40.2%	12	$ 6,013.01	4.5%	$ 6,283.60	$ 6,566.36	$ 6,861.85	$ 7,170.63	$ 7,493.31	
Total Expenditure					$ 20,108,840	$ 21,644,143	$ 23,296,686	$ 25,075,377	$ 26,989,888	$ 117,114,933

DEMONSTRATION WITH WAIVER (WW) BUDGET PROJECTION: COVERAGE COSTS FOR POPULATIONS

ELIGIBILITY GROUP	DY 05	DEMO TREND RATE	DEMONSTRATION YEARS (DY) DY 06	DY 07	DY 08	DY 09	DY 10	TOTAL WW
Managed Care MEG								
Pop Type:	**Medicaid**							
Eligible Member Months	61,027		62,858	64,744	66,686	68,686	70,747	
PMPM Cost	$ 1,264.95	4.5%	$ 1,321.87	$ 1,381.35	$ 1,443.51	$ 1,508.47	$ 1,576.35	
Total Expenditure			$ 83,089,853	$ 89,433,495	$ 96,261,692	$ 103,611,413	$ 111,522,063	$ 483,918,517
FFS MEG								
Pop Type:	**Medicaid**							
Eligible Member Months	3,107		3,200	3,296	3,395	3,497	3,602	
PMPM Cost	$ 6,013.01	4.5%	$ 6,283.60	$ 6,566.36	$ 6,861.85	$ 7,170.63	$ 7,493.31	
Total Expenditure			$ 20,108,840	$ 21,644,143	$ 23,296,686	$ 25,075,377	$ 26,989,888	$ 117,114,933

Budget Neutrality Summary

Without-Waiver Total Expenditures

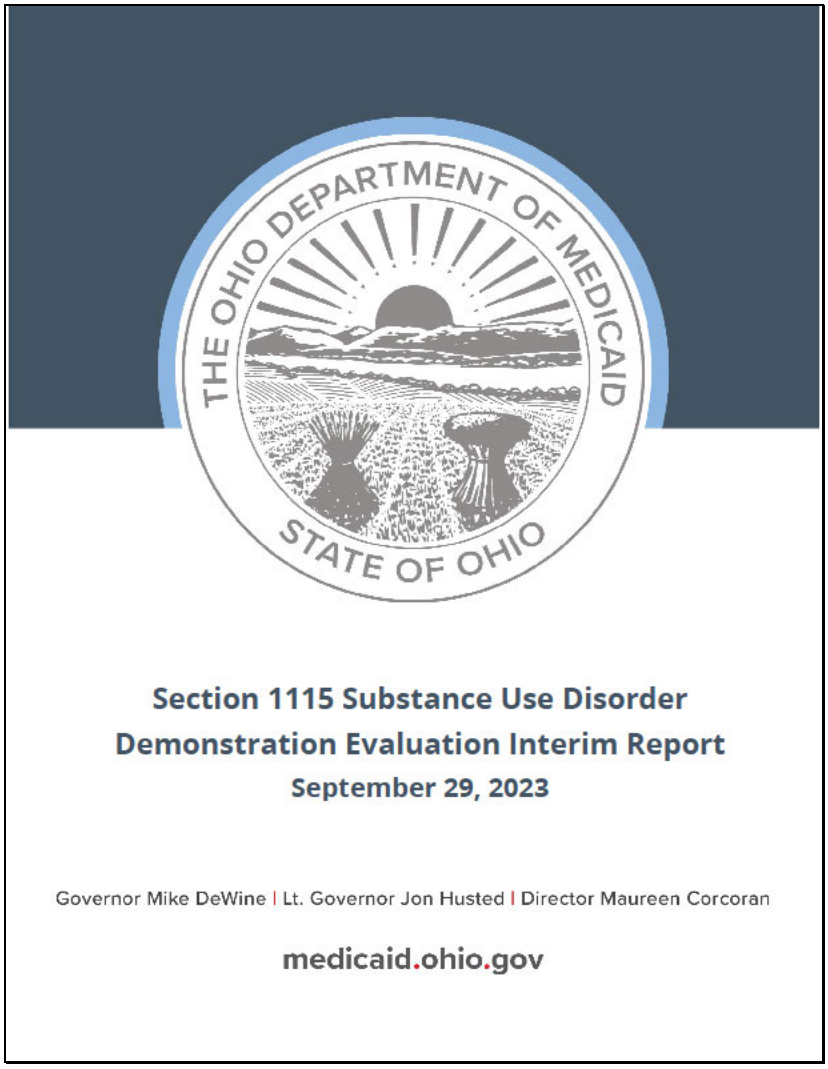
Medicaid Populations	DEMONSTRATION YEARS (DY) DY 06	DY 07	DY 08	DY 09	DY 10	TOTAL
Managed Care MEG	$ 83,089,853	$ 89,433,495	$ 96,261,692	$ 103,611,413	$ 111,522,063	$ 483,918,517
FFS MEG	$ 20,108,840	$ 21,644,143	$ 23,296,686	$ 25,075,377	$ 26,989,888	$ 117,114,933
DSH Allotment Diverted	-	-	-	-	-	-
TOTAL	$ 103,198,693	$ 111,077,638	$ 119,558,378	$ 128,686,790	$ 138,511,951	$ 601,033,450

With-Waiver Total Expenditures

Medicaid Populations	DEMONSTRATION YEARS (DY) DY 06	DY 07	DY 08	DY 09	DY 10	TOTAL
Managed Care MEG	$ 83,089,853	$ 89,433,495	$ 96,261,692	$ 103,611,413	$ 111,522,063	$ 483,918,517
FFS MEG	$ 20,108,840	$ 21,644,143	$ 23,296,686	$ 25,075,377	$ 26,989,888	$ 117,114,933
TOTAL	$ 103,198,693	$ 111,077,638	$ 119,558,378	$ 128,686,790	$ 138,511,951	$ 601,033,450
VARIANCE	$ -	$ -	$ -	$ -	$ -	$ -

ATTACHMENT 2 – INTERIM EVALUATION

Ohio's interim evaluation is on the following pages.


THE OHIO DEPARTMENT OF MEDICAID
STATE OF OHIO
Section 1115 Substance Use Disorder
Demonstration Evaluation Interim Report
September 29, 2023
Governor Mike DeWine | Lt. Governor Jon Husted | Director Maureen Corcoran
medicaid.ohio.gov

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About us

The Ohio Colleges of Medicine Government Resource Center's mission is to identify, research, and spread innovative practices to improve access to quality health care for all Ohioans through partnerships with health care, state, and academic leaders.

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A. Acronyms

ASAM	American Society of Addiction Medicine
AUD	Alcohol Use Disorder
BH	Behavioral Health
BHR	Behavioral Health Redesign
CMS	Centers for Medicare & Medicaid Services
GRC	Government Resource Center
IMD	Institutions for Mental Disease
IOP	Intensive Outpatient
ITS	Interrupted Time Series
LOC	Level of Care
MAT	Medication Assisted Treatment (includes MOUD and medication for AUD)
MCP	Managed Care Plan
MM	Monitoring Metric
MOUD	Medication for Opioid Use Disorder
ODM	Ohio Department of Medicaid
OhioMHAS	Ohio Department of Mental Health and Addiction Services
OUD	Opioid Use Disorder
PDMP	Prescription Drug Monitoring Program
PHP	Partial Hospitalization
SOR	State Opioid Response
SUD	Substance Use Disorder
RT	Residential Treatment

B. Executive Summary

Background

On September 24, 2019, the Ohio Department of Medicaid received approval for *Ohio's Substance Use Disorder (SUD) Section 1115 Demonstration Waiver* to address unprecedented increases in drug overdose deaths and substance use disorders (SUD) among Ohio Medicaid enrollees. Through the Demonstration, Ohio was able to pursue a series of programmatic changes over a period of five years (October 1, 2019 through September 30, 2024) to address the following milestones: (1) Access to critical LOCs for OUD and other SUDs; (2) Use of ASAM placement criteria; (3) Use of ASAM program standards for residential provider qualifications; (4) Provider capacity of SUD treatment including MAT; (5) Implementation of OUD comprehensive treatment and prevention strategies; and (6) Improved care coordination and transition between LOCs.

ODM worked with an independent evaluator to evaluate whether Ohio's Demonstration would achieve 6 goals that were established for the demonstration by CMS. The evaluation was designed to clarify the relationships between the key provisions of Ohio's demonstration and the CMS goals.

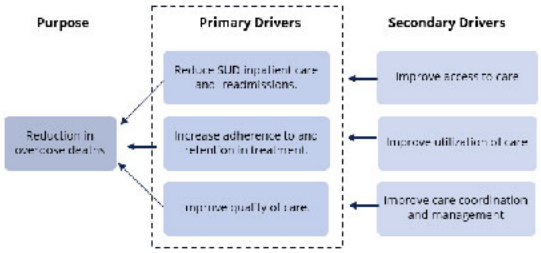
CMS Goals for SUD 1115 Demonstration

1. Increased rates of identification, initiation, and engagement in treatment.
2. Increased adherence to and retention in treatment for OUD and other SUDs.
3. Reductions in overdose deaths, particularly those due to opioids.
4. Reduced utilization of emergency departments (EDs) and inpatient (IP) hospital settings for OUD and other SUD treatment where the utilization is preventable or medically inappropriate through improved access to other continuum of care services.
5. Fewer readmissions to the same or higher LOC where readmissions is preventable or medically inappropriate for OUD and other SUD.

6. Improved access to care for physical health conditions among beneficiaries with OUD or other SUDs.

A driver diagram was developed to depict the hypothesized relationships between the desired outcomes of the demonstration and the factors that are expected to drive improvement (see Figure 1). Within the framework of the driver diagram, CMS Goal 3, reduction of overdose deaths, was viewed as the primary purpose of Ohio's demonstration, while other CMS goals were viewed as drivers of reduction in overdose death.

Figure 1: Primary Purpose and Drivers of Ohio's SUD 1115 Waiver



CMS Goals 1, 2, 4, 5, and 6 were subsumed in three categories of primary drivers. Primary Driver 1, reduction in hospital-based SUD service use and treatment readmissions, aligned with CMS Goals 4 and 5. Primary Driver 2, increased adherence to and retention in treatment, corresponded to CMS Goal 2. Primary Driver 3 combined CMS Goal 1, initiation and engagement in treatment, and CMS Goal 6, access to physical health care, under the umbrella of health care quality. In this model three secondary drivers represented the immediate outcomes of specific programmatic changes in Ohio's implementation plan. Each secondary driver was expected to exert influence on all three primary drivers, and in turn, the primary drivers were expected to impact drug overdose deaths. Research questions and hypotheses were developed to assess these relationships.

Research Questions	Hypotheses
Q1 Does the demonstration increase access to SUD treatment services?	*H1.a* The demonstration will increase the ratio of SUD providers to beneficiaries enrolled in Medicaid and qualified to deliver SUD services.
	H1.b The demonstration will increase the ratio of providers to beneficiaries at each of the levels of care.
	H1.c The demonstration will increase the ratio of providers to beneficiaries in geographic areas that are underserved at baseline.
Q2 Does the demonstration increase utilization of SUD treatment by enrollees with SUD?	*H2.a* The demonstration will reduce the time between initial diagnosis and treatment.
	H2.b The demonstration will increase the rate of MAT usage.
Q3 Does the demonstration improve coordination and management of care?	*H3.a* The demonstration will increase the proportion of IP stays which have a timely follow- up visit with a corresponding primary diagnosis of SUD.
	H3.b The demonstration will increase the proportion of RT visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.
	H3.c The demonstration will increase the proportion of ED visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.

	H3.d The demonstration will decrease high-risk prescribing practices (i.e., high dose, multiple prescribers and pharmacies, concurrent use of benzodiazepines).
Q4 Does the demonstration reduce the utilization of ED and IP hospital settings for OUD and other SUD treatment?	*H4.a* The demonstration will decrease the rate of ED and IP visits within the beneficiary population for SUD.
	H4.b The demonstration will decrease the rate of readmissions to ED and IP settings.
Q5 Does the demonstration improve adherence to SUD treatment?	*H5.a* The demonstration will increase continuity of pharmaceutical care.
Q6 Do beneficiaries receiving SUD services experience an improved quality of care?	*H6.a* The demonstration will increase the percentage of beneficiaries with SUD who receive screening and care for co-morbid conditions.
	H6.b The demonstration will increase early engagement in SUD treatment.
Q7 Does the demonstration reduce rates of opioid-related overdose deaths?	*H7.a* The demonstration will decrease the rate of overdose deaths, including those due to opioids.
Q8 How do costs related to the demonstration waiver change throughout	*H8.a* The demonstration will decrease or have no effect on total costs. The demonstration will increase SUD-IMD, SUD-other, and Non-SUD costs, but decrease IP,

the pre- and post-demonstration periods?	non-ED outpatient, ED outpatient, pharmacy and long-term care costs.

This interim report describes the evaluation methods and preliminary results associated with the key components of Ohio's demonstration that have been implemented to date.

Methods

The evaluation uses a combination of quantitative and qualitative methods to assess the effects of the demonstration. Quantitative measures aligned with each of the hypotheses are constructed primarily from Medicaid claims and eligibility data and computed for each quarter stretching back to 2017 or 2018 depending on the measure. An interrupted time series approach is used to assess changes in the level and trend of the measures from a pre-implementation time period to a post-implementation time period. The post-implementation time period is defined as starting at Q4 2021 and was chosen at the time of developing an evaluation design based on when waiver activities were planned to be completed.

Qualitative data collection and analysis complements the quantitative analysis, allowing for more in-depth examinations of the mechanisms that impact the waiver goals and a more comprehensive understanding of the lived experiences of individuals receiving treatment. The first of two qualitative data collections during the demonstration were conducted as a part of the Mid-Point Assessment (submitted to CMS in December 2022) consisting of semi-structured interviews with key informants such as representatives from state agencies, SUD treatment providers, treatment and recovery advocates, and representatives from managed care organization as well as focus groups with individuals actively receiving SUD treatment. A second data collection is planned for September-November 2024, which is about five years into (and nearing the end of) the demonstration. This will include a second round of interviews with key stakeholders and focus groups with individuals in treatment to understand how changes in processes and services unfolded during the demonstration from a variety of perspectives.

Limitations

A limitation of the study design is a lack of consistent pre-implementation trends in several measures due to the effects of the COVID-19 pandemic. It is likely that in several cases, the pandemic changed the trend of the measure and as a result makes it difficult to attribute changes in the trend of the measure directly to the demonstration versus the pandemic (or the pandemic ending). A related limitation is the delayed implementation of many waiver activities. The time point chosen (Q4 2021) to examine change from the pre-implementation to post-implementation period was based on the planned dates of waiver activities. Since some planned waiver activities were delayed, it raises the question of whether a later date should be used for the start of the post-implementation period in some, or all, of the analysis. As part of the summative report, the evaluation team plans to explore utilizing a later start date as part of a sensitivity analysis to better understand how the date chosen affects the results.

Another limitation is the lack of available data for post-implementation time points at the time this report was written. Several factors including a change in Ohio's vendor that processes the claims data and long measurement periods for some measures makes it such that there were few or only one quarter of data available for the designated post-implementation period, limiting the conclusions that can be made about changes in the measures at this point. In response, evaluators draw limited conclusions from the causal inference portion of the analysis. Additional data points and time for the effects of waiver activities to take place will allow for more robust conclusions about the causal impact of the waiver to be drawn in the summative report.

Preliminary Results and Conclusions

The preliminary findings of the evaluation are encouraging; however, many of the interventions that are central to Ohio's demonstration are still in early stages of implementation. Additional time in the post-implementation phase will permit a comprehensive assessment of cost, quality, and outcomes associated with the demonstration.

There was evidence of improvement in many of the primary and secondary drivers and outcomes that were the focus of the demonstration.

1. Access to SUD treatment providers.

- The trend in the overall ratio of SUD providers to beneficiaries did not substantially change during the post-intervention period, but there was an improved trend in the ratio of providers to beneficiaries for specific levels of care (LOC) 1,2, and 3.
- In underserved areas, there was a significant immediate improvement in access to SUD providers that was associated with the intervention, but also an estimated downward trend in the post-intervention period.
- Access to MOUD providers increased over time during both the pre-intervention and post-intervention periods. There was no significant change associated with the intervention.

2. Utilization of SUD treatment.

- MOUD utilization increased steadily during the pre-implementation period and continued to improve, though at a slower pace, in the post-implementation period.
- MAT/MOUD utilization during residential treatment stays showed a brief decline at the start of the post-intervention period, followed by an estimated trend of more rapid improvement than the post-intervention period.
- Initiation of SUD treatment for new episodes was on a slight downward trend during the pre-intervention period. Additional time points are needed to observe the impact of the demonstration.

3. Coordination and management of care

- Measures related to timely follow-up care showed either no change in trend relative to pre-intervention period or negative trends, though limited post-implementation time points are available.
- Additional time for data collection will be needed to assess changes for measures related to high-risk prescribing practices.

4. Utilization of ED and IP

- ED and IP utilization for SUD decreased significantly in the post-implementation period. Additional time for data collection is needed to assess changes in readmission rates.

5. Adherence of SUD treatment.

- Post-intervention data are not yet available to observe potential changes in continuity of care.

6. Improved quality of care

- Post-intervention data are not yet available to observe the impact of the demonstration on preventable ambulatory care and screening for HIV/HCV/HBC.
- Early engagement in SUD treatment was on a slight downward trend during the pre-intervention period. Additional time points are needed to observe the impact of the demonstration.

7. The primary purpose of Ohio's demonstration was to reduce the overdose death rate, including overdose deaths due to opioids.

- While the interim findings are only available for the first four timepoints of the post-intervention period, the results suggest that there was a significant immediate decrease in the rate of overdose deaths and opioid overdose deaths associated with the start of the post-intervention period, but that the

rates are continuing to increase at a similar trajectory as the pre-intervention period.

8. A key consideration for this evaluation was the impact on cost of care.

- The interim findings suggest that there was a decrease in the trend of total cost of care per member-month during the post-implementation period. In particular, there was an estimated immediate decrease in total ED and IP costs per member-month that aligned with the timing of the demonstration.
- There was also an estimated decrease in the trend of ED and IP costs over time in the post-implementation period suggesting that ED and IP costs continued to decline post-intervention.
- The interim results showed an estimated decrease in the trend over time for outpatient treatment costs in the post-intervention period and a decrease in non-SUD treatment costs associated with the demonstration.

C. General Background Information about the Demonstration

The goal of this SUD 1115 demonstration was to provide Ohio with flexibility and tools to address a growing SUD crisis within the state, including substance misuse, SUD, and opioid overdose deaths and other negative outcomes. During the years prior to the waiver, there were unprecedented increases in the number of individuals with SUD and, concurrently, the number of overdose deaths. By 2018, approximately 9% of the Medicaid non-dually eligible adult population (18-64) had a primary diagnosis of SUD[1], while drug overdose deaths among Ohioans had increased from 1,914 in 2012 to 4,854 in 2017.[2]

The Ohio Department of Medicaid pursued an SUD 1115 demonstration waiver to address these trends and enhance access to evidence-based treatment and

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[1] Ohio Medicaid Administrative Data. Prevalence of primary or secondary SUD diagnosis among non-dual eligible adults 18-64 years of age.
[2] Ohio Department of Health, Bureau of Vital Statistics, 2020 Ohio Drug Overdose Report

prevention of SUD. Through the waiver, the state obtained the authority to provide high-quality, clinically appropriate treatment to beneficiaries with an SUD diagnosis while they were short-term residents in residential and inpatient treatment settings that qualify as IMDs. The waiver supported efforts to increase access to care for individuals in community and home-based settings and improve access to a continuum of evidence-based SUD treatment at varied levels of intensity.

Ohio's Substance Use Disorder (SUD) Section 1115 Demonstration Waiver was approved by the Centers for Medicare and Medicaid Services (CMS) from October 1, 2019, through September 30, 2024. The period covered by this evaluation includes a baseline period prior to the start of the demonstration to assess the impact of waiver-related changes. The evaluation period begins on January 1, 2018,[3] and ends on September 30, 2024. In this interim report, results are generally reported through September 30, 2022. Further details about data availability, relevant changes to billing codes, and specific time periods of analysis by measure, are discussed in section E.3 and E.6.1.4.

The demonstration was expected to impact services for all Medicaid enrollees of any age with a SUD. Ohioans who are not enrolled in Medicaid were also likely to benefit from Medicaid-focused interventions that enhanced the behavioral health system capacity to deliver evidence-based prevention and treatment.

C.1 History of the waiver's implementation

In the years prior to Ohio's SUD 1115 Waiver, the state implemented broad policy changes to modernize its Medicaid behavioral health benefit for individuals with mental health and substance use disorders. These changes, identified as Ohio Medicaid Behavioral Health Redesign (BHR), went into effect in January 2018 and set the stage for improvements in access to evidence based behavioral health treatment and continuity of care that were established under the SUD 1115 waiver.

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[3] A handful of measures which were not expected to be impacted by the overhaul of Ohio's behavioral health system on January 1, 2018 (which included significant changes in Medicaid behavioral health benefits and billing codes) are calculated starting on January 1, 2017. For most other measures, January 1, 2018, was the earliest point that certain relevant Medicaid claims codes were used.

BHR enabled community behavioral health treatment providers to expand the array of services offered for mental health and SUD treatment, offer new evidence-based practices, and aligned SUD outpatient and residential treatment benefits with ASAM levels of care. For example, the redesigned benefit package included new evidence based BH services such as Assertive Community Treatment (ACT) for individuals with complex treatment needs and established a unique benefit package for opioid treatment programs. SUD treatment providers were required to assess and provide services using ASAM criteria with the goal of increasing utilization of community-based and non-hospital residential programs and limiting use of inpatient hospitalizations to situations in which there is a need for safety, stabilization, or acute detoxification (ASAM LOC 4). As of July 1, 2018, the Medicaid behavioral health benefit was integrated into Medicaid managed care. In 2022, 92% of individuals 18-64 with SUD were enrolled in a Medicaid managed care plan.

The SUD 1115 demonstration waiver gives Ohio the opportunity to continue progress with additional flexibility and tools to counter the state's elevated levels of SUD, including OUD. Through this demonstration, Ohio was able to complete a series of programmatic changes that aligned with the program milestones and goals that were established by CMS.

CMS Milestones:

1. Access to critical LOCs for OUD and other SUDs.
2. Use of ASAM placement criteria.
3. Use of ASAM program standards for residential provider qualifications.
4. Provider capacity of SUD treatment including MAT.
5. Implementation of OUD comprehensive treatment and prevention strategies.
6. Improved care coordination and transition between LOCs.

CMS Goals:

1. Increased rates of identification, initiation, and engagement in treatment.
2. Increased adherence to and retention in treatment for OUD and other SUDs.
3. Reductions in overdose deaths, particularly those due to opioids.
4. Reduced utilization of emergency departments (EDs) and inpatient (IP) hospital settings for OUD and other SUD treatment where the utilization is

preventable or medically inappropriate through improved access to other continuum of care services.

5. Fewer readmissions to the same or higher LOC where readmissions is preventable or medically inappropriate for OUD and other SUD.
6. Improved access to care for physical health conditions among beneficiaries with OUD or other SUDs.

Under the Demonstration, Ohio took steps to ensure providers utilized SUD-specific, multi-dimensional assessment tools so that patients received appropriate levels of care (LOC) that reflected evidence-based clinical treatment guidelines. The Medicaid Behavioral Health Provider Manual, managed care provider agreement, and/or Ohio Administrative Code (OAC) were modified to establish provider responsibilities for screening, assessment, and treatment plan review.[4] ODM conducted reviews of provider and plan utilization management (UM) processes and used findings to improve UM and prior authorization approaches, including a standardized prior authorization form for all SUD residential and partial hospitalization services.

Ohio revised regulations, policies, and managed care contracts to align services with national standards and evidence-based practices. Service definitions, eligibility criteria, program requirements and provider qualifications in the Medicaid provider manual were updated to align with ASAM guidance. Residential program standards were updated to include more detail about the types of services, hours of clinical care, and credentials of staff in residential treatment settings. A single statewide vendor was selected to conduct an on-site review process of residential treatment providers to assure they met standards and to manage provider enrollment on an on-going basis. Residential treatment providers were also required to offer or facilitate patient access to MAT.

To address geographic variation in provider capacity, ODM evaluated the distribution and anticipated penetration rates among treatment providers and

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[4] This included, for example, an amendment to Ohio's managed care provider agreement on July 1, 2020, to include the use of ASAM criteria in approvals of inpatient SUD treatment admissions.

used the results to update MCP access standards for Behavioral Health State Plan services including all ASAM LOC and MAT. The new access standards require MCPs to ensure that all members have access to all Medicaid-covered BH services and monitor provider appointment access, time, and distance standards by ASAM LOC. MCPs must also monitor compliance with federal provider panel access standards set forth in 42 CFR 438.206.

Ohio continues to make system improvements to provide more coordinated and comprehensive treatment of Medicaid beneficiaries with SUD. ODM and OhioMHAS worked with MCPs and providers to develop and implement care coordination models that are tailored to individuals' needs including a tiered care coordination strategy and data-driven attribution methodologies. In order to improve care coordination and promote integration of behavioral and physical health care, funding was provided for 80 SUD providers to upgrade their electronic health record systems to enable utilization of Ohio's Health Information Exchanges (HIE). Other data-driven strategies to improve care coordination are still underway, such as enhancements to the state's PDMP that will allow providers to identify individuals that are at increased risk of negative outcomes, including individuals participating in drug court programs and those who have experienced a non-fatal drug overdose.

C.1.1 Status of waiver activities

Several action items were delayed beyond their target completion dates, which has impacted and limited the conclusions that can be drawn from the evaluation in the interim report. Table 1 details the planned and actual implementation dates for waiver activities specified Ohio's approved implementation plan.[5]

[5] Ohio's approved implementation plan

Table 1: Status of Ohio SUD 1115 Waiver Implementation Activities and Timeline

Action Item	Associated Milestone	Planned Date for Implementation	Actual Date of Implementation
Review plan policies for utilization review and prior authorization for compliance.	2	by October 2021	7/1/2021
Review plan delivery for program compliance (e.g., treatment plan, provider qualifications, etc.).	2	by October 2021	7/1/2021
Collect, review, and analyze utilization management information for CY2018.	2	by October 2021	7/1/2021
Based upon review and analysis, develop changes to the utilization management approach that reflect analysis and ensure compliance with ASAM and MHPAE.	2	by October 2021	7/1/2021
Develop necessary guidance to plans and providers regarding the new UM process.	2	by October 2021	7/1/2021
Update the State requirements to reflect residential requirements for the types of services, hours of clinical care and credentials of staff for each ASAM residential LOC.	3	by October 2021	7/1/2023
Require the plans to comply with updated ASAM residential requirements.	3	by October 2021	7/1/2018
Implement a standardized State on-site review process of residential provider qualifications against State requirements for ASAM, including the types of services,	3	by October 2021	7/1/2023

hours of clinical care and credentials of staff for each ASAM residential LOC.			
Implement a single statewide vendor to survey Ohio SUD residential providers to assure they meet certain standards and manage provider enrollment on an on-going basis.	3	by October 2021	7/1/2023
Require the plans to comply with state processes for credentialling SUD residential providers.	3	by October 2021	10/1/2022
Educate abstinence-based residential providers on benefits of MAT accessibility and begin cultural shift toward acceptance of MAT as a complementary treatment.	3	by October 2021	5/3/2023
Require SUD treatment providers to offer access and to facilitate patient access to MAT while in residential settings.	3	by October 2021	7/1/2023
Require the FFS delivery system and the plans to monitor access to MAT in residential settings including access to MAT counseling.	3	by October 2021	7/1/2023
Create a comprehensive access assessment baseline of all SUD providers and all SUD LOC, including MAT capacity.	4	by October 2020	9/1/2020
ODM will create access standards for SUD LOC.	4	by October 2020	2/1/2023
Add an indicator for providers accepting new patients to the plan quarterly network adequacy reports	4	by October 2021	TBD

Require MCPs to update their SUD network development and management plan to specifically focus on SUD provider capacity by LOC, including MAT.	4	by April 2021	2/1/2023
Continue to onboard new EHR and pharmacy dispensing system vendors.	5	by October 2021	Open
Explore the possibility of analysis to correlate long-term opioid use directly to clinician prescribing patterns in conjunction with the ODM (Action item for the Board of Pharmacy).	5	by October 2021	Open
Implement enhanced information within the Ohio Automated Rx Reporting System (OARRS) including: OARRS flags for individuals who are participating in one of Ohio's drug court programs; non-fatal overdose, and naltrexone identification to identify individuals treated for SUD.	5	Over the duration of the waiver	Open
Implement an enforcement plan to minimize the risk of inappropriate overprescribing consistent with prescribing guidelines.	5	Over the duration of the waiver	2011 – 2018
Support behavioral and physical health integration through care coordination and data exchange through increased use of Ohio's Health Information Exchanges	5	None - additional activity not specified in waiver protocol	9/1/2021

(HIE) among inpatient and residential treatment providers.[6]			
Review data and conduct analysis of individuals with SUD.	6	by October 2021	Open
Based upon data analysis, develop care coordination model(s) specific to identified populations.	6	by October 2021	Open[7]
Implement care coordination for identified populations.	6	by October 2021	Open[7]
Implement additional optional SUD residential notification of admission form	6	None - additional activity not specified in waiver protocol	8/1/2022

The items in this table were pulled from Ohio's approved implementation plan, with two additional items added in and noted.

[6] Approximately 80 behavioral health providers were awarded funds to expand their HIE connectivity.

[7] On July 1, 2022, the OhioRISE (Resilience through Integrated Systems and excellence) program was launched. It is a specialized managed care program for youth enrolled in Medicaid with complex behavioral health and multisystem needs. A primary component of OhioRISE is comprehensive, community-driven, care coordination across healthcare, BH care, SUD care, education, families, and other local entities to ensure individual care needs are met. OhioRISE covers children up to age 20, and therefore impacted a portion of the population of interest (individuals 18 years or older) for the interim evaluation. Additionally, as a part of the Next Generation Managed Care, Ohio has made enhancements to the overall managed care coordination model. The new four-tiered approach considers the individuals' involvement with other systems and providers to complement and support care coordination models at the practice level. When individuals are not connected to local or practice level care coordinators, the MCP provides a care coordinator, when needed. This work is ongoing.

Several important action items related to Milestone 3 were delayed including the implementation of new residential treatment program requirements to assure access (e.g., hours of service) and quality (e.g., staff credentials). Of note, the proposed requirement for residential treatment providers to facilitate access to MAT was delayed from its original target date of October 2021 to July 2023. Action items for Milestone 5 related to the use of EHR and pharmacy data systems to establish comprehensive treatment and prevention strategies are still underway. For example, enhancements to the state's PDMP that were planned to help providers identify individuals who have a heightened risk of overdose (e.g., individuals with a prior overdose) are targeted for completion by the end of the demonstration. Finally, there was short delay (< 1 year) in the implementation of several care coordination strategies associated with Milestone 6 that were expected to improve transitions between levels of care.

Many of these delays occurred in response to the COVID-19 pandemic, which we discuss in the next section.

C.2 Impact of COVID-19 on waiver implementation and SUD care

The COVID-19 PHE has impacted some facets of the SUD 1115 Waiver implementation and changed many aspects of SUD care for much of 2020, 2021, and into 2022. As described in the previous section, the diversion in resources required by the PHE delayed some demonstration activities by several months or longer. In addition, many behavioral health services were temporarily interrupted as providers implemented safety measures, purchased PPE, redesigned office workflows and office hours to enable social distancing and transitions to telehealth services were possible. Starting in Q2 of 2020, there was a substantial drop in provider availability ratios (see Table 31,Table 35, Table 37) and in timely follow-up care (see Table 42, Table 43, Table 44). However, access to MOUD was largely maintained during the pandemic (Table 33, Table 40, Table 41).

Another important factor affecting the demonstration was a temporary maintenance of effort (MOE) restriction under the Families First Coronavirus Response Act that limited ODM's ability to disenroll Medicaid recipients beginning in March 2020. This policy led to a substantial increase in Medicaid enrollment,

including the population of non-dual Medicaid enrollees ages 19-64 with SUD who were the focus of this evaluation between 2020 and 2022. As shown in Table 2 and Figure 2 below, Medicaid enrollment for non-dual adults ages 18-64 increased by approximately 340,000 beneficiaries (about 26%) from the first quarter of 2020 to the first quarter of 2022. There was also an increase in the number of non-dual adults ages 18-64 with a SUD diagnosis during the MOE, from 137,475 to 155,028 (13% increase), and those with an OUD diagnosis, from 72,139 to 79,667 (10% increase), between Q1 2020 and Q1 2022.

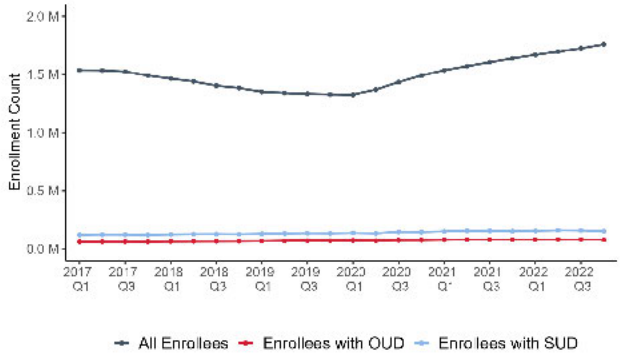
Much of the increase in SUD is related to factors other than Medicaid enrollment. Table 2 shows that there has been a consistent increase in enrollees with SUD and OUD since 2017, even during periods when Medicaid enrollment declined (2017-2020). These trends represent an increased burden on Ohio Medicaid and on the SUD treatment infrastructure over much of the duration of the demonstration period thus far.

Table 2: Ohio Medicaid Enrollment, Non-Duals Ages 18-64 (2017-2022)

Quarter	All Enrollees	Enrollees with SUD	Enrollees with OUD
2017 Q1	1,536,292	121,173	61,034
2018 Q1	1,464,901	124,585	63,445
2019 Q1	1,350,768	129,396	66,565
2020 Q1	1,326,858	137,475	72,139
2021 Q1	1,534,627	150,504	76,936
2022 Q1	1,668,529	155,028	79,667

Source: Ohio Medicaid administrative data, accessed September 2023.

Figure 2: Ohio Medicaid Enrollment, Non-Duals Ages 18-64 (2017-2022)



Source: Ohio Medicaid administrative data, accessed September 2023.

C.2.1 Ohio's response in the public health emergency

While several demonstration action items were delayed and in-person services were temporarily interrupted during the COVID-19 pandemic, several policy changes were enacted to maintain access to behavioral health care during the PHE. On March 19, 2020, Governor DeWine issued an Executive Order requiring emergency enactment of administrative rules to expand telemedicine. The emergency rules implemented the following:

- Allowed asynchronous forms of communication, such as telephone and email.
- Removed the requirement for an initial face-to-face visit so that new patients could also be treated with telemedicine.
- Expanded the types of services that could be provided through telemedicine, such as peer support, SUD case management, crisis intervention, and assertive community treatment.

- Allowed practitioners to provide services remotely to individuals who were staying in a residential facility.
- Allowed individuals in residential facilities who needed to be in quarantine to receive counseling services remotely from their rooms.

At the same time, federal requirements for opioid treatment programs (OTPs) were relaxed to allow at-home delivery of methadone in some circumstances. As a result of this prompt state and federal response to the PHE, most services were only briefly interrupted during the pandemic.

C.2.2 Impact on the interim evaluation

The primary impact of the COVID-19 pandemic on the interim evaluation is that it is limiting in the conclusions that can draw from the data at present. The delays in implementation resulted in some key waiver-related changes to policies and rules occurring after our latest available data (see section E.3 for more discussion about data availability). Other activities occurred within the time frame of available data for the interim evaluation, but late enough that there is not yet sufficient post-trend data to be able to reliably interpret the preliminary trends or ITS findings (e.g. for many measures there are only three post-trend data points). Additionally, in cases where waiver activities have occurred later than the pre-set Q4 2021 post-implementation period start, there is some question as to the appropriateness of interpreting this time point in the ITS models as a relevant point for evaluating change. Finally, in the best-case scenario where waiver activities occurred on schedule and there is sufficient pre- and post-trend Medicaid claims data to determine a causal effect, evaluators still caution against extrapolating from these time points because SUD care was occurring amid a global pandemic for much of the demonstration period. As healthcare utilization begins to return to pre-pandemic patterns (in addition to some new aspects of utilization, such as through expanded telehealth access), we are likely to get better insight into how the waiver will impact outcomes in Ohio in the coming years.

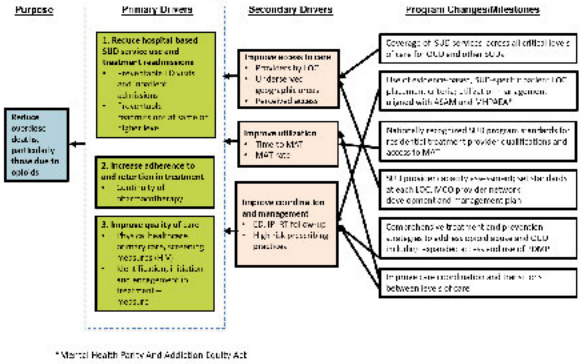
Evaluators believe the present limitations of the interim evaluation analyses, which are primarily attributable to insufficient time points in the evaluation period, after all waiver-related changes will have taken place, provide support for Ohio's application for extension of the 1115 waiver. In section E.7 we discuss plans for analyses in the summative report that will address many of the limitations of the

interim analyses, as well as how an extension to the waiver would create an opportunity for more robust analysis of waiver activities that occurred later in the demonstration.

D. Evaluation Goals, Questions, and Hypotheses

CMS established six goals for the SUD 1115 Waiver, as discussed in section C.1. Goal #3 – reduction of drug overdose deaths – was identified as the demonstration's chief purpose. In order to evaluate Ohio's SUD demonstration waiver, we developed the driver diagram shown in Figure 3 to visually represent the expected primary and secondary drivers that contribute to reducing overdose deaths either directly or indirectly. It also depicts the milestone-driven programmatic changes that will impact the secondary drivers. The demonstration's purpose and three primary drivers align with the six CMS-specified goals, and the three secondary drivers align with the six milestones defined by CMS.

Figure 3: Evaluation Driver Diagram



* Mental Health Parity And Addiction Equity Act

The logic of the driver diagram suggests that a reduction in drug overdose deaths (goal 3) will be achieved most directly by:

1. **Reducing the need for preventable hospital-based care** (goal 4) **and readmissions** (goal 5);
2. **Improving treatment adherence** (goal 2), including continuity of pharmacotherapy; and
3. **Improving the quality of care** through evidence-based treatment engagement (goal 1), and the integration of behavioral health and primary care (goal 6).

Three secondary drivers will indirectly influence drug overdose deaths through their impact on each of the primary drivers. These secondary drivers are:

1. **Improving access to care** by ensuring sufficient provider capacity at each level of care and particularly in underserved geographic areas; (milestone 1, milestone 4)

2. **Improving service utilization**, with a focus on the rate of medication assisted treatment (MAT) and time to MAT (milestone 3, milestone 6); and

3. **Improving care coordination and management**, including emergency department (ED), inpatient (IP), and residential treatment (RT) follow up, and reduction of high-risk prescribing practices (milestone 2, milestone 5, milestone 6)

Finally, the three secondary drivers represent the immediate outcomes of specific programmatic changes that Ohio implemented in response to the SUD 1115 Waiver. These programmatic changes, which were identified within the framework of CMS's six milestones, were hypothesized to impact the secondary drivers in the following ways:

1. Access to care will be improved through programmatic elements focused on **coverage for all critical levels of care** (LOC) (milestone 1), **developing provider networks** and certification of new provider types, and incorporating **access standards** in managed care contracts (milestone 4);

2. Service utilization will be improved through new **residential treatment (RT) program standards** that require access to MAT in RT settings (milestone 3), and **new care coordination approaches** to assure patients are engaged in appropriate LOCs (milestone 6); and

3. Care coordination and oversight will be achieved through use of **evidence-based patient placement criteria** and utilization management approach to assure that services meet the appropriate level of need (milestone 2), **expanded access and use of Ohio's prescription drug management program** (PDMP) to prevent high-risk prescribing (milestone 5), as well as **coordination of services to improve transitions between LOCs** (milestone 6).

The evaluation design was developed to follow the logic of this driver diagram. We identified eight research questions to assess the causal impact of programmatic

changes on secondary drivers, the indirect impact of the demonstration waiver on drug overdose deaths, the primary drivers of these deaths, and the costs associated with SUD care. Each research question and hypothesis aligns with and supports key objectives of Title XIX and XXI or the Social Security Act by supporting efficient and effective administration of Ohio's Medicaid and Children's Health Insurance Programs. The research questions and hypotheses are designed to assess whether Ohio's demonstration advances the quality of care for SUD by improving access to evidence-based treatment while maintaining budget neutrality.

We specify the research questions, their associated hypotheses, and the goals and milestones they were derived from in the next section.

D.1 Questions and Hypotheses

The following questions and hypotheses were examined and tested as part of the evaluation:

Q1 Does the demonstration increase access to SUD treatment services?
Derived from: Secondary Driver #1

> *H1.a* The demonstration will increase the ratio of SUD providers to beneficiaries enrolled in Medicaid and qualified to deliver SUD services.
>
> *H1.b* The demonstration will increase the ratio of providers to beneficiaries at each of the levels of care.
>
> *H1.c* The demonstration will increase the ratio of providers to beneficiaries in geographic areas that are underserved at baseline.

Q2 Does the demonstration increase utilization of SUD treatment by enrollees with SUD?
Derived from: Secondary Driver #2

> *H2.a* The demonstration will reduce the time between initial diagnosis and treatment.
>
> *H2.b* The demonstration will increase the rate of MAT usage.

Q3 Does the demonstration improve coordination and management of care?
Derived from: Secondary Driver #3

H3.a The demonstration will increase the proportion of IP stays which have a timely follow-up visit with a corresponding primary diagnosis of SUD.

H3.b The demonstration will increase the proportion of RT visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.

H3.c The demonstration will increase the proportion of ED visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.

H3.d The demonstration will decrease high-risk prescribing practices (i.e., high dose, multiple prescribers and pharmacies, concurrent use of benzodiazepines).

Q4 Does the demonstration reduce the utilization of ED and IP hospital settings for OUD and other SUD treatment?
Derived from: Primary Driver #1, Goal 4, Goal 5

H4.a The demonstration will decrease the rate of ED and IP visits within the beneficiary population for SUD.

H4.b The demonstration will decrease the rate of readmissions to ED and IP settings.

Q5 Does the demonstration improve adherence to SUD treatment?
Derived from: Primary Driver #2, Goal 2

H5.a The demonstration will increase continuity of pharmaceutical care.

Q6 Do beneficiaries receiving SUD services experience an improved quality of care?
Derived from: Primary Driver #3, Goal 1, Goal 6

H6.a The demonstration will increase the percentage of beneficiaries with SUD who receive screening and care for co-morbid conditions.

H6.b The demonstration will increase early engagement in SUD treatment.

Q7 Does the demonstration reduce rates of opioid-related overdose deaths?
Derived from: Goal 3

H7.a The demonstration will decrease the rate of overdose deaths, including those due to opioids.

Q8 How do costs related to the demonstration waiver change throughout the pre- and post- demonstration periods?

H8.a The demonstration will decrease or have no effect on total costs. The demonstration will increase SUD-IMD, SUD-other, and Non-SUD costs, but decrease IP, non-ED outpatient, ED outpatient, pharmacy and long-term care costs.

E. Methodology

E.1 Evaluation Design

This section describes the analytic methods strategy that was used for the evaluation, including both quantitative and qualitative methods. Summaries of the quantitative and qualitative methods are described below.

E.1.1 Quantitative Methods

Quantitative measures are derived from Ohio Medicaid administrative data (claims/encounters, eligibility, and provider information). The use of Medicaid administrative data allows measures to not only be tracked prospectively but also calculated historically to estimate trends. The primary causal analysis method for the evaluation is an interrupted time series (ITS). Medicaid administrative data are ideal for this method because measures can be constructed over repeated time periods and calculated historically, in many cases, allowing pre-intervention trends to be properly estimated.

After careful consideration, Ohio was not able to identify a feasible in- state or out-of-state comparison population to provide a counterfactual (that is, what might have happened had the waiver program not been implemented) for causal inference. Ohio's interventions are state- and system- wide, and therefore apply to all Medicaid beneficiaries, making in-state comparisons within the Medicaid program infeasible. Also, there was no readily available source of service data from persons who are not enrolled in Medicaid in Ohio. Consequently, there are no opportunities to gather data from a comparison group of Ohio Medicaid enrollees not subject to interventions, or a comparison group of Ohioans who are not enrolled in Medicaid.

During the development of the evaluation design, several national data sources were considered to provide a state-level comparison group. However, because many states already have an 1115 SUD Waiver demonstration or have applied for a waiver to CMS, there were few remaining states to serve as candidates for a valid counterfactual comparison to Ohio. Analysis of summary measures for the states with similar characteristics to Ohio indicated that states without a waiver had a much lower opioid-involved overdose death rate, making them a poor counterfactual comparison to Ohio's experience with the opioid crisis.

Since Ohio had limited options for a valid comparison group, the evaluation utilizes statistical methods that compare the outcomes across time. These methods compare pre- and post- intervention outcomes in a time series controlling for pre-intervention trends. The majority of the proposed evaluation outcomes are derived from Medicaid administrative data and are ideal candidates for a time series modelling approach because they can be calculated over repeated intervals and gathered retrospectively for a period prior to implementation of the demonstration interventions.

An unanticipated complication of the ITS method strategy at the time of the design was created was the COVID-19 pandemic which abruptly changed some healthcare patterns. Given the timing of the pandemic relative to the proposed pre-intervention time period, it is necessary to interpret the findings within that context. The timing of the COVID-19 pandemic makes it difficult to be able to definitively attribute the changes observed in the data to the demonstration versus being an effect of the pandemic. Refer to section C.2.2 for more details.

E.1.2 Qualitative Methods

The quantitative findings of the evaluation are complemented by qualitative data collection and analysis that allows for more in-depth examination of the mechanisms that impact the waiver goals and a more comprehensive understanding of the lived experiences of individuals receiving treatment. The first of two qualitative data collections during the demonstration were conducted as a part of the Mid-Point Assessment (submitted to CMS in December 2022). First, twenty-three semi-structured interviews of 37 key informants were conducted on Zoom between October and December 2020, with 5 follow-up interviews in May 2022. This included interviews with representatives from state agencies, SUD treatment providers, treatment and recovery advocates, and representatives from managed care organizations. Second, between May and July 2021, ten focus groups were conducted on Zoom with individuals actively receiving SUD treatment. Focus groups included between 2 and 11 participants with a total of 79 participants and included treatment providers offering the full range of ASAM LOCs and recovery housing. Focus group participants were engaged in outpatient, intensive outpatient, and residential treatment programs.

This first data collection was targeted to occur in the 12-20 months after the demonstration start date, understanding that most of the demonstration activities would not have been fully implemented at that time. Therefore, the key stakeholders and focus group participants were able to identify many barriers to access and recovery within the behavioral health (BH) system that could be addressed over the course of the demonstration. Additional detail on these qualitative interviews with key stakeholders and focus groups with individuals in treatment can be found in section E.5.2 and E.6.2. A second data collection is planned for September-November 2024, which is about five years into (and nearing the end of) the demonstration. This will include a second round of interviews with key stakeholders and focus groups with individuals in treatment to understand how changes in processes and services unfolded during the demonstration from a variety of perspectives.

E.2 Target Population

While the impact of the demonstration was expected to be broad, the quantitative evaluation focuses on a more limited subset of the population. The target

population is Ohioans ages 18 through 64 during a given measurement period excluding beneficiaries who are dually enrolled in Medicaid and Medicare. Enrollees less than 18 years of age were excluded from the evaluation because adolescents differ substantially from adults in terms of the prevalence of SUD and aspects of treatment that are the focus of this evaluation. Beneficiaries who are dually enrolled in Medicaid and Medicare were also excluded from the analyses because it is not possible to observe all of their health care in Medicaid claims and encounters. Additional inclusion criteria for specific construct measures such as a SUD/OUD diagnosis and/or continuous enrollment are described in Table 4 and in measure specifications in Appendix K.1.

There has not been substantial change in the racial-ethnic or sex makeup of the target population between the first quarter of 2017 and the first quarter of 2022. As shown in Table 3, as of Q1 2022 a sizable majority (72.2%) of the non-dual Ohio Medicaid population with SUD who are ages 18-64 are Non-Hispanic White (72.2%), and a slight majority (51.2%) are male. These demographic groups are both overrepresented in the Ohio Medicaid SUD population relative to their share of the Medicaid population more generally (in the same age range).[8] There has been a slight shift in the age profile of the Ohio Medicaid SUD population since 2017 – there has been a nearly 6 percentage point increase in the proportion of adults who are ages 35-44, and a 3 and 4 percentage point decrease in the share of adults who are ages 18-24 and ages 25-34, respectively.

[8] Ohio Medicaid Demographics Dashboard

Table 3: Demographic Makeup of the Non-Dual Ohio Medicaid Population with SUD Ages 18-64 (2017-2022)

Variable	Subgroup	Percent Q1 2017	Percent Q1 2019	Percent Q1 2022
Race-Ethnicity	Asian, Non-Hispanic	0.3	0.3	0.3
Race-Ethnicity	Black, Non-Hispanic	20.8	19.8	19.4
Race-Ethnicity	Hispanic	1.8	2.2	2.6
Race-Ethnicity	Missing	6.9	4.6	4.8
Race-Ethnicity	Other, Non-Hispanic	0.5	0.6	0.7
Race-Ethnicity	White, Non-Hispanic	69.7	72.5	72.2
Sex	Female	48.1	49.4	48.8
Sex	Male	51.9	50.6	51.2
Age Group	18-24	12.1	10.3	9.3
Age Group	25-34	34.2	33.2	30.4
Age Group	35-44	24.4	26.5	30.2
Age Group	45-54	18.1	17.4	17.5
Age Group	55-64	11.2	12.6	12.6

Source: Ohio Medicaid administrative data, accessed September 2023.

E.3 Evaluation Period

The demonstration waiver period is October 2019 to September 2024. Evaluators used data starting in January 2018 or earlier in their measures and models in order to show outcome trends in the pre-demonstration period. January 2018 is significant because it marked the implementation of Ohio's behavioral health system redesign which included significant changes in Medicaid behavioral health benefits and billing codes. January 1, 2018, was the earliest that certain relevant Medicaid claims codes were used, and since many of the outcome measures are dependent on Medicaid benefits structure, the start date for many of the measures is set at Q1 2018, though some start in Q1 2017 when appropriate (e.g., when the measure was not affected by the change in billing codes). Additionally, due to a transition in the vendors of Ohio Medicaid data, reliable claims data is currently only available through Q3 2022. Therefore, time points in this report are restricted to only show through Q3 2022 or earlier (in cases where the measure requires a longer measurement period that would extend beyond Q3 2022). The one exception is the measures concerning overdose deaths which are reported through

Q4 2022 because they do not utilize the Medicaid claims data. The summative evaluation report will include additional time periods beyond Q3 2022 to fully capture the entirety of the waiver period.

An important consideration when determining the evaluation period is the timing of the implementation of waiver activities that are expected to be the primary drivers of change under the waiver. Based on the state's implementation plan,[9] the majority of the actions related to the milestones were originally scheduled to occur within the first 12 to 24 months of the waiver time period (by October 2020 or October 2021, respectively). However, as mentioned in section C.1.1, the implementation of a number of these activities was delayed and many were implemented after October 2021 or remain in progress. This included a delayed rollout of significant reforms to the Medicaid managed care system due in part to uncertainty related to the COVID-19 public health emergency. In section E.7 we discuss the planned work for the summative report which will benefit from a more expansive evaluation period to allow for the effects of the delayed activities to be observed.

E.4 Evaluation Measures

When available and appropriate, evaluation measures were derived from the SUD 1115 waiver Monitoring Metrics that were approved for Ohio by CMS. Several evaluation measures were calculated using definitions that were established by the Medicaid Outcomes Distributed Research Network (MODRN),[10] a multi-state effort to develop standardized SUD measure specifications and that allow comparison across states. The SUD 1115 Waiver Evaluation Metrics are specified in the "Steward" column of Table 4. In all cases, the Evaluation measures have adjusted measurement periods (with the evaluation measures primarily quarterly, as opposed to the monitoring metrics which are monthly and yearly) and most have

[9] Ohio Section 1115 Substance Use Disorder Demonstration Waiver Proposal

[10] Zivin K, Allen L, Barnes AJ, Junker S, Kim JY, Tang L, Kennedy S, Ahrens KA, Burns M, Clark S, Cole E, Crane D, Idala D, Lanier P, Mohamoud S, Jarlenski M, McDuffie MJ, Talbert J, Gordon AJ, Donohue JM. Design, Implementation, and Evolution of the Medicaid Outcomes Distributed Research Network (MODRN). Med Care. 2022 Sep 1;60(9):680-690. doi: 10.1097/MLR.0000000000001751. Epub 2022 Jul 15. PMID: 35838242; PMCID: PMC9378530.

small deviations in content from the specifications laid out in Version 5 of the 1115 SUD Monitoring Metrics Technical Specifications. Many of the measures utilize a measurement period longer than three months and therefore the evaluation team adopted a strategy of computing some of the measures quarterly using a moving 6-month or 1-year window. For example, measure H3A1 uses a 6-month window for the measurement period. That means that the calculation of the measure for Q1 2019 uses data from January through June in 2019 while the measure for Q2 2019 uses data from April through September 2019. In that case, there are three months of data overlap with the previous quarter calculation. In the case of a year-long window (e.g., H6a1) that increases to 9 months of data overlap. The first quarter of the measurement window is always listed as the quarter attributed to the measure. There were also several cases where refinements to Evaluation measure specifications were made as measure construction began and the utility of each for the evaluation analyses was examined more closely. When substantial, these changes were discussed with and approved by Ohio Medicaid. Table 4 below summarizes the Evaluation measures, but detailed documentation for the construction of all measures can be found in Appendix K.1. Any deviations from the originally proposed measure specifications are noted in this appendix.

Table 4: Summary of Key Evaluation Questions, Hypotheses, Data Sources, and Analytic Approaches

Driver	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
Q1 Does the demonstration increase access to SUD treatment services?						
H1.a The demonstration will increase the ratio of SUD providers to beneficiaries enrolled in Medicaid and qualified to deliver SUD services.						
Secondary Driver: *Improve access to care*	SUD provider availability ratio[11] [quarterly]		The number of providers who were enrolled in Medicaid and delivered SUD services during the measurement period	Number of beneficiaries with an SUD diagnosis during the measurement period	Medicaid administrative data	Interrupted time series
	SUD provider availability ratio – MOUD[11] [quarterly]		The number of providers who were enrolled in Medicaid and provided MOUD (buprenorphine, methadone, or naltrexone)	Number of beneficiaries with an OUD diagnosis during the measurement period	Medicaid administrative data	Interrupted time series
H1.b The demonstration will increase the ratio of providers to beneficiaries at each of the levels of care.						
Secondary Driver: *Improve access to care*	SUD provider availability ratio by level of care[11] [quarterly]		The number of providers who were enrolled in Medicaid and delivered SUD services during the measurement period by category (appropriate sublevels of 1, 2, and 3)	Number of beneficiaries with a SUD diagnosis during the measurement period	Medicaid administrative data	Interrupted time series
H1.c The demonstration will increase the ratio of providers to beneficiaries in geographic areas that are underserved at baseline.						
Secondary Driver: *Improve access to care*	SUD provider availability ratio within underserved areas[11] [quarterly]		The number of providers who were enrolled in Medicaid and delivered SUD services during the measurement period in select counties determined to be underserved based on the number, percentage, and ratio of provider to beneficiaries	Number of beneficiaries with a SUD diagnosis during the measurement period within selected counties	Medicaid administrative data and ODM Provider Address Database	Interrupted time series

[11] We also calculate this using billing providers rather than rendering providers as a supplemental measure. See Appendix K.2 for results.

Driver	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
Q2 Does the demonstration increase utilization of SUD treatment by enrollees with SUD?						
H2.a The demonstration will reduce the time between initial diagnosis and treatment.						
Secondary Drivers: *Improve utilization*	Initiation of SUD Treatment [rolling quarters, 1-year windows]	Based on MM15	The number of beneficiaries who initiated treatment through an IP SUD admission, outpatient visit, intensive outpatient encounter or partial hospitalization, telehealth, or MAT within 14 days of diagnosis	Number of beneficiaries with a new episode of SUD abuse or dependence	Medicaid administrative data	Interrupted time series
H2.b The demonstration will increase the MAT usage rate.						
Secondary Drivers: *Improve utilization*	MOUD usage [quarterly]	Based on MM12; MODRN metric[12]	The number of beneficiaries with an OUD diagnosis who have a claim for MOUD during the measurement period	Number of beneficiaries with an OUD diagnosis during the measurement period	Medicaid administrative data	Interrupted time series
	RT stays with MOUD [quarterly]		The number of RT stays for beneficiaries with a primary OUD diagnosis with MOUD administered or prescribed during the stay or 15 days before the start or after the end of the stay	Number of RT stays for beneficiaries with a primary OUD diagnosis during the measurement period	Medicaid administrative data	Interrupted time series

[12] MODRN metric "Medications for opioid use disorder (OUD) measure"

Driver	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
Q3 Does the demonstration improve coordination and management of care?						
H3.a The demonstration will increase the proportion of IP visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.						
Secondary Driver: *Improve care coordination/ management*	IP follow-up [rolling quarters, 6-month windows]	Based on MM17	Number of IP visits for beneficiaries who have a primary SUD diagnosis and who had a follow-up visit with a corresponding primary SUD diagnosis within 30 days	Number of IP visits for beneficiaries who have a primary SUD diagnosis	Medicaid administrative data	Interrupted time series
H3.b The demonstration will increase the proportion of RT visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.						
Secondary Driver: *Improve care coordination/ management*	RT follow-up [rolling quarters, 6-month windows]	Based on MM17	Number of RT visits for beneficiaries who have a primary SUD diagnosis and who had a follow-up visit with a corresponding primary SUD diagnosis within 30 days	Number of RT visits for beneficiaries who have a primary SUD diagnosis	Medicaid administrative data	Interrupted time series
H3.c The demonstration will increase the proportion of ED visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.						
Secondary Driver: *Improve care coordination/ management*	ED follow-up [rolling quarters, 6-month windows]	Based on MM 17	Number of ED visits for beneficiaries who have a primary SUD diagnosis and who had a follow-up visit with a corresponding primary SUD diagnosis within 30 days	Number of ED visits for beneficiaries who have a primary SUD diagnosis	Medicaid administrative data	Interrupted time series
H3.d The demonstration will decrease high-risk prescribing practices.						
Secondary Driver: *Improve care coordination and oversight*	Use of opioids from multiple providers in persons without cancer [rolling quarters, 1-year windows]	Based on MM 19; adjusted requirement	The number of beneficiaries without cancer who received prescriptions for opioids from four and more prescribers or four or more pharmacies	Number of beneficiaries without cancer during the measurement period	Medicaid administrative data	Interrupted time series
	Use of opioids at high dosage in persons without cancer [rolling quarters, 1-year windows]	Based on MM 18	The number of beneficiaries without cancer who received prescriptions for opioids at high dosage, ≥ 90 morphine milligram equivalents	Number of beneficiaries without cancer during the measurement period	Medicaid administrative data	Interrupted time series

Driver	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
Q4 Does the demonstration reduce the utilization of ED and IP hospital settings for OUD and other SUD treatment?						
H4.a The demonstration will decrease the rate of ED and IP visits within the beneficiary population for SUD.						
Primary Driver: *Reduce hospital-based SUD service use and treatment readmissions*	Emergency department utilization for SUD[13] [quarterly, with 11-month lookback window for defining SUD diagnosis]	Based on MM23	The number of ED visits for SUD during the measurement period	Number of beneficiaries with SUD during the measurement period	Medicaid administrative data	Interrupted time series
	IP stays for SUD[13] [quarterly, with 11-month lookback window for defining SUD diagnosis]	Based on MM24	The number of IP discharges related to a SUD stay during the measurement period	Number of beneficiaries with SUD during the measurement period	Medicaid administrative data	Interrupted time series
H4.b The demonstration will decrease the rate of readmissions to ED and IP settings.						
Primary Driver: *Reduce hospital-based SUD service use and treatment readmissions*	The 30-day IP admission rate for SUD following a RT stay among beneficiaries with SUD [rolling quarters, 1-year windows]	Based on MM25; adjusted index locations	The count of IP admissions within 30-days of the index date: at least one acute admission for SUD within 30 days of the index discharge date	RT discharges among beneficiaries with a SUD diagnosis	Medicaid administrative data	Interrupted time series
	The 30-day ED visit rate for SUD following a RT stay among beneficiaries with SUD [rolling quarters, 1-year windows]	Based on MM25; adjusted index locations	The count of ED visits within 30-days of the index date: at least one acute visit for SUD within 30 days of the index discharge date	RT discharges among beneficiaries with a SUD diagnosis	Medicaid administrative data	Interrupted time series
	The 30-day ED visit rate for SUD following an ED visit among beneficiaries with SUD [rolling quarters, 1-year windows]	Based on MM23/25	The count of ED visits within 30-days of the index date: at least one acute visit for SUD within 30 days of the index discharge date	ED visits among beneficiaries with a SUD diagnosis	Medicaid administrative data	Interrupted time series

[13] We also calculate this for the OUD subpopulation as a supplemental measure. See Appendix K.2 for results.

Driver	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
Q5 Does the demonstration improve adherence to SUD treatment?						
H5.a The demonstration will increase continuity of pharmaceutical care.						
Primary Driver: *Increased adherence to and retention in treatment*	Continuity of pharmacotherapy for opioid use disorder [rolling quarterly, 1-year windows]	Based on MM22; MODRN metric[14]	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	Number of beneficiaries who had an OUD diagnosis and at least one claim for an OUD medication during the measurement period	Medicaid administrative data	Interrupted time series
Q6 Do beneficiaries receiving SUD services experience an improved quality of care?						
H6.a The demonstration will increase the percentage of beneficiaries with SUD who receive screening and care for co-morbid conditions.						
Primary Driver: *Improve quality of care*	Access to preventive/ ambulatory health services for adult Medicaid beneficiaries with SUD [rolling quarters, 1-year windows]	Based on MM32	The number of beneficiaries with SUD who had an ambulatory or preventive care visit during a 12-month period	Number of beneficiaries with SUD during the measurement period	Medicaid administrative data	Interrupted time series
	Screening for HIV/HCV/HBV [rolling quarters, 1-year windows]	Based on MODRN metric[15]	The number of beneficiaries with SUD who were screened for HIV/HCV/HBV during a 12-month period	Number of beneficiaries with SUD during the measurement period	Medicaid administrative data	Interrupted time series
H6.b The demonstration will increase early engagement in SUD treatment.						
Primary Driver: *Improve quality of care*	Initiation and engagement of alcohol and other drug abuse or dependence treatment [rolling quarters, 1-year windows]	Based on MM15	Number of beneficiaries who initiated treatment and who had two or more additional SUD services or MAT within 34 days of the initiation visit	Number of beneficiaries with a new episode of alcohol or other drug abuse or dependence during the measurement period	Medicaid administrative data	Interrupted time series

[14] MODRN metric "Continuity of medications for OUD measure," which is based on the specification from the National Quality Forum (NQF).
[15] MODRN metric "Screening for HIV, HCV, HBV among Enrollees with an OUD diagnosis", with modified age criteria and includes enrollees with an SUD diagnosis.

Driver	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
Q7 Does the demonstration reduce rates of opioid-related overdose deaths?						
H7.a The demonstration will decrease the rate of overdose deaths, including those due to opioids.						
Purpose: *Reductions in overdose deaths particularly those due to opioids*	Rate of overdose deaths [quarterly]	Based on MM27	Number of overdose deaths	Number of beneficiaries/1000	Medicaid and ODH administrative data	Interrupted time series
	Rate of overdose deaths due to opioids [quarterly]	Based on MM27	Number of overdose deaths due to opioids	Number of beneficiaries/1000	Medicaid and ODH administrative data	Interrupted time series

Driver	Measure Description	Steward	Numerator	Denominator	Data Source	Analytic Approach
Q8 How do costs related to the demonstration waiver change throughout the pre- and post-demonstration periods?						
H8.a The demonstration will decrease or have no effect on total costs. The demonstration will increase SUD-IMD, SUD-other, and Non-SUD costs, but decrease IP, non-ED outpatient, ED outpatient, pharmacy and long-term care costs.						
	Total costs [quarterly]	Based on MM 28	Total costs from fee-for-service and encounter claims, including inpatient, outpatient, professional medical, pharmacy, dental, and long-term care for the population of beneficiaries with a SUD diagnosis	Total member-months for beneficiaries with SUD	Medicaid administrative data	Beneficiary-level interrupted time series model
	Total federal costs [quarterly]	Based on MM 28	Total Medicaid costs * federal Medicaid percentage for the population of beneficiaries with a SUD diagnosis	Total member-months for beneficiaries with SUD	Medicaid administrative data	Beneficiary-level interrupted time series model

	SUD-IMD costs [quarterly][16]	*Based on MM 29*	*IMD costs for the population of beneficiaries with a SUD diagnosis*	*Total member-months for beneficiaries with SUD*	*Medicaid administrative data*	*Beneficiary-level interrupted time series model*
	SUD-other costs [quarterly]	Based on MM 28	Costs associated with claims with an SUD diagnosis and/or SUD-related code (procedure, revenue, POS, provider type) for the population of beneficiaries with a SUD diagnosis	Total member-months for beneficiaries with SUD	Medicaid administrative data	Beneficiary-level interrupted time series model
	Non-SUD costs [quarterly]		Costs associated with claims without an SUD diagnosis and without SUD-related code (procedure, revenue, POS, provider type) for the population of beneficiaries with a SUD diagnosis	Total member-months for beneficiaries with SUD	Medicaid administrative data	Beneficiary-level interrupted time series model
	Outpatient costs: non-ED [quarterly]		Costs associated with outpatient and professional medical and dental, non-ED claims for the population of beneficiaries with a SUD diagnosis	Total member-months for beneficiaries with SUD	Medicaid administrative data	Beneficiary-level interrupted time series model
	Outpatient costs: ED [quarterly]		Costs associated with ED claims that do not result in an inpatient admission for the population of beneficiaries with a SUD diagnosis	Total member-months for beneficiaries with SUD	Medicaid administrative data	Beneficiary-level interrupted time series model
	Inpatient costs [quarterly]		Costs associated with inpatient claims for the population of beneficiaries with a SUD diagnosis	Total member-months for beneficiaries with SUD	Medicaid administrative data	Beneficiary-level interrupted time series model
	Pharmacy costs [quarterly]		Costs associated with pharmacy claims for the population of beneficiaries with a SUD diagnosis	Total member-months for beneficiaries with SUD	Medicaid administrative data	Beneficiary-level interrupted time series model
	Long-term care costs [quarterly]		Costs associated with long-term care claims for the population of beneficiaries with a SUD diagnosis	Total member-months for beneficiaries with SUD	Medicaid administrative data	Beneficiary-level interrupted time series model

[16] This measure was not calculated for the interim report because Ohio's designation of a residential IMD is still in development by ODM. It will be calculated for the summative report. This is discussed in further detail in section F.1.

E.5 Data Sources

E.5.1 Quantitative Data

This section provides details on the data sources to be used in the evaluation. See Table 4 for how specific measures relate to these data sources. The primary data source for the evaluation is Medicaid administrative data as supplied to the Ohio Colleges of Medicine Government Resource Center (GRC) by the Ohio Department of Medicaid (ODM). Medical claims and encounter data for professional medical, outpatient facility, inpatient facility, and pharmacy are used to assess service utilization. Eligibility and enrollment records are used to determine eligibility and continuous enrollment criteria.

Cleaning of Medicaid administrative data primarily occurs through eligibility verification and claim adjudication processes. Eligibility verification occurs regularly at Ohio Medicaid to determine whether individuals are eligible for Medicaid benefits and the appropriate category of eligibility. The claims adjudication process validates submitted claims against Medicaid coverage policies. When multiple claims have been submitted by a provider for the same service(s), only the most recent version of the claim is retained for the evaluation. Due to the lag in submitting claims, the evaluation team will use claims on a six-month delay (e.g., claims for services rendered in January 2020 will be included in measures no sooner than July 2020). The evaluation team validated measure results through comparison to other Ohio SUD treatment data work, including but not limited to Ohio's SUD 1115 Monitoring project, the MODRN OUD project, and other SUD work conducted by GRC on behalf of the Ohio Department of Medicaid and Ohio Department of Mental Health and Addiction Services.

In order to answer evaluation question Q7 about the number and rate of overdose deaths, Vital Statistics death records from the Ohio Department of Health (ODH) were utilized for the related measures. These data were provided by ODM and had already been linked to Medicaid administrative data to determine the Medicaid identification number of the individuals.

E.5.2 Qualitative Stakeholder Feedback

E.5.2.1 Key informant interviews

Twenty-three semi-structured interviews of 37 key informants were conducted between October and December 2020, with 5 follow-up interviews in May 2022. Participants included representatives from state agencies (7 interviews of 14 people), SUD treatment providers (7 interviews of 7 people), treatment and recovery advocates (4 interviews of 5 people), and representatives from managed care organizations (5 interviews of 11 people, including 7 BH/medical/clinical directors and 4 administrative directors/staff). Participants were selected from among the SUD 1115 Waiver Stakeholder Advisory Committee members, state policy makers, and managed care plans. State agency representatives were selected to gather the perspectives from key actors responsible for policy development and implementation. Providers and treatment/recovery advocates were selected to ensure representation by geography, populations served, and services provided. Each of Ohio's five managed care plans were included. The characteristics of the key informants who participated in interviews are summarized below. Interviews were conducted over Zoom and were recorded with participant permission.[17] They were then professionally transcribed for qualitative analysis. Each interview lasted approximately one hour, and topics covered the implementation of the 1115 waiver, including access to care along the continuum, MAT, and the impact of the COVID-19 pandemic. Interview guides were tailored to the participants' role in SUD treatment to capture the unique experiences and perspectives of the diverse stakeholders we engaged. The key informant interview guides can be found in Appendix K.3.

E.5.2.2 Key Informant Interview Participants

- State agencies (7 interviews)
  - State mental health agency (4)
  - State Medicaid (3)

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[17] One interview with a state agency was not recorded due to agency policy. Instead, verbatim notes were taken during the interviews.

- Treatment providers (6 interviews)
  - Southwest Ohio provider for women (1)
  - Northeast Ohio providers (2)
  - Northern Ohio adolescent provider (1)
  - Central Ohio MAT provider (1)
  - Statewide professional association for treatment providers (1)
- Treatment & Recovery advocates (4 interviews)
  - Statewide recovery housing representative (1)
  - Statewide SUD recovery advocate (1)
  - Statewide SUD treatment advocacy organization (2)
- Managed Care Plans (5 interviews)
  - Buckeye (1)
  - CareSource (1)
  - Molina (1)
  - Paramount (1)
  - United Health Care (1)

E.5.2.3 Focus groups with individuals with lived experience

Ten focus groups were conducted with individuals actively receiving SUD treatment. Focus groups included between 2 and 11 participants with a total of 79 participants and included treatment providers offering the full range of ASAM LOCs and recovery housing. Focus group participants were engaged in outpatient, intensive outpatient, and residential treatment programs. Table 5 provides characteristics about each focus group. Focus groups were conducted over Zoom between May and July 2021. Participants were recruited with the assistance of treatment and recovery housing providers. Some treatment providers were SUD 1115 Advisory Committee members and others were recommended by state and Advisory Committee partners as attempts were made to reach diverse populations and

regions of the state.[18] All participants were actively enrolled in Medicaid at the time of their focus group. Topics discussed included barriers and facilitators to entering or staying in treatment, MAT, court-involvement in treatment, and the impact of COVID-19 on treatment services. Focus groups lasted one hour, and each participant received a $75 Amazon gift card for their participation. The focus group interview guide is available in Appendix K.4.

Table 5: Focus Group Participants

Care Provided to Participants by Participating Facility	Treatment Demographic	Geographic Region of Facility	# of Participants in Focus Group
Residential treatment	Pregnant women and mothers with young children	Southeast Ohio	11
Residential treatment	Adult men and women	Southeast Ohio	11
Residential treatment	Pregnant women and mothers with young children	Southeast Ohio	5
Recovery housing	Women	Southwest Ohio	10
Outpatient treatment	Adult men and women	Southwest Ohio	6
Residential and IOP treatment	Adult men and women	Northeast Ohio	10
IOP treatment	Adult men and women	Northeast Ohio	2
Opioid Treatment Program and IOP treatment[19]	Adult men and women	Central Ohio	6
Residential, IOP, and recovery housing	Adult men and women	Central and Southwest Ohio	10
Residential, IOP, and recovery housing	Adult men and women	Central and Southwest Ohio	8

[18] Attempts to recruit participants from Northwest Ohio through multiple treatment and recovery housing providers were unsuccessful due to scheduling conflicts and limited interest in participation.
[19] This was a combined group for two facilities.

E.6 Analytic methods

E.6.1 Quantitative Measures

E.6.1.1 Summary-level ITS

The majority of analysis will be conducted with a summary-level interrupted time series, meaning that unit of analysis is the summary measure (e.g., a ratio or percentage) at a given time period rather than individual's outcome at the given time period. Assume an outcome of interest Y across $t = 0, \ldots, m$ time periods. Let t represent the time elapsed, Y_t represent the outcome at time t, W_t represent an indicator variable specifying whether or not time t is part of the post-intervention period, and T_I represent the time point that is the start of the post-intervention period (interruption). Then the ITS regression model is given by:

$$Y_t = \beta_0 + B_1 t + \Delta_1 W_t + \Delta_2 [t - T_I] W_t + \varepsilon_t$$

where β_0, $\beta_1$represent the pre-intervention intercept and slope respectively, Δ_1 represents the level (intercept) change at T_I, and Δ_2 represents the change in the slope during the post-intervention period. The variable ε_t represents random gaussian error in the time series outcome at time t. The coefficients Δ_1 and Δ_2 are the causal parameters of interest in the model.

One important consideration in time series models is autocorrelation, meaning the outcome at a point in time is correlated with its past values. Auto-correlation can violate the linear regression model's assumption that errors are independent over time. In order to account for auto-correlation in the data, the Newey-West estimator[20] was utilized for the calculation of standard errors.

For a few of the quarterly measures, the evaluation team observed seasonality in the data, where in certain times of year an event (e.g. ED visits) are much more or less common. In order to take this into account for the analysis in these circumstances, three additional parameters and associated indicators were added

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[20] Newey, W. K., & West, K. D. (1986). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix.

to the model to adjust for the seasonality effect. Let Q_2, Q_3, Q_4 be indicators for the time period being the 2nd, 3rd, and 4th quarter of the year. Then the following model adjusts for the seasonality in the data while still allowing us to estimate changes in the slope and intercept of the trend.

$$Y_t = \beta_0 + B_1 t + \Delta_1 W_t + \Delta_2 [t - T_I] W_t + \lambda_2 Q_2 + \lambda_3 Q_3 + \lambda_4 Q_4 + \varepsilon_t$$

E.6.1.2 Beneficiary-level ITS

A beneficiary-level interrupted time series model was utilized for measures associated with Q8, concerning per-beneficiary quarterly cost data (capitation and claim cost). The unit of analysis in the model are individuals rather than aggregate measures. This approach allows for the model to control for individual-level demographics (e.g., age, race, gender).

Let the outcome Y be the cost per member month. Then Y_{it} is the cost per member month for individual i at time t. The evaluation team explicitly modelled Y_{it} as a function of time, the intervention time period, and individual-level characteristics. All of the cost categories considered had many values of zero in the data when considered at a per-quarter per-person level. In order to better account for the zeros, the evaluation team utilized a zero-inflated generalized linear model. Zero-inflated models have two parts: a zero-inflation model and a conditional model. First, the zero-inflation model estimates the probability an observation is a zero given a set of predictors using a logistic regression model. Next, the conditional model estimates the outcome, conditional on it being greater than zero. The evaluation team considered Poisson, negative binomial, and log linear regression models for the conditional model form. Ultimately, from considering how different model types fit the data, a log linear regression model was chosen.

The data contains multiple observations per beneficiary across the different quarters. As a result, the outcomes are correlated with one another. To take into account this within-beneficiary dependence the evaluation team utilized random-effects at the beneficiary level in both the zero inflation and the conditional log linear regression parts of the model. Random effects models take into account within-person dependence by assuming a person-level random effect that is constant over time. The evaluation team considered GEE (Generalized Estimating

Equations) as an alternative but found no available software to do compute zero-inflated GEE models.

Fixed-effects parameters for age, sex, and race-ethnicity were included in the models to control for changes in demographics over time. A separate model was fit for each cost outcome: total, total federal, SUD-other, non-SUD, outpatient non-ED, outpatient ED, IP, pharmacy, and long-term care costs.

The zero-inflation models have the form:

$$\text{logit}(P_{it}) = \beta_0{}^z + X'\theta^z + B_1{}^z t + \Delta_1{}^z W_t + \Delta_2{}^z [t - T_I] W_t + \omega_i{}^z$$

and the conditional models have the form:

$$\log(Y_{it}) = \beta_0{}^c + X'\theta^c + B_1{}^c t + \Delta_1{}^c W_t + \Delta_2{}^c [t - T_I] W_t + \omega_i{}^c + \varepsilon_{it}{}^c.$$

The superscripts "z" and "c" are meant to denote the zero-inflation and conditional model parameters to make it clear that these parameters are not shared between models. P_{it} represents the probability that the cost for individual i at time t is zero, $X'\theta^z$ and $X'\theta^c$ represent the demographic variables and coefficients for both models, $\omega_i{}^z$ and $\omega_i{}^c$ represent the random effects for the two parts of the model, and $\varepsilon_{it}{}^c$ represents the random gaussian error for the outcome for individual i at time t. As in the earlier ITS model, the B_1 parameters estimate the pre-intervention slope, the Δ_1 parameters estimate the intercept change at time T_I, and the Δ_2 parameters estimate the change in slope in the post-intervention period. Given the outcomes are on the logit and log scales respectively, the exponentiated coefficients will represent odds ratios in the case of the zero-inflation model and multiplicative ratios in the case of the conditional cost portion of the model.

The final dataset containing observations for each beneficiary and quarter contained almost 5 million rows of data for over 600,000 unique beneficiaries. Given the high computational cost to fit the complex models, instead of using the entire dataset to fit the models, the evaluation team took a smaller random sample of 100,000 beneficiaries and all their associated quarterly observations (approximately 1/6 of the full data) to fit the model. This decreased the computational cost of fitting the models while yielding very similar parameter

estimates as using the entire dataset in the evaluation team's tests. Models were fit in R version 4.2.2[21] using the glmmTMB package.[22]

In a few cases, the cost measure had a very high proportion of quarterly costs that were zero and the full model was not able to be fit due to convergence problems. In those cases, the evaluation team used a reduced parameterization for the conditional portion of the model which eliminated the demographic covariates and the random effects which leads to a model form in the conditional model of

$$\log(Y_{it}) = \beta_0{}^c + B_1{}^c t + \Delta_1{}^c W_t + \Delta_2{}^c [t - T_I] W_t + \varepsilon_{it}{}^c$$

Note that the demographic covariate and random effects parameters were still used for the zero-inflated portion of the model in this case.

E.6.1.3 Hypothesis Testing

As part of the model output, two-tailed hypothesis tests were performed on all model parameters. All p-values reported in the report are two-tailed and unadjusted for multiple testing. Given the limited data in the post-intervention period and the plan to utilize additional data points for future analysis, the model parameter estimates, and associated p-value should be considered preliminary and subject to change after gathering additional data.

E.6.1.4 Time periods for ITS

The start of the post-implementation period for the ITS models was proposed to be Q4 2021 in the evaluation design because that is when the majority of actions related to the milestones were expected to be complete. As aforementioned, a delay in the implementation of many demonstration activities as a result of the COVID-19 pandemic calls the appropriateness of that date into question. As a

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[21] R Core Team (2023). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

[22] Brooks ME, Kristensen K, van Benthem KJ, Magnusson A, Berg CW, Nielsen A, Skaug HJ, Maechler M, Bolker BM (2017). "glmmTMB Balances Speed and Flexibility Among Packages for Zero-inflated Generalized Linear Mixed Modeling." *The R Journal*, 9(2), 378–400. doi:10.32614/RJ-2017-066.

result, in addition to the planned analysis under the original timepoint of Q4 2021, in the summative report, evaluators will plan to conduct a sensitivity analysis with a later starting point(s) for the post-implementation period that align more accurately with the actual implementation dates. This will be completed as part of the final evaluation report given the need for additional time periods in order to support a later pre-post transition date.

Table 6 summarizes the time periods used for each measure in the analysis for the interim report. See section E.3 for more discussion of the justification for the starting data point for measures. Any deviations from the time periods proposed in the approved evaluation design are shown in Table 6 and discussed below.

Table 6: Summary of ITS measures and time periods

Hypothesis	Measure	Earliest Data Point	Final Data Point	Start of Post-Implementation Period for ITS Model
H1.a1	SUD Provider Availability Ratio [quarterly]	Q3 2018*	Q3 2022	Q4 2021
H1.a2	SUD Provider Availability Ratio – MOUD [quarterly]	Q1 2017	Q3 2022	Q4 2021
H1.b1	SUD Provider Availability Ratio by Level of Care [quarterly]	Q3 2018*	Q3 2022	Q4 2021
H1.c1	SUD Provider Availability Ratio within Underserved Areas [quarterly]	Q3 2018*	Q3 2022	Q4 2021
H2.a1	Initiation of SUD Treatment [rolling quarters, 1-year windows]	Q1 2018	Q4 2021	Q4 2021
H2.b1	MOUD Usage [quarterly]	Q1 2017	Q3 2022	Q4 2021
H2.b2	RT Treatment Stays with MOUD [quarterly]	Q1 2018	Q3 2022	Q4 2021
H3.a1	IP Follow-Up [rolling quarters, 6-month windows]	Q1 2017*	Q2 2022	Q4 2021
H3.b1	RT Follow-Up [rolling quarters, 6-month windows]	Q1 2018	Q2 2022	Q4 2021

H3.c1	ED Follow-Up [rolling quarters, 6-month windows]	Q1 2017*	Q2 2022	Q4 2021
H3.d1	Use of Opioids from Multiple Providers in Persons Without Cancer [rolling quarters, 1-year window]	Q1 2017	Q4 2021	Q4 2021
H3.d2	Use of Opioids at High Dosage in Persons Without Cancer [rolling quarters, 1-year window]	Q1 2017	Q4 2021	Q4 2021
H4.a1	Emergency Department Visits for SUD[23] [quarterly, with 11-month lookback window for defining SUD diagnosis]	Q1 2018*	Q3 2022	Q4 2021
H4.a2	IP Admissions for SUD[23] [quarterly, with 11-month lookback window for defining SUD diagnosis]	Q1 2018*	Q3 2022	Q4 2021
H4.b1	The 30-day IP Admission Rate for SUD Following a RT Stay Among Beneficiaries with SUD [rolling quarters, 1-year windows]	Q1 2018	Q4 2021	Q4 2021
H4.b2	The 30-day ED Visit Rate for SUD Following a RT Stay Among Beneficiaries with SUD [rolling quarters, 1-year windows]	Q1 2018	Q4 2021	Q4 2021
H4.b3	The 30-day ED Visit Rate for SUD Following an ED Visit Among Beneficiaries with SUD [rolling quarters, 1-year windows]	Q1 2018	Q4 2021	Q4 2021
H5.a1	Continuity of Pharmacotherapy for Opioid Use Disorder [rolling quarters, 1-year windows]	Q1 2017	Q4 2021	Q4 2021
H6.a1	Access to Preventive/ Ambulatory Health Services for Adult Medicaid Beneficiaries with SUD [rolling quarters, 1 -year windows]	Q1 2018	Q4 2021	Q4 2021
H6.a2	Screening for HIV/HCV/HBV [rolling quarters, 1-year windows]	Q1 2018	Q4 2021	Q4 2021

[23] We also calculate this for the OUD subpopulation as a supplemental measure. See Appendix K.2 for results.

H6.b1	Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment [rolling quarters, 1-year windows]	Q1 2018	Q4 2021	Q4 2021
H7.a1	Rate of Overdose Deaths [quarterly]	Q4 2019*	Q4 2022	Q4 2021
H7.a2	Rate of Overdose Deaths Due to Opioids [quarterly]	Q4 2019*	Q4 2022	Q4 2021
H8.a1	Total Costs Per-Beneficiary [quarterly]	Q1 2018	Q2 2022	Q4 2021
H8.a2	Total Federal Costs Per-Beneficiary [quarterly]	Q1 2018	Q2 2022	Q4 2021
H8.a3	SUD-IMD Costs Per-Beneficiary [quarterly]	TBD	TBD	Q4 2021
H8.a4	SUD-other Costs Per-Beneficiary [quarterly]	Q1 2018	Q2 2022	Q4 2021
H8.a5	Non-SUD Costs Per-Beneficiary [quarterly]	Q1 2018	Q2 2022	Q4 2021
H8.a6	Outpatient non-ED Costs Per-Beneficiary [quarterly]	Q1 2018	Q2 2022	Q4 2021
H8.a7	Outpatient ED Costs Per-Beneficiary [quarterly]	Q1 2018	Q2 2022	Q4 2021
H8.a8	Inpatient Costs Per-Beneficiary [quarterly]	Q1 2018	Q2 2022	Q4 2021
H8.a9	Pharmacy costs - ED Costs Per Beneficiary [quarterly]	Q1 2018	Q2 2022	Q4 2021
H8.a10	Long-term care costs - ED Costs Per-Beneficiary [quarterly]	Q1 2018	Q2 2022	Q4 2021

* Represents a deviation from the originally proposed design. The reasons for the deviations are discussed in the text below.

As specified in Table 6 above, the starting point for measures H1A1, H1B, and H1C (SUD provider availability ratios) deviated from what was listed in the originally proposed design. As discussed in section C.1, BH Redesign, which involved broad policy changes to modernize Ohio Medicaid's behavioral health benefit, went into effect in January 2018 and resulted in a substantial change in billing and service codes for SUD and MH providers, as well as credentialing of new providers such as Licensed Independent Social Workers (LISWs). The combination of a large number

of new codes that providers could use to bill, in addition to an influx of newly credentialed providers beyond clinicians, resulted in an expansion of the number of providers delivering SUD services in 2018. This policy change is reflected in numerator counts for measures H1A1, H1B, and H1C, all of which count the number of providers delivering SUD services. Evaluators determined that including time points prior to Q3 2018 in the ITS models for these measures would bias the pre-trend slope, as the observed jump in rates in Q3 2018 is indicative of the BHR policy changes rather than an expansion in the number of SUD providers due to waiver-related changes. Measure H1A2 was not similarly affected by BHR because billing codes for MOUD were not substantially changed, and therefore the number of MOUD providers did not have a corresponding increase in reaction to BHR. Therefore, evaluators retained the earlier start point (Q1 2017) for H1A2 – SUD provider ratio for MOUD.

The start points for measure H3A1 (IP follow-up) and H3C1 (ED follow-up) were updated from the original proposal to now include data back to Q1 2017. The start point was originally set at Q1 2018 because evaluators were uncertain whether these were outcomes that would have been affected by the BHR overhaul. After evaluating the 2017 trends, it was determined that the data for this year was consistent with 2018, and that IP (H3A1) and ED (H3C1) follow-up would have been minimally impacted by the 2018 change in billing codes. Evaluators retained the originally proposed Q1 2018 start date for H3B1 (RT follow-up) because RT was billed differently in 2017 than in later years and therefore the data is not comparable.

The start points for H4A1 (ED visits for SUD) and H4A2 (IP admissions for SUD) were also updated from the originally proposed Q1 2017 date. In the interim analysis this start date was modified to Q1 2018 because the measure specifications (based off monitoring metrics 23 and 24, respectively) necessitate an 11-month look back window for the SUD diagnosis.

Finally, in the approved evaluation design the evaluators proposed a Q1 2018 start date for H7A1 (Rate of overdose deaths) and H7A2 (Rate of overdose deaths due to opioids). For the interim analysis, this was modified to Q4 2019 for both measures due to data quality concerns for 2018 and part of 2019. The end date for the

interim analysis was Q4 2022 because of increased data availability relative to the other claims-based measures.

E.6.1.5 Descriptive Statistics

In addition to the formal models, for all measures the evaluation team created graphics and tables of the measures by quarters. In the case of measures associated with Hypothesis 1 concerning provider availability, the evaluation team computed alternative measure specifications that counted unique billing providers instead of rendering providers. Supplemental measures were also computed for measure H4A1 and H4a2 which utilized the OUD subpopulation instead of the SUD subpopulation. See Appendix K.2 for results for the supplemental measures.

The evaluation team had originally proposed additional descriptive analyses in the evaluation design concerning time and distance standards, state comparisons using the Medicaid Outcomes Distributed Research Network (MODRN) and calculating measures for specific subpopulations. Those analyses were unable to be completed at this time, but will continue to be considered, if feasible, as part of the summative report.

E.6.2 Qualitative Stakeholder Feedback

Once professionally transcribed, all qualitative data from key informant interviews and focus groups were uploaded to ATLAS.ti for content analysis using a multiple coding approach in which passages of text could be categorized with one or more relevant code. For each data collection effort, we used a multi-stage approach to qualitative coding. First, the project team generated a coding frame through a combination of deductive and inductive methods. The team leveraged the subject matter and policy expertise of our 6-member coding team, which included a PhD social epidemiologist and a PhD urban sociologist, to identify prominent themes embedded in the extant literature on substance use disorder and SUD treatment. Next, two team members independently coded each transcript, with coders allowed to add codes to the frame as they reviewed the transcripts. The team met weekly for informal intercoder comparisons and discussions, followed by additional coding and refinement of the coding frame. This iterative process continued until all 34 transcripts were coded.

For the analysis of key informant interview data, the team developed more than 149 codes grouped into 27 overarching themes, including Best Practices, Medication Assisted Treatment, ASAM levels of care, Care Coordination, Quality of Care, COVID-19, Structural Factors, Cultural Competency, Stigma, Criminal Justice System, Geographic Differences, Technology, 12-Step Programs, Waiver Design & Implementation, Rules & Regulations, Data and Data Tracking, Market Factors, Collaboration, and Community. For the analysis of focus group data, we developed more than 173 codes grouped into 31 overarching themes. Many of these overlapped with the themes identified for analysis of key informant interviews, with the addition of themes such as Barriers to Accessing, Entering, or Staying in Treatment, Triggers to Leaving Treatment, Factors Facilitating Entering or Staying in Treatment, Experiences with Treatment Providers, Environmental Factors, Insurance, Family, Behavioral Health, Physical Well-Being, Peer Supports/Recovery, and the Addiction Cycle.

Once all transcripts were coded, the files were merged, codes were deduplicated, and areas of inconsistency were flagged. The analytics leads then met to discuss overlaps and divergences in coding and resolved any outstanding discrepancies. Finally, the team reviewed code densities, co-occurrences, and relationships between topics, and generated reports in ATLAS.ti to assess patterns emerging in the data.

E.7 Plans for the summative report

The summative evaluation report, which will be submitted within 18 months of the end of the demonstration period (September 30, 2024) is scheduled to be completed at a time point that will allow for analyses to include at least six years of data. Evaluators will be able to utilize Medicaid claims data for the entirety of this time period, as the vendor transition for Ohio Medicaid administrative data and subsequent quality control reviews will be completed in 2024. The longer time period for the summative evaluation presents the opportunity for a post-intervention period of at least one year, if not longer, for all measures. If CMS approves Ohio's request for an extension to the 1115 demonstration waiver, there is potential for an even longer post-intervention period, with additional time points that can increase the robustness of the interrupted time series analysis. Additionally, the longer evaluation period will allow for the selection of a starting

point for the post-implementation period that more accurately aligns with the actual (versus planned) implementation dates for relevant waiver activities, which increases the validity of a causal analysis of the impact of these activities on the outcomes of interest. Finally, evaluators plan to conduct a supplementary sensitivity analysis in the summative report to explore how the selection of a start point for the post-implementation period impacts the results from the ITS analysis.

Evaluators also plan to expand the set of descriptive analyses presented in the interim report to explore the demographics of the Medicaid population who have died from overdose during the demonstration. This will present an opportunity to examine how waiver changes may have affected demographic groups in different ways, and subpopulations for whom more targeted support is required. Additionally, we plan to create maps for measures with geographic components, such as provider availability ratios, in order to provide visual representations of how these outcomes have changed over time.

F. Methodological Limitations

F.1 Quantitative analysis

A limitation of the study design is a lack of consistent pre-implementation trends in several measures due to the effects of the COVID-19 pandemic. It is likely that in several cases, the pandemic changed the trend of the measure and as a result makes it difficult to attribute changes in the trend of the measure directly to the demonstration versus the pandemic (or the pandemic ending). A related limitation is the delayed implementation of many waiver activities, often as a result of the COVID-19 pandemic. As discussed in sections C.1,C.2,C.2.2, and E.3, the time point chosen (Q4 2021) to examine change from the pre-implementation to post-implementation period was based on the planned dates of waiver activities. Since some planned waiver activities were delayed, it raises the question of whether a later date should be used for the start of the post-implementation period in some, or all, of the analysis. As part of the summative report, the evaluation team plans to explore utilizing a later start date as part of a sensitivity analysis to better understand how the date chosen affects the results.

Another limitation is the lack of available data for post-implementation time points at the time this report was written. Several factors including a change in Ohio's vendor that processes the Medicaid claims data and long measurement periods for some measures makes it such that there were few or only one quarter of data available for the designated post-implementation period, limiting the conclusions that can be made about changes in the measures at this point. In response, evaluators draw limited conclusions from the causal inference portion of the analysis. Additional data points and time for the effects of waiver activities to take place will allow for more robust conclusions about the causal impact of the waiver to be drawn in the summative report.

There are also some limitations inherent to a study that relies on administrative data to assess the state of SUD in a population. This type of data source is likely to undercount SUD prevalence in the Ohio Medicaid population because these statistics only capture individuals who have interacted with the healthcare system and received a diagnosis. Other studies have found evidence of this undercounting of OUD prevalence in the Medicaid population in Ohio.[24] The COVID-19 pandemic likely exacerbated this undercount, as the PHE hindered detection and diagnosis of SUD.

When assessing the causal impact of changes that occurred under the waiver, it's also important to consider that many of the outcome measures may be simultaneously influenced by social determinants of health, the nonmedical factors that influence health outcomes. This was a recurring theme of the feedback received in focus groups with beneficiaries, particularly in the context of accessing and remaining in treatment. While changes under the waiver are certainly one dimension that will influence outcomes, there are many other drivers – housing, financial security, employment, familial support – that are outside of the purview of the waiver but are often critical determinants of an individual's ability to receive care.

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[24] Doogan NJ, Mack A, Wang J, Crane D, Jackson R, Applegate M, Villani J, Chandler R, Barocas JA. Opioid Use Disorder Among Ohio's Medicaid Population: Prevalence Estimates From 19 Counties Using a Multiplier Method. Am J Epidemiol. 2022 Nov 19;191(12):2098-2108. doi: 10.1093/aje/kwac154. PMID: 36004683; PMCID:PMC10144717.

Finally, measure H8A3 – SUD-IMD costs – cannot be calculated in the interim report because a designation of residential IMD is pending in Ohio. In Ohio, institutional/hospital-based IMDs are identified using state-specific Provider Type 02 (Psychiatric Hospital) with state-specific Provider Specialty 018 (IMD). As a part of the 1115 Demonstration, the Ohio Department of Medicaid is collaborating with Ohio Department of Mental Health and Addiction Services to develop a method to identify bed counts at residential IMDs in Ohio. This method is still in development, but once the bed count method is finalized by the state, SUD-IMD costs will be calculated and included in the summative report.

F.2 Qualitative analysis

There are also some limitations inherent to the qualitative data presented in this report. Most centrally, the key informant interview and focus group participants were not randomly sampled from their target populations and, therefore, the qualitative findings discussed in this report are not generalizable to the broader population. Rather, they are indicative of the specific experiences and views of the participants, which may or may not be shared by the general population. For example, for key informant interviews, SUD treatment providers and recovery advocates were recruited from the SUD Stakeholder Advisory Committee, limiting feedback collected to potentially better-informed individuals who were closely engaged with waiver planning and implementation activities. While these providers may have more intimate knowledge of the state's waiver progress than other providers around the state, their experiences of SUD treatment in Ohio may not be the average experience. For focus groups, we attempted to recruit diverse participants from treatment centers around the state, but the final sample lacked representation from northeast Ohio and for some subpopulations, such as LGBTQ+, immigrant, returning citizen, non-English speaking, and Hispanic populations. Additionally, focus group recruitment strategies failed to engage individuals who left treatment early or had not yet started treatment, so the narratives we gathered are to some extent those of the "success stories." Therefore, there may be additional barriers to entering or staying in treatment or challenges faced by individuals needing treatment which are not reported in our summaries of the lived experiences of individuals with SUD.

However, despite the fundamental limits to the generalizability of our stakeholder feedback, we report these stories due to the inherent importance of each person's

experience and we attempt to triangulate any claims made with other sources of data. The geographic coverage across the state of both treatment providers interviewed and individuals in treatment in focus groups, as well as the breadth of roles of key informants interviewed, have provided us with a variety of unique perspectives and experiences to help shed light on what it is like to receive substance use disorder treatment in Ohio.

G. Results

G.1 Quantitative Results

This section contains interim results for each of the measures in Table 4. For measures related to Hypotheses 1 through 7, the quarterly measures are plotted in order to visually see patterns and then model results are presented and discussed. The trend lines represented in the plots by solid-colored lines correspond to the parameters from the ITS models. In cases where there were too few time points in the post-implementation period to fit a model with the causal parameters of interest, only the measure plots with the pre-implementation trend are shown. Tables that include the numerators and denominators for each quarter are included in Appendix K.2.

Results for cost measures related to Hypothesis 8 are displayed slightly differently. First, the unadjusted costs per member month are shown graphically to get a sense of the trend pattern. These are referred to as "unadjusted" because the statistical models that were used to estimate effects of the demonstration were adjusted for demographics (age, sex, race-ethnicity) at the beneficiary level. Therefore, the model parameters might not correspond exactly to the patterns in the graphics. Afterwards, model results are presented for each cost measure and are discussed.

The model results for measures related to Hypothesis 8 differ from those related to Hypotheses 1 through 7 in that more complex beneficiary-level models were fit to data, and therefore they have a more complicated set of parameters and interpretations. In this section, only parameters related to the causal parameters of interest are shown in the tables, but full model results are included in Appendix K.2. Note that the interpretation of the *exp(Estimate)* column in the model results tables will differ for the conditional and the zero-inflated parts of the model. For

the conditional part of the model the numbers in the *exp(Estimate)* column can be interpreted as the estimated multiplicative change in the cost per member-month for the given variable. For the zero-inflated part of the model the numbers in the *exp(Estimate)* column can be interpreted as an estimated odds ratio for the cost being zero.

Q1: Does the demonstration increase access to SUD treatment services?

H1A: The demonstration will increase the ratio of SUD providers to beneficiaries enrolled in Medicaid and qualified to deliver SUD services.

H1B: The demonstration will increase the ratio of providers to beneficiaries at each of the levels of care.

H1C: The demonstration will increase the ratio of providers to beneficiaries in geographic areas that are underserved at baseline.

Measure H1A1: SUD provider availability ratio

- Numerator: The number of providers who were enrolled in Medicaid and delivered SUD services during the measurement period
- Denominator: The number of beneficiaries with a SUD diagnosis during the measurement period

Measure H1a1 considers the ratio of providers delivering SUD services to beneficiaries with an SUD diagnosis, with a higher ratio indicating more capacity. Figure 4 shows that prior to Q3 2018, the ratio was quite a bit lower than the ratio from Q3 2018 to Q3 2021. This was likely a result of policy changes implemented as part of the Ohio Behavioral Health Redesign in 2018, which required all rendering providers to be enrolled in Medicaid and identified on billing claims. As a result, in the analysis of the trend of the measure, we exclude those data points prior to Q3 2018 as they don't align with the rest of the pre-intervention trend.

The overall trend of the ratio appears to be slightly decreasing in both the pre-intervention and post-intervention periods. Based on the model results (Table 7), there was no immediate causal effect of the demonstration on the ratio of SUD providers to beneficiaries. However, there was a slight change in the trend in the positive direction of the ratio in the post-intervention period relative to the pre-intervention period, though more observations would be needed to make a stronger claim.

Figure 4: Measure H1a1: SUD provider availability ratio

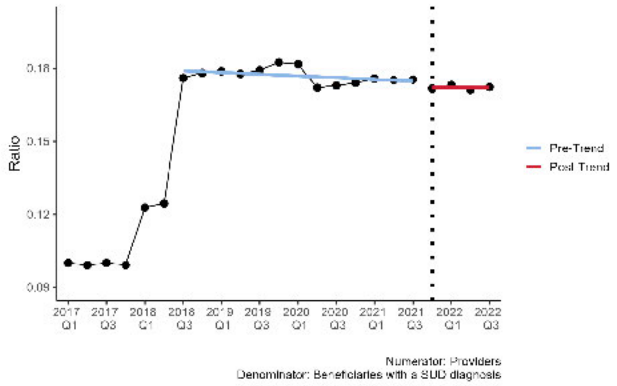


Table 7: H1a1 Interim ITS Model Results

	Estimate	SE	t	p-value
Intercept	0.18148	0.00153	118.24773	< 0.0001
Time	-0.00036	0.00011	-3.36865	0.00504
Intervention	-0.00219	0.00141	-1.55787	0.14327
Time Since Intervention x Intervention	0.00031	0.00013	2.39664	0.03229

Measure H1A2: SUD provider availability ratio - MOUD

- Numerator: The number of providers who were enrolled in Medicaid and provided MOUD (buprenorphine, methadone, or naltrexone) during the measurement period
- Denominator: The number of beneficiaries with an OUD diagnosis during the measurement period

Measure H1A2 is calculated as the ratio of MOUD providers to beneficiaries with an OUD diagnosis and appears to be steadily increasing on average across all time periods (Figure 5). Based on the model results (Table 8), there was not significant evidence of a causal effect of the demonstration in this measure up to this point.

Figure 5: Measure H1a2: SUD provider availability ratio MOUD

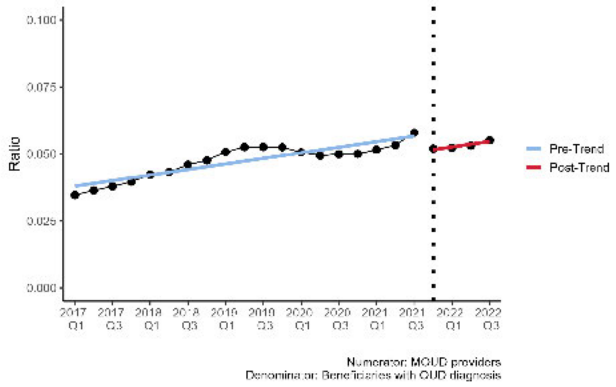


Table 8: H1a2 Interim ITS Model Results

	Estimate	SE	t	p-value
Intercept	0.03695	0.00176	20.98575	< 0.0001
Time	0.00104	0.00019	5.33502	< 0.0001
Intervention	-0.00610	0.00335	-1.82032	0.08450
Time Since Intervention x Intervention	-0.00001	0.00026	-0.03794	0.97013

Measure H1B1: SUD provider availability ratio by level of care

- Numerator: The number of providers who were enrolled in Medicaid and delivered SUD services during the measurement period by category (appropriate sublevels of 1,2, and 3)
- Denominator: The number of beneficiaries with a SUD diagnosis during the measurement period

Measure H1B1 is similar to H1A1 but looks specifically at the number of providers who delivered SUD services at ASAM levels of care 1,2, and 3. ASAM Level 1 generally consists of outpatient services, level 2 consists of intensive outpatient and partial hospitalization services, and level 3 consists of residential or inpatient services. Figure 6, Table 9, Table 10, and Table 11 show that for all three levels of care, there was a statistically significant positive increase in the trend of the SUD provider-to-beneficiary ratio in the post-intervention period relative to the pre-intervention period, changing the direction of the trend from negative to positive. Additionally, for Level 2, there was a significant immediate increase in the SUD provider-to-beneficiary ratio at the time of the intervention. Similar to measure H1A1, the time periods prior to Q3 2018 are excluded from the analysis because of trends that do not align with the rest of the data (not shown in the figure).

Figure 6: Measure H1b1: SUD provider availability ratio by level of care

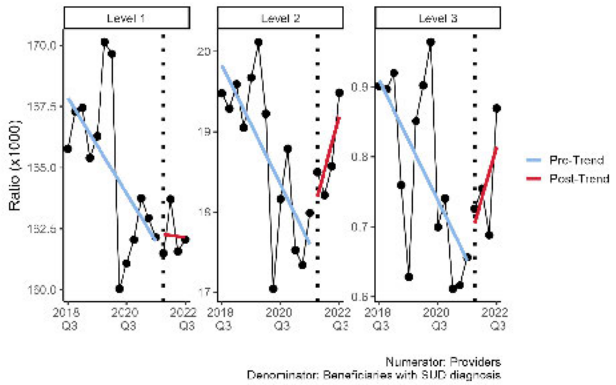


Table 9: H1b1 Interim ITS Model Results, Level 1

	Estimate	SE	t	p-value
Intercept	171.26871	1.23992	138.12921	< 0.0001
Time	-0.48827	0.08072	-6.04884	< 0.0001
Intervention	0.77462	0.67301	1.15099	0.27047
Time Since Intervention x Intervention	0.44290	0.13617	3.25248	0.00630

Table 10: H1b1 Interim ITS Model Results, Level 2

	Estimate	SE	t	p-value
Intercept	21.12907	0.27372	77.19216	< 0.0001
Time	-0.18580	0.01676	-11.08597	< 0.0001
Intervention	0.77860	0.17927	4.34316	0.00080
Time Since Intervention x Intervention	0.51900	0.05894	8.80571	< 0.0001

Table 11: H1b1 Interim ITS Model Results, Level 3

	Estimate	SE	t	p-value
Intercept	1.05933	0.07334	14.44494	< 0.0001
Time	-0.02145	0.00460	-4.66574	0.00044
Intervention	0.07460	0.04913	1.51856	0.15281
Time Since Intervention x Intervention	0.05777	0.01035	5.58204	< 0.0001

Measure H1C1: SUD provider availability ratio within underserved areas

- Numerator: The number of providers who were enrolled in Medicaid and delivered SUD services during the measurement period in select counties determined to be underserved based on the number, percentage, and ratio of provider to beneficiaries
- Denominator: The number of beneficiaries with a SUD diagnosis during the measurement period within selected counties

Concentrating specifically on counties identified as underserved at the beginning of the demonstration, measure H1C1 considers the ratio of SUD providers in the county to the number of beneficiaries with SUD (see Appendix K.1 for details on which counties were defined to be underserved). Similar to measure H1A1, the time periods prior to Q3 2018 are excluded from the analysis because of trends that do not align with the rest of the data. Figure 7 shows that the trend in the ratio of SUD providers to beneficiaries with a SUD diagnosis within selected underserved counties is increasing on average in the pre-intervention period. The model results (Table 12) show a small immediate increase in the SUD provider availability ratio within underserved areas at the start of the post-intervention period. However, the trend in the ratio in the post-intervention period also decreased and changed direction to a negative slope in the first four quarters of the post-intervention period.

Figure 7: Measure H1c1: SUD provider availability ratio within underserved areas

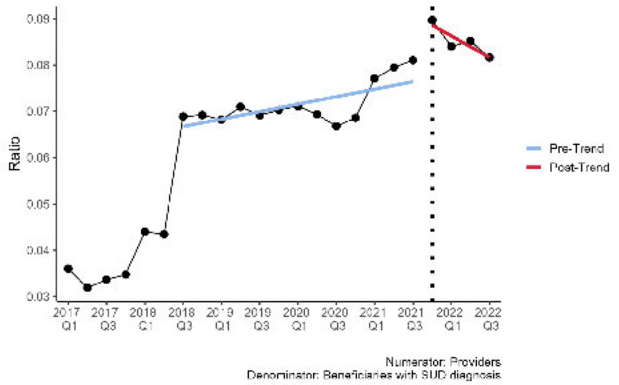


Table 12: H1c1 Interim ITS Model Results

	Estimate	SE	t	p-value
Intercept	0.06106	0.00394	15.50405	< 0.0001
Time	0.00081	0.00040	2.02601	0.06379
Intervention	0.01141	0.00394	2.89290	0.01258
Time Since Intervention x Intervention	-0.00312	0.00059	-5.29130	0.00015

Q2: Does the demonstration increase utilization of SUD treatment by enrollees with SUD?

H2A: The demonstration will reduce the time between initial diagnosis and treatment.

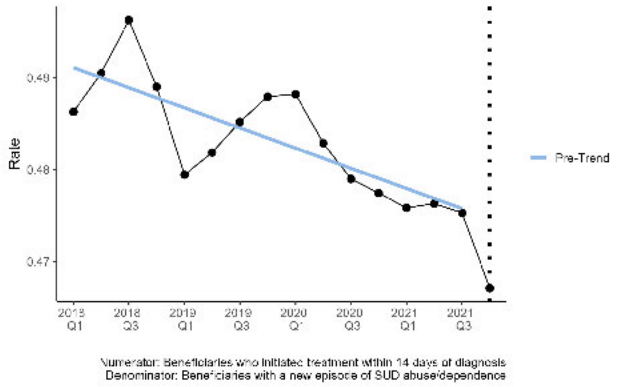
H2B: The demonstration will increase the MAT usage rate.

Measure H2A1: Initiation of SUD treatment

- Numerator: The number of beneficiaries who initiated treatment through an IP SUD admission, outpatient visit, intensive outpatient encounter or partial hospitalization, telehealth, or MAT within 14 days of diagnosis
- Denominator: The number of beneficiaries with a new episode of SUD abuse or dependence

Measure H2A1 calculates the proportion of beneficiaries with a new SUD episode in the measurement period who initiated treatment within 14 days of the diagnosis. Figure 8 shows that in the pre-intervention period this proportion had a small but consistent trend downwards from around 49% in 2018 to below 48% in 2021. It is possible that the COVID-19 pandemic played a role in this decline as it disrupted many utilization patterns. Given the year-long measurement period, there are limited results for the post-implementation period at this point. Conclusions about the effect of the demonstration cannot be made until there are additional data points in the post-intervention period.

Figure 8: Measure H2a1: Initiation of SUD Treatment



Measure H2B1: MOUD usage

- Numerator: The number of beneficiaries with an OUD diagnosis who have a claim for MOUD during the measurement period
- Denominator: The number of beneficiaries with an OUD diagnosis during the measurement period

Figure 9 shows that the trend in the MOUD usage among beneficiaries with an OUD diagnosis was steadily increasing across all time periods. Based on the model results in Table 13, there was no significant immediate effect of the demonstration on the MOUD usage rate. However, the trend in the MOUD usage rate decreased slightly in the post-intervention period relative to the pre-intervention period, though the trend was still positive in the post-intervention period.

Figure 9: Measure H2b1: MOUD Usage

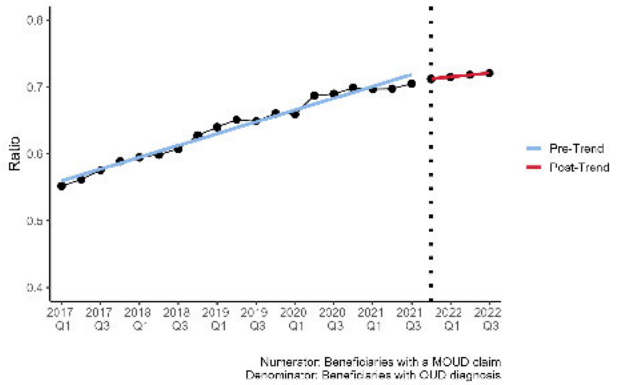


Table 13: H2b1 Interim ITS Model Results

	Estimate	SE	t	p-value
Intercept	0.55094	0.00488	112.90862	< 0.0001
Time	0.00881	0.00059	14.84461	< 0.0001
Intervention	-0.01527	0.00773	-1.97595	0.06286
Time Since Intervention x Intervention	-0.00584	0.00062	-9.40145	< 0.0001

Measure H2B2: RT stays with MOUD

- Numerator: The number of RT stays for beneficiaries with a primary OUD diagnosis with MOUD administered or prescribed during the stay or 15 days before the start or after the end of the stay
- Denominator: The number of RT stays for beneficiaries with a primary OUD diagnosis during the measurement period

Figure 10 shows that there is a general upward trend in the proportion of RT stays with MOUD among beneficiaries with a primary OUD diagnosis. The model results in Table 14 indicate a statistically significant initial decrease in this proportion during the post-intervention period; however, the slope of the trend increased in the post-intervention period relative to the pre-intervention period.

Figure 10: Measure H2b2: Residential Treatment Stays with MOUD

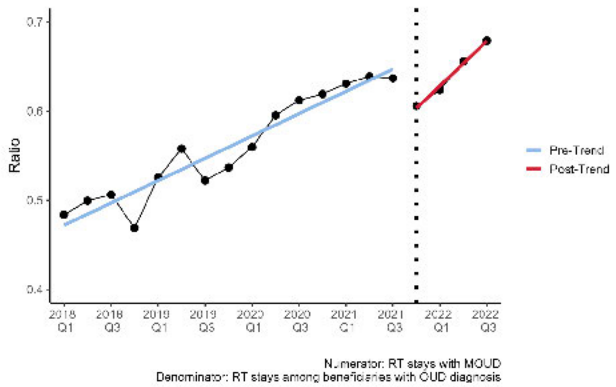


Table 14: H2b2 Interim ITS Model Results

	Estimate	SE	t	p-value
Intercept	0.45952	0.00586	78.48153	< 0.0001
Time	0.01250	0.00059	21.07205	< 0.0001
Intervention	-0.05628	0.00609	-9.23959	< 0.0001
Time Since Intervention x Intervention	0.01259	0.00068	18.60716	< 0.0001

Q3: Does the demonstration improve coordination and management of care?

H3A: The demonstration will increase the proportion of IP visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.

H3B: The demonstration will increase the proportion of RT visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.

H3C: The demonstration will increase the proportion of ED visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.

H3D: The demonstration will decrease high-risk prescribing practices.

Measure H3A1: IP follow-up

- Numerator: The number of IP visits for beneficiaries who have a primary SUD diagnosis and who had a follow-up visit with a corresponding primary SUD diagnosis within 30 days
- Denominator: The number of IP visits for beneficiaries who have a primary SUD diagnosis

The proportion of inpatient visits with a follow-up visit within 30 days among beneficiaries with a primary SUD diagnosis was generally on an upward trajectory during the pre-intervention period; however, there does seem to have been a possible pandemic-related drop in the measure during 2020 and 2021 (Figure 11). The model results (Table 15) show that the trend began to decrease in the post-intervention period. Though this change in trend was statistically significant, inferences drawn from it are limited by both the variability in the pre-intervention trend and the lack of observations in the post-intervention period.

Figure 11: Measure H3a1: Proportion of Inpatient stays with timely follow-up visit among persons with SUD

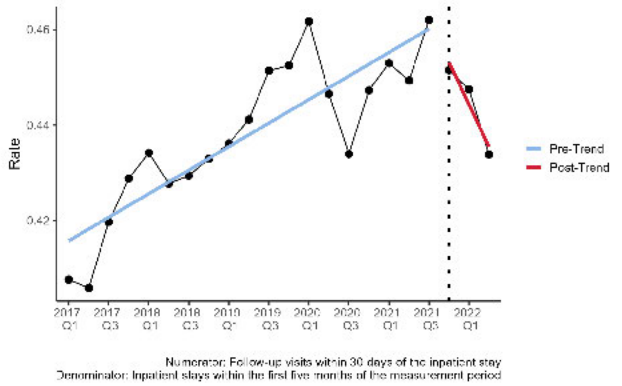


Table 15: H3a1 Interim ITS Model Results

	Estimate	SE	t	p-value
Intercept	0.41331	0.00463	89.27060	< 0.0001
Time	0.00246	0.00043	5.75223	< 0.0001
Intervention	-0.00950	0.00591	-1.60793	0.12525
Time Since Intervention x Intervention	-0.01129	0.00063	-17.99821	< 0.0001

Measure H3B1: RT follow-up

- Numerator: The number of RT visits for beneficiaries who have a primary SUD diagnosis and who had a follow-up visit with a corresponding primary SUD diagnosis within 30 days
- Denominator: The number of RT visits for beneficiaries who have a primary SUD diagnosis

Figure 12 shows an unclear pattern in the proportion of follow-up visits among beneficiaries with a primary SUD diagnosis who had a RT stay, though the trend appears to be increasing on average. From Q3 2018 through Q4 2019, there was a relatively large increase in the measure, but from Q4 2019 until Q3 2021, the measure was relatively flat. Relative to the trend going back to 2018, the model results in Table 16 failed to show a significant effect of the demonstration on this proportion. However, relative to the trend going back to Q4 2019, the first points in the post-intervention period show an increase. Data for additional time periods will be necessary to see a clearer picture of the overall trend.

Figure 12: Measure H3b1: Proportion of Residential Treatment stays with timely follow-up visit among persons with SUD

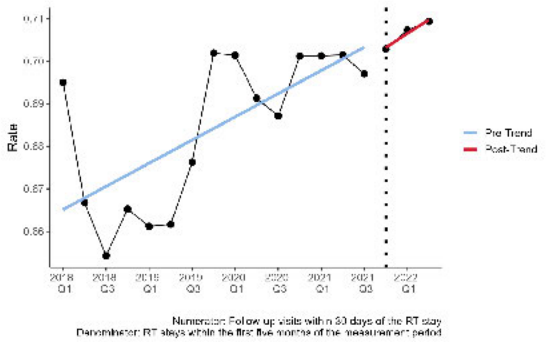


Table 16: H3b1 Interim ITS Model Results

	Estimate	SE	t	p-value
Intercept	0.65149	0.01091	59.74026	< 0.0001
Time	0.00273	0.00062	4.38197	0.00063
Intervention	-0.00278	0.00358	-0.77577	0.45079
Time Since Intervention x Intervention	0.00055	0.00066	0.82640	0.42244

Measure H3C1: ED follow-up

- Numerator: The number of ED visits for beneficiaries who have a primary SUD diagnosis and who had a follow-up visit with a corresponding primary SUD diagnosis within 30 days
- Denominator: The number of ED visits for beneficiaries who have a primary SUD diagnosis

Figure 13 shows that the proportion of ED follow-up visits among beneficiaries with a primary SUD diagnosis is increasing on average in the pre-intervention period, though the trend is not very consistent. Like a few other measures, there was a clear decline in the measure during the COVID-19 pandemic starting in Q1 2020, breaking the earlier pattern of the measure. The first few time points of the post-intervention period indicate a change in the slope (Table 17) of the measure to be trending downward, but more data points are needed to better establish the pattern.

Figure 13: Measure H3c1: Proportion of ED Visits with timely follow-up visit among persons with SUD

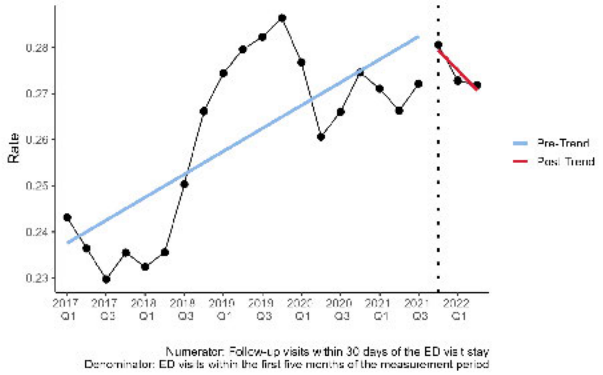


Table 17: H3c1 Interim ITS Model Results

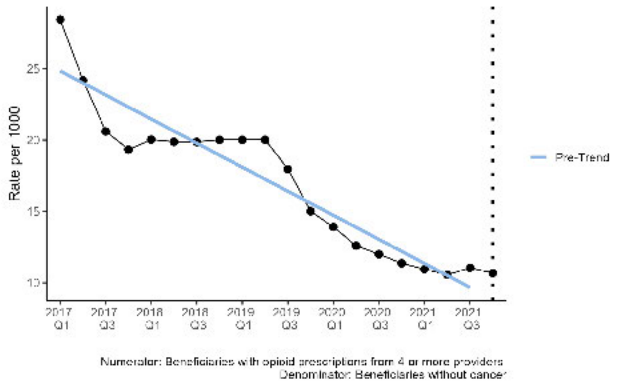
	Estimate	SE	t	p-value
Intercept	0.23504	0.01266	18.56864	< 0.0001
Time	0.00249	0.00088	2.82223	0.01129
Intervention	-0.00545	0.01260	-0.43263	0.67042
Time Since Intervention x Intervention	-0.00686	0.00078	-8.84676	< 0.0001

Measure H3D1: Use of opioids from multiple providers in persons without cancer

- Numerator: The number of beneficiaries without cancer who received prescriptions for opioids from four or more prescribers or four or more pharmacies during the measurement period
- Denominator: The number of beneficiaries without cancer during the measurement period

Figure 14 shows that the trend in the proportion of beneficiaries without cancer who received prescriptions for opioids from four or more prescribers or four or more pharmacies is decreasing in the pre-intervention period. Due to the length of the measurement period (one year), conclusions about the effect of the demonstration cannot be made until there is additional data for the post-intervention period.

Figure 14: Measure H3d1: Use of opioids from multiple providers in persons without cancer

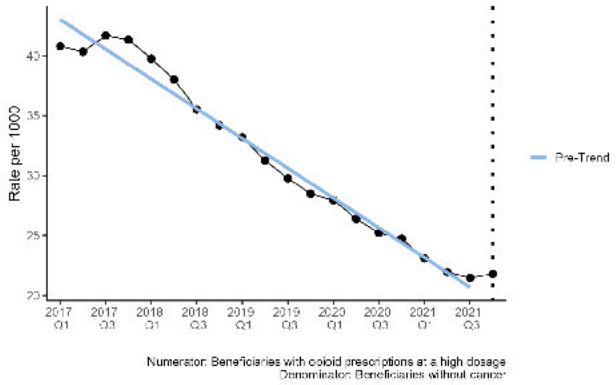


Measure H3D2: Use of opioids at high dosage in persons without cancer

- Numerator: The number of beneficiaries without cancer who received prescriptions for opioids at high dosage, ≥ 90 morphine milligram equivalents
- Denominator: The number of beneficiaries without cancer during the measurement period

Figure 15 shows that the trend in the proportion of beneficiaries without cancer who received prescriptions for opioids at high dosage (≥ 90 morphine milligram equivalents) is generally decreasing in the pre-intervention period. Due to the length of the measurement period (one year), conclusions about the effect of the demonstration cannot be made until there is additional data for the post-intervention period.

Figure 15: Measure H3d2: Use of opioids at high dosage in persons without cancer



Q4: Does the demonstration reduce the utilization of ED and IP hospital settings for OUD and other SUD treatment?

H4A: The demonstration will decrease the rate of ED and IP visits within the beneficiary population for SUD.

H4B: The demonstration will decrease the rate of readmissions to ED and IP settings.

Measure H4A1: Emergency department utilization for SUD

- Numerator: The number of ED visits for SUD during the measurement period
- Denominator: The number of beneficiaries with a SUD diagnosis enrolled in Medicaid during the measurement period

There appears to be a seasonal pattern in the trend of the proportion of emergency department visits among beneficiaries with a SUD diagnosis, with clear spikes at the third quarter of each year (Figure 16). To better account for seasonality, parameters were added to the models for each quarter. In Figure 16 the dashed colored lines represent the model with the seasonality and the solid-colored lines represent the model with the seasonality effect removed. Based on the model results in Table 18, there was an immediate decrease in emergency department utilization among beneficiaries with a SUD diagnosis during the post-implementation period, but no significant change in the trend of emergency department utilization between the pre-intervention period and the post-intervention period thus far. Given the seasonal effect, additional data points are needed to better estimate the post-intervention trend. As a supplement, this measure was also calculated amongst the OUD subpopulation which showed similar patterns. Those additional results can be found in Appendix K.2.

Figure 16: Measure H4a1 Emergency department utilization for SUD among beneficiaries SUD Diagnosis

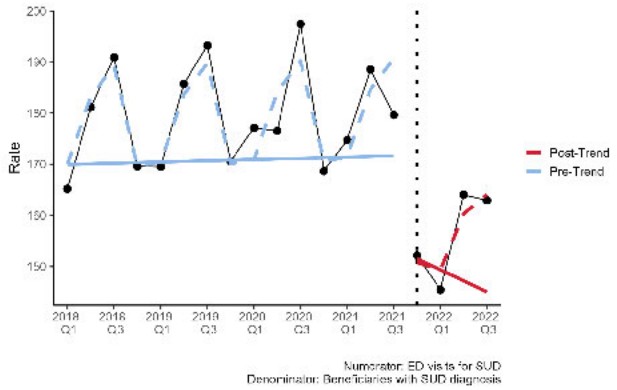


Table 18: H4a1 Interim ITS Model Results

	Estimate	SE	t	p-value
Intercept	169.81968	1.63593	103.80589	< 0.0001
Time	0.12163	0.23464	0.51835	0.61364
Intervention	-20.27478	1.50793	-13.44541	< 0.0001
Q2	-2.27988	1.26597	-1.80090	0.09688
Q3	13.13599	3.76646	3.48762	0.00448
Q4	19.08982	2.60349	7.33239	< 0.0001
Time x Intervention	-0.72322	2.49727	-0.28961	0.77706

Measure H4A2: IP stays for SUD

- Numerator: The number of IP discharges related to a SUD stay during the measurement period
- Denominator: The number of beneficiaries with a SUD diagnosis enrolled in Medicaid during the measurement period

Similar to measure H4a1, the proportion of inpatient discharges related to an SUD diagnosis among beneficiaries with an SUD diagnosis also has an obvious seasonal trend, with peaks at the third quarter of each year (Figure 17). Based on the model results in Table 19, the demonstration was associated with an immediate decrease in inpatient discharges related to an SUD diagnosis among beneficiaries with an SUD diagnosis. Additionally, the trend in this proportion decreased in the post-intervention period relative to the pre-intervention period. Again, more data would be necessary to draw better conclusions, especially given the seasonal pattern for this measure. As a supplement, this measure was also calculated amongst the OUD subpopulation which showed similar patterns. Those additional results can be found in Appendix K.2.

Figure 17: Measure H4a2: Inpatient Discharges related to stay for SUD among beneficiaries SUD Diagnosis

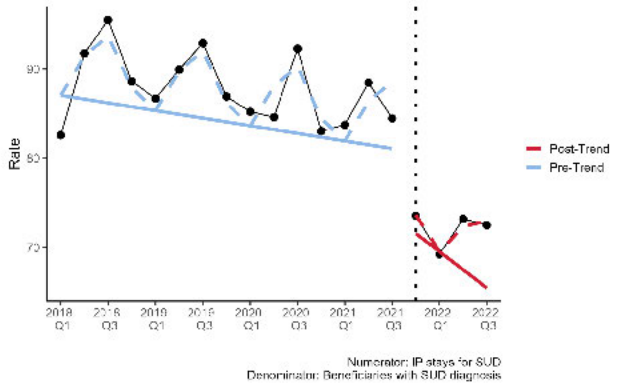


Table 19: H4a2 Interim ITS Model Results

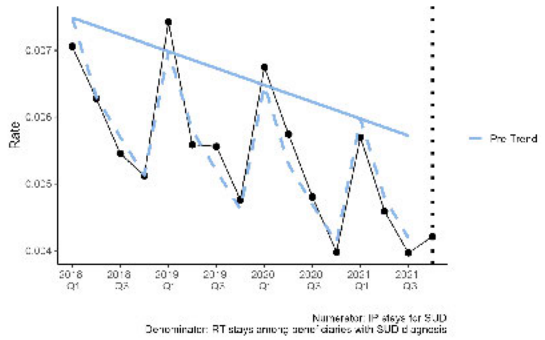
	Estimate	SE	t	p-value
Intercept	87.48444	0.88166	99.22657	< 0.0001
Time	-0.42581	0.07599	-5.60352	0.00012
Intervention	-9.10644	0.50791	-17.92915	< 0.0001
Q2	-1.60845	0.38378	-4.19104	0.00125
Q3	4.84689	1.08509	4.46681	0.00077
Q4	7.52343	1.28009	5.87726	0.00008
Time x Intervention	2.08912	0.74073	2.82036	0.01545

Measure H4B1: The 30-day IP admission rate for SUD following a RT stay among beneficiaries with SUD

- Numerator: The count of 30-day IP admissions: at least one acute admission for SUD within 30 days of the index discharge date
- Denominator: RT discharges among beneficiaries with a SUD diagnosis
- Notes: Updated measure specs from all-cause admissions to SUD-related admissions

The trend in the proportion of inpatient admissions for SUD within 30 days of an RT discharge among all RT discharges for beneficiaries with an SUD diagnosis appears to have a seasonal pattern, with peaks occurring at the first quarter of each year (Table 50). Taking into account the seasonality, the trend generally decreases in the pre-intervention period. Due to the length of the measurement period (one year), conclusions about the effect of the demonstration cannot be made until we have more data in the post-intervention period.

Figure 18: Measure H4b1: 30 Day IP Admission Rate for SUD among beneficiaries with a SUD Diagnosis

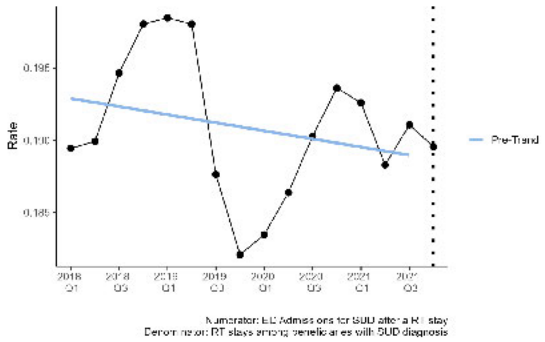


Measure H4B2: The 30-day ED visit rate for SUD following a RT stay among beneficiaries with SUD

- Numerator: The count of ED visits within 30-days of the index date: at least one acute visit for SUD within 30 days of the index discharge date
- Denominator: RT discharges among beneficiaries with a SUD diagnosis
- Notes: Updated measure specification from all-cause admissions to SUD-related admissions

The trend in the proportion of ED visits for SUD within 30 days of a RT discharge among beneficiaries with a SUD diagnosis was not consistent in the pre-intervention period (Figure 19). It initially increases from 2018 through early 2019, but then starts to decrease through the end of 2019, only to start increasing again in 2020. Taking all these points into account there is a slight downward trend. Due to the length of the measurement period (one year), conclusions about the effect of the demonstration cannot be made until there is additional data in the post-intervention period.

Figure 19: Measure H4b2: 30 Day ED Admission Rate for SUD following an RT stay among beneficiaries with a SUD Diagnosis

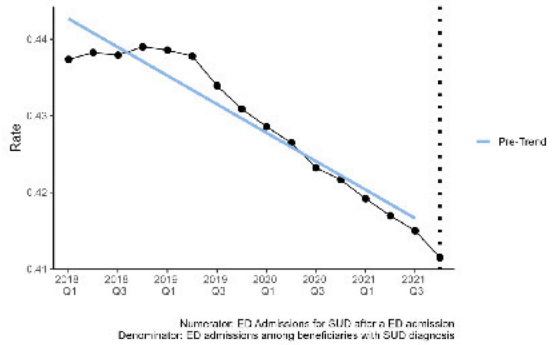


Measure H4B3: The 30-day ED admission rate for SUD following an ED visit among beneficiaries with SUD

- Numerator: The count of ED visits within 30-days of the index date: at least one acute visit for SUD within 30 days of the index discharge date
- Denominator: ED visits among beneficiaries with a SUD diagnosis
- Notes: Updated measure specification from all-cause admissions to SUD-related admissions

Figure 20 shows that the trend in the proportion of 30-day ED readmissions among all ED visits for beneficiaries with a SUD diagnosis is consistently declining in the pre-intervention period. Due to the length of the measurement period (one year), conclusions about the effect of the demonstration cannot be made until there is additional data in the post-intervention period.

Figure 20: Measure H4b3: 30 Day ED Admission Rate for SUD following an ED Admission for SUD among beneficiaries with a SUD Diagnosis



Q5: Does the demonstration improve adherence to SUD treatment?

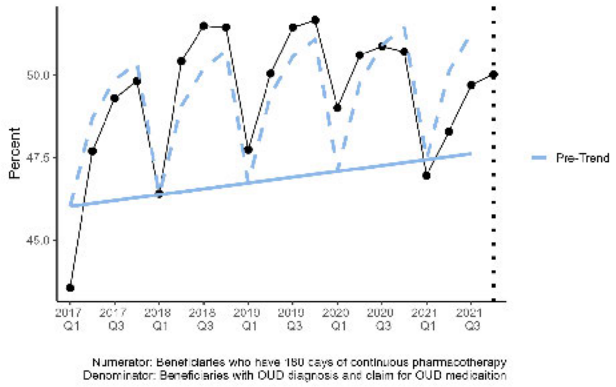
H5A: The demonstration will increase continuity of pharmaceutical care.

Measure H5A1: Continuity of pharmacotherapy for opioid use disorder

- Numerator: The 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
- Denominator: The number of beneficiaries who had an OUD diagnosis and at least one claim for an OUD medication during the measurement period

Measure H5A1 was calculated as the proportion of beneficiaries with an OUD diagnosis who have at least 180 days of continuous pharmacotherapy with a medication prescribed for OUD without a gap of more than seven days. In the pre-intervention period, there is a clear seasonal pattern in this proportion, with peaks occurring in the fourth quarter of each year (Figure 21). Taking into account the seasonality, there may be a subtle general increase in the trend. Conclusions about the effect of the demonstration cannot be made until there are additional data points in the post-intervention period.

Figure 21: Measure H5A1: Continuity of pharmacotherapy for OUD



Numerator: Benef ciaries who have 180 days of continuous pharmacotherapy
Denominator: Beneficiaries with OUD diagnosis and claim for OUD medication

Q6: Do beneficiaries receiving SUD services experience an improved quality of care?

H6A: The demonstration will increase the percentage of beneficiaries with SUD who receive screening and care for co-morbid conditions.

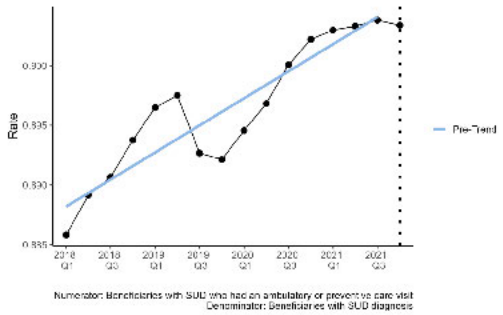
H6B: The demonstration will increase early engagement in SUD treatment.

Measure H6A1: Access to preventive/ambulatory health services for adult Medicaid beneficiaries with SUD

- Numerator: The number of beneficiaries with SUD who had an ambulatory or preventive care visit during a 12-month period
- Denominator: The number of beneficiaries with SUD during the measurement period
- Notes: Updated measure specification to change 12-month lookback period to a 12-month look-forward period to more closely align with associated monitoring metric (#32)

Measure H6A1 is calculated as the proportion of beneficiaries with a SUD diagnosis who had an ambulatory or preventive care visit during a 12-month period. Figure 22 shows that this proportion is increasing on average in the pre-intervention period, though there was a dip during time periods associated with the COVID-19 pandemic. Conclusions about the effect of the demonstration cannot be made until there are additional data points in the post-intervention period.

Figure 22: Measure H6a1 Access to preventive/ambulatory health service among beneficiaries with a SUD Diagnosis

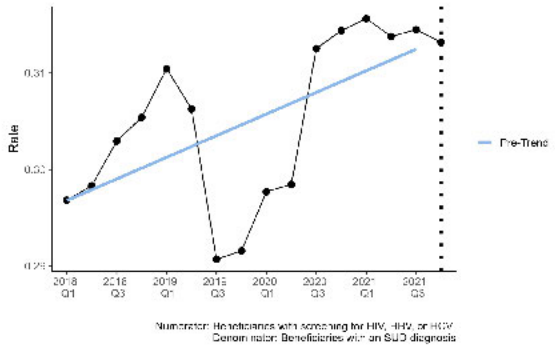


Measure H6A2: Screening for HIV/HCV/HBC

- Numerator: The number of beneficiaries with SUD who were screened for HIV/HCV/HBC during a 12-month period
- Denominator: The number of beneficiaries with SUD during the measurement period
- Notes: Updated measure specification to change 12-month lookback period to a 12-month look-forward period to more closely align with associated MODRN metric

Measure H6A2 is calculated as the proportion of beneficiaries with a SUD diagnosis who were screened for HIV, HCV, or HBV during a 12-month period. Like measure H6A1, Figure 23 shows a steep drop in Q3 2019, likely related to the COVID-19 pandemic (the Q3 2019 statistic includes data from July 2019 until Jun 2020). Though the trend is a little unclear, in general the proportion increases over time in the pre-intervention period. Conclusions about the effect of the demonstration cannot be made until there are additional data points in the post-intervention period.

Figure 23: Measure H6a2 Screening for HIV/HBV/HCV

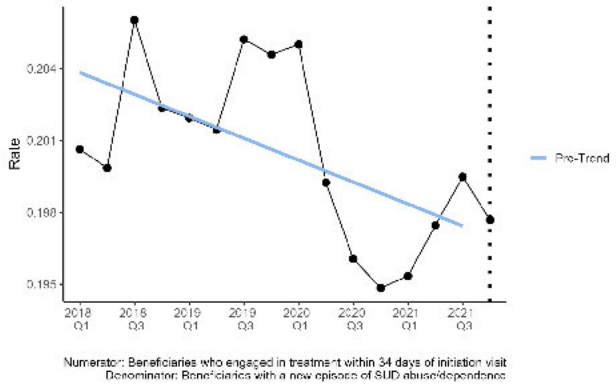


Measure H6B1: Initiation and engagement of alcohol and other drug abuse or dependence treatment

- Numerator: The number of beneficiaries who initiated treatment and who had two or more additional SUD services or MAT within 34 days of the initiation visit
- Denominator: The number of beneficiaries with a new episode of SUD abuse or dependence

Measure H6B1 is related to measure H2A1 and considers the proportion of beneficiaries with a new episode of SUD abuse or dependence who not only initiate treatment within 14 days but also engage in treatment as measured by additional treatment visits within the 34 days following initiation. Figure 24 shows that, like the initiation measure, the rate of early engagement was on a slight downward trend during the pre-intervention period. It is possible that the COVID-19 pandemic played a role in this decline as we see the steepest drops during the 2020 measurement quarters. Given the year-long measurement period, there are limited results for the post-implementation period at this point. Conclusions about the impact of the demonstration on this measure cannot be made until there are additional data points in the post-intervention period.

Figure 24: Measure H6b1: Initiation and engagement of alcohol and other drug abuse or dependence treatment



Q7: Does the demonstration reduce rates of opioid-related overdose deaths?

H7A: The demonstration will decrease the rate of overdose deaths, including those due to opioids.

Measure H7A1: Rate of overdose deaths

- Numerator: The number of overdose deaths

- Denominator: The number of beneficiaries/1000

Measure H7A2: Rate of overdose deaths due to opioids

- Numerator: The number of overdose deaths due to opioids
- Denominator: The number of beneficiaries/1000

Figure 25 shows that the trend in the rates of overdose deaths and overdose deaths due to opioids per 1000 beneficiaries both appear to be steadily increasing in the pre-intervention period. The model results in Table 20 and Table 21 suggest that there was a statistically significant immediate decrease in this rate at the start of the post-intervention period, but that the overdose rates are continuing to increase at a similar rate as to the pre-intervention period. Note that data concerning overdose deaths in 2022 is not yet final, though it is not expected to change meaningfully.

Figure 25: Measures H7a1 and H7a2: Rate of overdose deaths

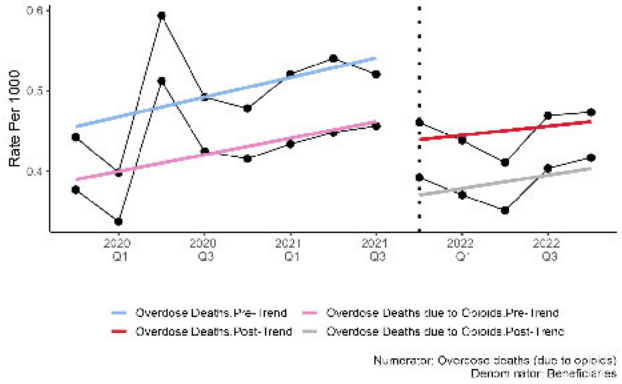


Table 20: H7a1Interim ITS Model Results

	Estimate	SE	t	p-value
Intercept	0.40671	0.03362	12.09663	< 0.0001
Time	0.01221	0.00353	3.45446	0.00722
Intervention	-0.11399	0.02485	-4.58733	0.00131
Time Since Intervention x Intervention	-0.00659	0.00525	-1.25528	0.24099

Table 21: H7a2 Interim ITS Model Results

	Estimate	SE	t	p-value
Intercept	0.34852	0.02532	13.76222	< 0.0001
Time	0.01029	0.00290	3.54955	0.00622
Intervention	-0.10164	0.02252	-4.51403	0.00146
Time Since Intervention x Intervention	-0.00202	0.00474	-0.42510	0.68075

Q8: How do costs related to the demonstration waiver change throughout the pre- and post-demonstration periods?

Measures H8A1 – H8A10 consider the costs per member month in the subpopulation of beneficiaries who had a claim with a primary or secondary diagnosis of SUD in the measurement quarter or the following 11 months. Costs include fee-for-service and encounter claims. Total costs include inpatient, outpatient, professional medical, pharmacy, dental, and long-term care costs.

H8A: The demonstration will decrease or have no effect on total costs. The demonstration will increase SUD-IMD, SUD-other, and Non-SUD costs, but decrease IP, non-ED outpatient, ED outpatient, pharmacy and long-term care costs.

Measure H8A1: Total costs

- Numerator: The total costs from fee-for-service and encounter claims, including inpatient, outpatient, professional medical, pharmacy, dental, and long-term care for the population of beneficiaries with a SUD diagnosis
- Denominator: Total member-months for beneficiaries with SUD

Figure 26 shows the trend in the total costs per member-month unadjusted for age, sex, or race. This trend is increasing in the pre-intervention period, with a drop occurring at the time of the intervention. The model for total costs (Table 22) indicates that after adjusting for age, sex, and race, there was an immediate decrease in total costs per member-month in the post-intervention period, as well as a significant decrease in the trend of average total costs per member-month.

Figure 26: Measure H8a1 Average Total Cost per Member Month (unadjusted means)

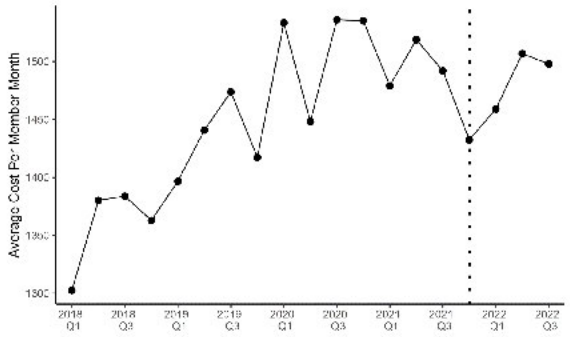


Table 22: H8a1 Interim Model Results

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Time	0.00346	1.00347	0.00051	6.86	< 0.0001

Cond	Intervention	-0.07997	0.92315	0.00725	-11.03	< 0.0001
Cond	Time Since Intervention x Intervention	-0.00616	0.99386	0.00323	-1.90	0.05702
ZI	Time	0.01562	1.01574	0.00116	13.45	< 0.0001
ZI	Intervention	0.10277	1.10824	0.01620	6.34	< 0.0001
ZI	Time Since Intervention x Intervention	0.02488	1.02519	0.00713	3.49	0.00048

Cond = conditional model; ZI = Zero-inflated model

Measure H8A2: Total federal costs

- Numerator: Total Medicaid costs * Federal Medicaid percentage, for the population of beneficiaries with a SUD diagnosis
- Denominator: Total member-months for beneficiaries with SUD

Figure 27 shows the trend in the total federal costs per member-month unadjusted for age, sex, or race, which is steadily increasing in the pre-intervention period with a drop occurring at the time of the intervention. The trend in the post-intervention period is still increasing, but to a lesser extent than is seen in the pre-intervention period. The model results in Table 23 indicate that after adjusting for age, sex, and race, there was an immediate decrease in total federal costs per member-month at the start of the intervention period, as well as a statistically significant decrease in the trend of total federal costs per member-month.

Figure 27: Measure H8a2 Average Total Federal Cost per Member Month (unadjusted means)

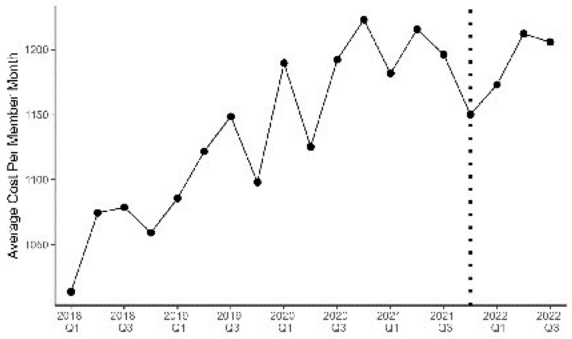


Table 23: H8a2 Interim Model Results

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Time	0.00485	1.00486	0.00051	9.57	< 0.0001
Cond	Intervention	-0.07150	0.93100	0.00727	-9.83	< 0.0001
Cond	Time Since Intervention x Intervention	-0.00693	0.99309	0.00324	-2.14	0.03257
ZI	Time	0.01563	1.01576	0.00116	13.45	< 0.0001
ZI	Intervention	0.10297	1.10845	0.01621	6.35	< 0.0001
ZI	Time Since Intervention x Intervention	0.02468	1.02498	0.00713	3.46	0.00054

Cond = conditional model; ZI = Zero-inflated model

Measure H8A3: SUD-IMD costs

- Numerator: IMD costs for the population of beneficiaries with a SUD diagnosis
- Denominator: Total member-months for beneficiaries with SUD

This measure was not calculated for the interim report because Ohio's designation of a residential IMD is still in development by ODM. It will be calculated for the summative report. This is discussed in further detail in section F.1.

Measure H8A4: SUD-other costs

- Numerator: Costs with SUD diagnosis and/or SUD-related code (procedure, revenue, POS, provider type) for the population of beneficiaries with an SUD diagnosis
- Denominator: Total member-months for beneficiaries with SUD

Measure H8A4 considers the SUD costs for the subpopulation of beneficiaries with SUD. Figure 28 shows the trend in the total SUD-related costs per member-month, unadjusted for age, sex, or race, is steadily increasing in both the pre-intervention period and the post-intervention period. The model results in Table 24 indicate that after adjusting for age, sex, and race, there is no statistically significant effect of the demonstration on the trend of total SUD-related costs per member-month. The results do indicate that the post-intervention period is associated with a statistically significant increase in the odds of a member incurring zero SUD-related costs in the post-intervention period compared to the pre-intervention period.

Figure 28: Measure H8a4 Average Total SUD Cost per Member Month (unadjusted means)

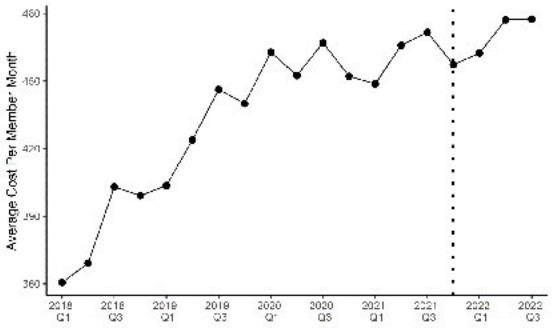


Table 24: H8a4 Interim Model Results

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Time	0.00320	1.00321	0.00066	4.85	< 0.0001
Cond	Intervention	-0.00054	0.99946	0.00957	-0.06	0.95529
Cond	Time Since Intervention x Intervention	-0.00276	0.99724	0.00427	-0.65	0.51753
ZI	Time	0.00570	1.00571	0.00083	6.84	< 0.0001
ZI	Intervention	0.11677	1.12386	0.01194	9.78	< 0.0001
ZI	Time Since Intervention x Intervention	0.02709	1.02746	0.00531	5.10	< 0.0001

Cond = conditional model; ZI = Zero-inflated model

Measure H8A5: Non-SUD costs

- Numerator: Costs without SUD diagnosis and without SUD-related code (procedure, revenue, POS, provider type) for the population of beneficiaries with a SUD diagnosis
- Denominator: Total member-months for beneficiaries with SUD

Figure 29 shows the trend in the non-SUD costs per member-month unadjusted for age, sex, or race. There is a substantial amount of variability in the unadjusted trend in the pre-intervention period, but it seems to trend upward. The model results in Table 25 suggest that after adjusting for age, sex, and race, the trend is decreasing in the pre-intervention period. The results also suggest that there was no statistically significant immediate change in total non-SUD costs per member-month in the post-intervention period, but there was a statistically significant decrease in the trend of total non-SUD costs per member-month.

Figure 29: Measure H8a5 Average Total Non-SUD Cost per Member Month (unadjusted means)

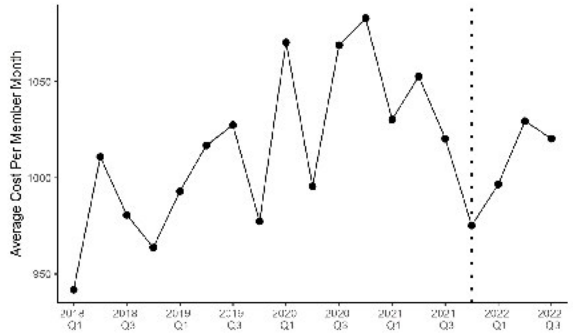


Table 25: H8a5 Interim Model Results

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Time	-0.00323	0.99677	0.00105	-3.07	0.00213
Cond	Intervention	-0.00864	0.99140	0.01540	-0.56	0.57494
Cond	Time Since Intervention x Intervention	-0.02217	0.97807	0.00688	-3.22	0.00126
ZI	Time	0.01103	1.01109	0.00129	8.57	< 0.0001
ZI	Intervention	0.10145	1.10678	0.01789	5.67	< 0.0001
ZI	Time Since Intervention x Intervention	0.01395	1.01405	0.00794	1.76	0.07889

Cond = conditional model; ZI = Zero-inflated model

Measure H8A6: Outpatient costs – non-ED

- Numerator: Costs associated with outpatient and professional medical and dental, non-ED claims for the population of beneficiaries with a SUD diagnosis
- Denominator: Total member-months for beneficiaries with SUD

Measure H8A6 is constructed as the total costs associated with outpatient, professional medical, and dental non-ED claims per member-month. Figure 30 shows the trend in these outpatient costs per member-month unadjusted for age, sex, or race, which is steadily increasing in the pre-intervention period with a drop occurring at the time of the intervention. The model results in Table 26 indicate that after adjusting for age, sex, and race, there was an immediate decrease in total outpatient non-ED costs per member-month associated with the start of the post-intervention period, but no evidence of a change in the trend.

Figure 30: Measure H8a6 Average Non-ED Outpatient Cost per Member Month (unadjusted means)

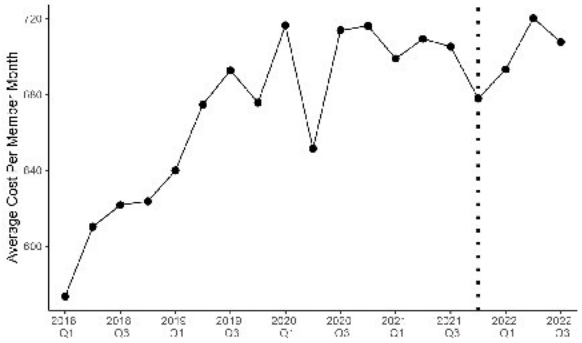


Table 26: H8a6 Interim Model Results

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Time	0.00457	1.00458	0.00046	10.00	< 0.0001
Cond	Intervention	-0.07306	0.92955	0.00663	-11.02	< 0.0001
Cond	Time Since Intervention x Intervention	-0.00476	0.99526	0.00296	-1.61	0.10757
ZI	Time	0.01251	1.01259	0.00101	12.36	< 0.0001
ZI	Intervention	0.10930	1.11549	0.01434	7.62	< 0.0001
ZI	Time Since Intervention x Intervention	0.01382	1.01392	0.00633	2.18	0.02899

Cond = conditional model; ZI = Zero-inflated model

Measure H8A7: Outpatient costs – ED

- Numerator: Costs associated with ED claims that do not result in an inpatient admission for the population of beneficiaries with a SUD diagnosis
- Denominator: Total member-months for beneficiaries with SUD

Figure 31 shows the trend in the outpatient ED costs per member-month unadjusted for age, sex, or race. In the unadjusted trend there is a large peak in Q1 2020 and then a slower decline which could be an effect of the COVID-19 pandemic. The model results in Table 27 indicate that after adjusting for age, sex, and race, there was an immediate decrease in total outpatient costs per member-month at the post-intervention period, as well as a statistically significant decrease in the trend of outpatient ED costs per member-month.

Figure 31: Measure H8a7 Average ED-Outpatient Cost per Member Month (unadjusted means)

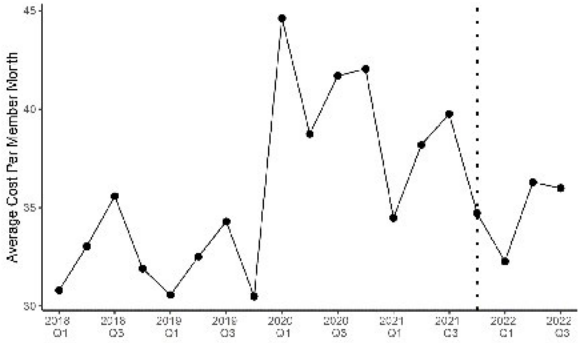


Table 27: H8a7 Interim Model Results

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Time	0.02833	1.02873	0.00045	62.62	< 0.0001
Cond	Intervention	-0.13792	0.87117	0.00762	-18.09	< 0.0001
Cond	Time Since Intervention x Intervention	-0.01649	0.98365	0.00341	-4.83	< 0.0001
ZI	Time	0.02366	1.02395	0.00080	29.71	< 0.0001
ZI	Intervention	0.09859	1.10361	0.01219	8.09	< 0.0001
ZI	Time Since Intervention x Intervention	-0.03767	0.96303	0.00544	-6.92	< 0.0001

Cond = conditional model; ZI = Zero-inflated model

Measure H8A8: Inpatient costs

- Numerator: Costs associated with inpatient claims for the population of beneficiaries with a SUD diagnosis
- Denominator: Total member-months for beneficiaries with SUD

Measure H8A8 is constructed as the total costs associated with inpatient claims per member-month. Figure 32 shows the trend in these inpatient costs per member-month unadjusted for age, sex, or race, which is generally increasing in the pre-intervention period with a drop occurring at the time of the intervention. Due to the large quantity of observations with zero costs, the evaluators were unable to fit the full model due to model convergence issues. Instead, a reduced model which did not include the random effect, age, sex, and race covariates in the conditional portion of the model was used for this measure. Those terms were still used in the zero-inflation portion of the model. The model results in Table 28 indicate that without adjusting for age, sex, and race, there was an immediate decrease in total inpatient costs per member-month due to the demonstration, as well as a statistically significant decrease in the trend of inpatient costs per member-month.

Figure 32: Measure H8a8 Average Inpatient Cost per Member Month (unadjusted means)

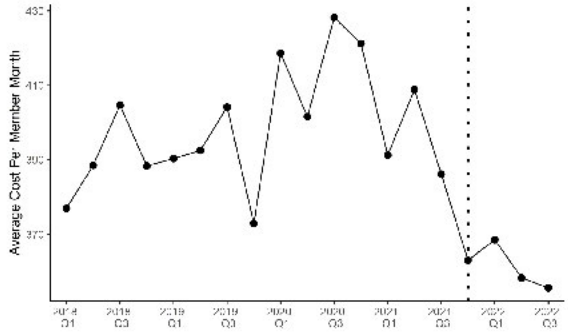


Table 28: H8a8 Interim Model Results

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Time	0.01456	1.01467	0.00082	17.77	< 0.0001
Cond	Intervention	-0.02773	0.97266	0.01341	-2.07	0.03868
Cond	Time Since Intervention x Intervention	-0.02194	0.97829	0.00609	-3.60	0.00032
ZI	Time	0.01307	1.01315	0.00117	11.15	< 0.0001
ZI	Intervention	0.14412	1.15502	0.01858	7.75	< 0.0001
ZI	Time Since Intervention x Intervention	-0.00122	0.99878	0.00841	-0.14	0.88505

Cond = conditional model; ZI = Zero-inflated model. This model was fit with the reduced set of covariates and without the random effect in the conditional model.

Measure H8A9: Pharmacy costs

- Numerator: Costs associated with pharmacy claims for the population of beneficiaries with a SUD diagnosis
- Denominator: Total member-months for beneficiaries with SUD

Measure H8A9 is constructed as the total costs associated with pharmacy claims per member-month. Figure 33 shows the trend in these pharmacy costs per member-month unadjusted for age, sex, or race, which is steadily increasing in the pre-intervention period and continuing to increase after the time of the intervention. Due to the large quantity of observations with zero costs, the evaluation team was unable to fit the full model due to model convergence issues. Instead, a reduced model which did not include the random effect, age, sex, and race covariates in the conditional portion of the model was used for this measure. Those terms were still used in the zero-inflation portion of the model. The model results in Table 29 indicate that there was an immediate decrease in total pharmacy costs per member-month due to the demonstration, but there was no statistically significant change in the trend of pharmacy costs per member-month in the post-intervention period.

Figure 33: Measure H8a9 Average Pharmacy Cost per Member Month (unadjusted means)

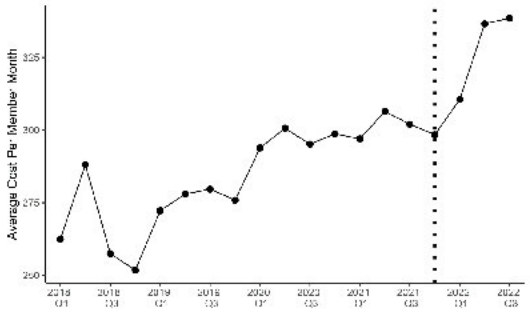


Table 29: H8a9 Interim Model Results

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Time	0.01009	1.01014	0.00082	12.33	< 0.0001
Cond	Intervention	-0.05374	0.94768	0.01309	-4.11	< 0.0001
Cond	Time Since Intervention x Intervention	0.00444	1.00445	0.00587	0.76	0.44957
ZI	Time	0.02094	1.02116	0.00113	18.54	< 0.0001
ZI	Intervention	0.02030	1.02051	0.01540	1.32	0.18730
ZI	Time Since Intervention x Intervention	-0.00579	0.99422	0.00687	-0.84	0.39907

Cond = conditional model; ZI = Zero-inflated model. This model was fit with the reduced set of covariates and without the random effect in the conditional model.

Measure H8A10: Long-term care costs

- Numerator: Costs associated with long-term care claims for the population of beneficiaries with a SUD diagnosis
- Denominator: Total member-months for beneficiaries with SUD

Measure H8A10 is constructed as the total costs associated with long-term care claims per member-month. Figure 34 shows the trend in these long-term care costs per member-month unadjusted for age, sex, or race, which is appears to be generally decreasing in the pre-intervention period starting in 2019 and appears to change direction after the intervention. Due to the large quantity of observations with zero costs, the evaluation team was unable to fit the full model due to model convergence issues. Instead, a reduced model which did not include the random effect, age, sex, and race covariates in the conditional portion of the model was used for this measure. Those terms were still used in the zero-inflation portion of the model. The model results in Table 30 indicate that there were no statistically significant changes in total long-term care costs per member-month in the post-intervention period.

Figure 34: Measure H8a10 Average Long-term Care Cost per Member Month (unadjusted means)

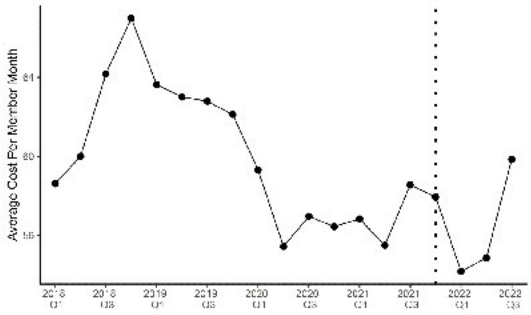


Table 30: H8a10 Interim Model Results

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Time	0.00690	1.00692	0.00286	2.41	0.01596
Cond	Intervention	-0.02880	0.97161	0.04767	-0.60	0.54570
Cond	Time Since Intervention x Intervention	0.00817	1.00821	0.02173	0.38	0.70683
ZI	Time	-0.04445	0.95652	0.00466	-9.53	< 0.0001
ZI	Intervention	-0.04992	0.95130	0.06515	-0.77	0.44355
ZI	Time Since Intervention x Intervention	0.06552	1.06771	0.02999	2.18	0.02891

Cond = conditional model; ZI = Zero-inflated model. This model was fit with the reduced set of covariates and without the random effect in the conditional model.

G.2 Qualitative Results: Stakeholder Input

Stakeholders provided valuable input regarding the state of SUD treatment access and care delivery in Ohio in the first years of the waiver. Key informant interviews with state agency representatives, treatment providers, MCP representatives, and recovery advocates, as well as focus groups with individuals with lived experience, provided a better understanding of waiver activities and progress, as well as the obstacles experienced by those delivering and receiving care across the state. The following discussion of stakeholder input represents common themes across data collection activities and may not reflect the opinions and experiences of the broader population. The findings and quotes included are indicative of the specific experiences, understandings, and views of the participants, which may not be shared by the general population or reflect Ohio Department of Medicaid's policies or waiver implementation. Finally, it should be noted that stakeholder input presented for one milestone may hold implications for, or be closely related to, other waiver milestones.

G.2.1 *COVID-19*

Both key informants and individuals in treatment discussed how the global COVID-19 pandemic led to an increased demand for behavioral health services. The pandemic's impact has also led to increases in substance use as many struggled to find ways of coping. At the same time, there was the complicating factor that the PHE led to a disruption in normal services and supports. Many individuals we spoke with told us they were not able to access services, either out of concern for their health (and being exposed to the virus while trying to seek services), or because services had become more limited through the course of the pandemic. These concerns and complications extended beyond support group meetings, as other stakeholders mentioned the impact the pandemic had on simply being in line on a daily basis to receive MAT or how it created a logjam for those seeking to enter residential treatment. Even among those able to get into residential treatment, the pandemic meant that while they were able to work on addressing their SUD, access to integral outside support, such as family and group meetings, was no longer permitted.

The COVID-19 pandemic put a strain not only on those seeking care, but those tasked with providing it as well. This, coupled with issues in recruitment and

retention, as well as shortages resulting from mandatory quarantining after contact with a COVID positive individual, means that it has been difficult to maintain a workforce that can address the needs of those seeking services.

One means of addressing some of the issues discussed above, such as an inability to meet in person for support groups or for meetings with providers, is the use of telehealth services. These services were met with mixed reviews from both providers and those in treatment who we spoke with. Some seeking treatment found that telehealth services meant that they had greater flexibility to maintain a more regular work schedule when they were able to call in rather than having to physically attend sessions. The benefits of this flexibility were observed on the provider side as well, with several noting a large drop in the rate of "no-shows." While the rise of telehealth for some can be viewed as a silver lining in the pandemic, there were others who did note concerns about it. The "digital divide" prevented some from easily accessing telehealth services, either because they did not have access to the technology or because their own digital literacy made access difficult. For others, telehealth was simply not seen as a substitution for actual in-person meetings and supports.

G.2.2 ***Milestone 1: Access to Critical LOC for OUD and Other SUDs***

While Milestone 1 predominantly pertains to Medicaid coverage of all ASAM levels of care, there are many systemic, structural, and individual-level factors that influence whether an individual with SUD has access to care. The insights and experiences of stakeholders provided this broader view of access to care in Ohio and highlights some of the factors that may impact Ohio's ability to make progress in measures associated with Milestone 1 in coming years, despite Ohio Medicaid's coverage of the ASAM critical levels of care.

G.2.2.1 **Delivery of Care**

One barrier to accessing the appropriate level of care, as discussed by stakeholders, is that treatment providers and MCPs don't always agree on what is the appropriate level of care for a patient. For example, we heard from both sides

about disagreements around the length of stay in residential or inpatient treatment, or whether medically supervised detox is medically necessary.

Additionally, while many individuals in treatment credited court involvement as facilitating treatment access, some treatment providers and MCPs cited courts as creating barriers to care. In an interview with a provider, court-ordered participation in naltrexone programs was specifically mentioned as a barrier because it limited treatment options for individuals who might have better outcomes with another type of care or medication.

G.2.2.2 Provider Availability

Treatment providers pointed to the behavioral health workforce shortage as an obstacle to providing critical levels of care. They indicated that reimbursement rates and COVID-19 have contributed to the shortage at all levels of care, which is particularly acute in some regions of the state. State agency representatives and treatment providers discussed Ohio's proposed plan to combat the BH workforce shortage. The plan includes investments to support students entering the BH field, such as tuition assistance and licensing support, as well as incentives for experienced professionals to either return to BH practice or stay in practice, such as retention bonuses and license renewal support.

Geography was frequently discussed as posing a barrier to accessing critical levels of care, particularly for rural and Appalachian Ohioans. This often was raised in the context of waitlists for treatment. Many individuals in treatment in rural parts of the state described struggling as they waited anywhere from hours to weeks for a bed at a treatment center, while other individuals in urban centers reported short wait times for care.

Stakeholders also reported that the focus of federal and state dollars on building OUD treatment capacity to combat the opioid crisis has had the unintended consequence of leaving fewer resources available for treatment individuals seeking treatment for alcohol use disorder and other SUDs, which means that those with the latter diagnoses sometimes have a harder time finding treatment than those with OUD.

Finally, some key informants indicated that quality recovery and other sober housing resources are scarce in certain communities due to local funding limitations and local ordinances that prohibit more than two or three unrelated adults living together. Treatment providers, recovery advocates, and individuals with lived experience emphasized the critical role recovery housing plays in both short- and long-term recovery for individuals engaged in outpatient, intensive outpatient, and partial hospitalization programs. While Medicaid does not cover housing costs, stakeholders consistently identified a lack of quality recovery housing as a leading barrier to SUD treatment and long-term recovery.

G.2.2.3 Individual-Level Factors

A variety of individual-level factors were identified as barriers to accessing care. The two most discussed were trying to maintain employment & lacking transportation. Many stakeholders also specifically described the challenges faced by pregnant people and mothers with young children. For example, many MAT prescribers are hesitant to treat pregnant people, which limits available treatment options for this demographic group. Additionally, mothers seeking residential treatment or other critical levels of care often must choose between delaying treatment until they find a provider that offers childcare or residential beds for children, and placing their children in foster care or family care while they seek treatment.

G.2.2.4 Facilitators to treatment access and retention

Individuals in care often cited personal and family hardships related to active addiction as the motivation to seek treatment. However, they also credited peer support services, the push from court or child protective services (CPS), case management, and telehealth as facilitating access to and maintaining critical levels of care.

G.2.3 ***Milestone 2: Use of Evidence-based, SUD-specific Patient Placement Criteria***

Milestone 2 is focused on improving the "fit" of the continuum of care for any prospective beneficiary seeking treatment into the level and quality of care that

maximizes their likelihood for SUD treatment success. Most providers and MCPs discussed support for the criteria.

To help improve the evidence base for the continuum of care, ASAM implementation is being refined through dialogue between key state agencies and providers to improve its client-centered measurement. A state government representative described their process of first establishing ASAM as the state's coverage framework for SUD services, and now taking that to a more detailed level by working with providers to determine which pieces of ASAM they need to incorporate into state rules and regulation. They also noted a focus on making changes to the state's utilization management process.

A community learning collaborative approach is being used to further ASAM familiarity, utility, and improved placement criteria and treatment outcomes. For example, an MCP representative described the MCP's own ASAM training for their staff and providers. They expressed hope that the accrediting bodies would eventually provide structured training for providers and facilities, although they noted that they hadn't seen that type of training in action yet. State agency representatives also described ASAM training as a top priority.

Finally, stakeholders discussed how a strong continuum of care nurtures a strong quality of care and so improving the efficiencies of prior authorization timing and completion strengthens the care continuum at multiple levels.

G.2.4 *Milestone 3: Use of Nationally Recognized SUD-specific Program Standards to Set Provider Qualifications for Residential Treatment Facilities*

As discussed under milestone 2, managed care plans and state agency representatives described ongoing efforts to fund ASAM training for providers, and sponsoring programs to ensure that providers are all properly licensed and certified. However, pertinent to milestone 3, there was not a significant discussion of training for residential treatment providers in particular. Stakeholder input relevant to milestone 3 goals was predominantly focused on factors that would influence the implementation of the requirement that residential treatment facilities offer MAT on-site or facilitate access off-site.

G.2.4.1 Obstacles to providing MAT in residential treatment

Across the board, key informants discussed the infrastructure and resources required to provide MAT in residential treatment. Many expressed concerns about the same workforce shortages plaguing SUD treatment more generally. Additionally, treatment providers described the ramp up costs involved in starting a MAT program, including needing access to labs, and a significant increase in staff hires, such as prescribers and nurses. Without sufficient prescribing staff, providers expressed that MAT would not be a viable treatment option in their facilities.

Treatment providers and managed care plans also highlighted rules and regulations about the provision of MAT as an obstacle to its use in residential treatment facilities. Due to strict rules about storing controlled substances, including needing a distributors' license, many residential treatment providers are not able to keep drugs such as buprenorphine on their premises. Instead, they need to transport patients to off-site locations to receive their medication. However, multiple treatment providers expressed how this transportation poses logistical issues, especially for patients on methadone who receive daily treatments. It also poses significant financial barriers to residential treatment providers, who are only being reimbursed for medication costs, and not the time or resources involved in transportation.

G.2.4.2 Resistance to MAT in residential treatment persists

State agency representatives and managed care plans acknowledged that philosophical objections to medication assisted treatment are posing challenges to provision of MAT in residential facilities. This resistance has implications for an individual's treatment plan more generally, as it can present limitations to care. One managed care plan described how many inpatient settings were not aware that their residential referral wasn't allowing continuation medications. Another managed care plan described being forced to advise the detoxification of a patient, against their better judgement, to be able to find that patient a spot in a residential treatment facility as they moved through the care continuum, because the RT facility they had access to didn't allow MAT.

A few treatment providers and recovery advocates speculated that some of this resistance to MAT in residential treatment may be due to a desire to provide a MAT-free environment to individuals who feel that the presence of MAT poses a threat to their recovery, such as those who used Suboxone as their drug of choice.

G.2.4.3 Potential evasion of MAT requirements for residential treatment facilities

Finally, there were a few key informants who expressed concerns about the potential ineffectiveness of the waiver if residential treatment providers can find loopholes that would allow them to avoid providing MAT. One of the managed care plans highlighted the frequency of delays they were seeing in offering MAT to patients. They described providers justifying not providing MAT in residential treatment by saying that the patient "isn't clinically ready for that discussion" early in the stay, and then only discussing MAT with the individual on day 29 of a 30-day stay or saying that the patient has refused MAT as a treatment option.

G.2.5 *Milestone 4: Sufficient Provider Capacity at Critical LOC including for MAT for OUD*

At the state level, SUD provider capacity at critical levels of care was largely described by stakeholders as adequate. However, four major outstanding issues of concern with regard to provider capacity were discussed in interviews and focus groups, in addition to 2 concerns about care provision for specific drug dependencies and subpopulations. Geographic variation in provider capacity was a central piece of feedback we received from stakeholders.

G.2.5.1 Geographic variation in provider capacity

Stakeholders described geographic variation in SUD provider capacity, with the disparity seeming to fall largely along a rural-urban divide. State agency representatives described known discrepancies between SUD prevalence and provider availability, and individuals in treatment reporting issues accessing care, in rural areas of the state. We were told that in some cases, this resulted in treatment at a different level of care than what is diagnosed. For example, a managed care

plan representative described a case in a rural part of southeastern Ohio where the provider indicated the member would have benefited from a residential level of care, but the provider was offering partial hospitalization because the closest residential facility was two hours away from the member's home and the member didn't want to be that far away.

In other cases, focus group participants reported having to wait many months to receive treatment in rural parts of the state. Others living close to the West Virginia border described needing to travel to the state's urban centers, such as Columbus and Cincinnati, to get access to care. In contrast, many focus group participants who were residing in urban areas of the state described access to care ranging from walk-in availability to a few days or weeks wait for treatment, and generally viewed this provider capacity as sufficient to meet their needs. Telehealth was suggested by some key informants as a potential method for expanding provider availability, especially as a means to combat geographic disparities in capacity.

State agency representatives, managed care plans, and treatment providers all attributed geographic disparities in provider capacity to market forces and the reality that providers have to sustain a business model. Some stakeholders tied this to small population centers where there wasn't sufficient demand for all levels of care. Decisions to provide certain services are also tied to reimbursement rates - one managed care plan reported a provider saying that they didn't offer ASAM level 3.7 care because it didn't reimburse well. These market forces also influence the level of care of received treatment.

G.2.5.2 Differential access to all forms of MAT

Stakeholders reported that provision of MAT varies by geography, and not all types of MAT are equally provided. This was again attributed to market forces, with stakeholders explaining that providers can only establish MAT services if it is economically viable in their area. However, this geographic variation in MAT capacity was also attributed to persistent cultural and philosophical objections to the use of medication assisted treatment. This stigma from providers was often discussed as being rooted in abstinence-only and 12-step philosophies, and is most prominent in Northeast Ohio, including the Cleveland-Akron area.

Both focus group participants and key informants described how agonist MAT, and particularly methadone, is more stigmatized than antagonist MAT, such as naltrexone. This stigma may feed into limited provider availability, with individuals in recovery and state agency representatives describing difficulty accessing methadone in some parts of the state.

Stigma around MAT can also result in forced tapering in some treatment facilities. While it is unclear exactly how widespread the issue of forced tapering is in Ohio, many individuals in recovery described fears and anxieties around being weaned off of medications that they felt "kept them alive." Receiving MAT also presents some barriers to treatment at other levels of care - two individuals in recovery described the ways that methadone was limiting their ability to find treatment centers that would accept them as they transitioned from residential treatment to lower levels of care.

Despite some stakeholders' concerns about variable access to MAT around the state and limited access to methadone in more rural areas, at the state-level provider availability for MOUD generally and MOUD usage has consistently expanded since Q1 2017 (see Table 33 and Table 40).

G.2.5.3 Chronic workforce & staffing shortages

When discussing SUD provider capacity, key informants repeatedly highlighted concern about chronic workforce and staffing shortages. One managed care plan explicitly raised a concern about SUD providers having enough staff to be able to meet the ASAM requirements for medical oversight, citing the general lack of practitioners in the behavioral health system in Ohio.

Workforce obstacles to SUD provision are compounded by geographic disparities in resources. State agency representatives and treatment providers described difficulty recruiting qualified providers in rural areas, explaining that they must compete with treatment centers in urban centers that can afford to pay higher salaries. Other treatment providers expressed that while the cost of hiring staff was going up, the reimbursement rates from Medicaid were not increasing to match these rising costs.

Staffing issues were frequently cited as a particular concern around MAT provision, with providers describing struggling to hire enough clinical staff to administer the MAT, or simply not being able to afford to hire MAT prescribers.

G.2.5.4 Limited resources for recovery housing results in lack of care at lowest ASAM levels

Although Medicaid-funded provision of care was generally described as adequate at the state level, key stakeholders universally expressed concerns around limited provision of care at some of the lowest levels of the ASAM continuum. Most specifically, reliance on private funds and local levies for recovery housing has, in effect, truncated the continuum of care for many individuals with SUD.

Geographic disparities again emerge regarding provider capacity for recovery housing, since counties with higher unemployment and poverty rates (such as those in Appalachia) that cannot afford to levy taxes to fund these non-clinical and social support aspects of SUD treatment, are often unable to provide these services. These limited resources were lamented as a gap in the broader approach to SUD treatment in Ohio. One recovery advocate described how the insufficient provision of recovery housing has implications for long term recovery. They described how if someone leaves a RT facility but doesn't have a safe place to go to, they may return to a place that more supports a lifestyle of addiction than a lifestyle of recovery.

G.2.5.5 Limited SUD provision for non-opiate drug dependencies & pregnant women

Finally, both individuals in recovery and key informants described a lack of availability of treatment for AUD and other non-opiate drug dependencies. This was frequently discussed in the context of federal funding being tied to OUD treatment. One focus group participant reported being turned down from three treatment centers because they were abusing crack cocaine, not opiates. Additionally, managed care plans and treatment providers described obstacles to finding care for pregnant addicted women, and even more so for medication assisted treatment for this subpopulation.

G.2.6 *Milestone 5: Implementation of Comprehensive Treatment and Prevention Strategies to Address Opioid Abuse and OUD*

One of the most important achievements of the last decade in OUD treatment in Ohio has been the board of pharmacy's initiation of the prescription drug monitoring program – the Ohio Automated Rx Reporting System (OARRS). This has made advanced data analytics possible, which allows for insight into prescribing practices of individual clinicians. This has resulted in partnerships with the emergency departments to assess diagnosis and utilization data in real time and compare it with historical records. Additionally, state agency representatives described an expansion in the use of data to track overdose, such as overdose anomaly reports and outreach into communities to see what is happening in real time. Finally, stakeholders expressed that more monitoring of and data collection from MAT providers, as well as ensuring that the outcomes meet expectations in outpatient treatment, are warranted to ensure adherence to best practices and reduce relapse and overdose rates, as well as to provide educational and support interventions if necessary.

Stakeholders also described some barriers to comprehensive treatment of OUD and prevention strategies. They described miscommunication/misunderstanding about the rules regarding care coordination among providers, specifically the belief that care coordination is only possible when a provider has seen the patient within the past 30 days. This is particularly important to solve, as addressing comorbidities with mental health and other substances was described as key to maintaining sobriety. Stakeholders also reported that it can take 30 days for notification that a member is in treatment facility, which immediately presents a challenge to adherence to best practices that specify follow-up should occur within 7-14 days to ensure the member receives the appropriate level of care. They expressed frustration around this because there is a small window of opportunity to ensure patients are at the correct level of care before the residential stay is wasted. Finally, providers described extensive intake assessments (e.g., psychosocial surveys and ASAM) on the first couple of visits as delaying the onset of appropriate SUD treatment and care and negatively impacting patient experience.

G.2.7 *Milestone 6: Improved Care Coordination and Transitions between Levels of Care*

Stakeholders identified numerous benefits of care coordination and discussed barriers to adequate care coordination services, such as workforce challenges, geographic barriers, and administrative burden.

G.2.7.1 Importance of establishing care coordination

Both providers and MCPs discussed the multifaceted concerns which manifest among those seeking treatment for SUD. Management of both SUDs as well as co-morbidities is important for avoiding additional health concerns for individuals and reducing overall costs. A managed care plan representative described their efforts to use a wraparound model to coordinate across multiple systems to ensure that all the providers were working in sync and not duplicating services or efforts to meet the beneficiary's needs.

Providers also generally agreed that early engagement with individuals in treatment and working to link them with the other services they may need was key to helping improve their outcomes. One provider discussed hiring a care coordinator to address a perceived gap in patient care coordination. State agency stakeholders expressed the important of continued investment and efforts to build care-coordination capacity, saying that care-coordination is "kind of the backbone of what we do."

Despite there being general agreement among stakeholders on the importance of coordination, there wasn't always agreement on roles and the involvement of care managers. Some MCPs felt they had a good working relationship with providers and that they were able to facilitate discussion and innovation between providers. However, there was some disagreement in terms of ultimately who decides what an appropriate level of care is. Others mentioned that the inclusion of too many care managers can be detrimental, paralyzing efforts to coordinate care and ultimately may even frustrate those in treatment.

G.2.7.2 Geographic disparities in services and telehealth

There was discussion among several stakeholders about geographic disparities in access to other healthcare services needed by those in SUD treatment. They may be able to find a residential treatment center, but there were not necessarily services for the treatment of mental health nearby. Telehealth has been one way in which some of these providers have attempted to fill in the gap. Concerns were also raised about being able to access and remain at the level of care needed while in residential treatment where there may be overlapping/competing concerns, such as physical or mental health needs. One provider discussed the possibility of trying to have some of these other mental health needs met while in a residential treatment setting.

G.2.7.3 Workforce considerations

Another concern regarding care coordination is its perceived reliance on highly motivated individuals to make sure coordination of patient care for other needs was being met. If those integrated individuals who have established connections between organizations and providers leave, then the system no longer functions, and care coordination falls apart for many patients. MCPs described working internally to make sure that they have appropriate staffing.

G.2.7.4 Rules and regulations as barriers

While all stakeholders acknowledged the need for rules and regulations, and the positive impact they have with regards to safety and consistency across organizations, there were some concerns about perceived barriers that some of these rules may put into place when trying to coordinate care. One rule in particular which was called out was 42 CFR Part 2 to protect patient records created by federally assisted programs for the treatment of SUD. They expressed difficulty in coordinating care when they aren't allowed to acknowledge the patient being in care without specific authorizations. The provider did go on to discuss how changes had made it easier to coordinate care internally for organizations but can still be burdensome when trying to discuss a patient with another care organization.

Others mentioned how other regulations made it difficult for residential treatment facilities to provide basic care (including use of OTC medications) and instead made the process more time intensive and complicated for patients. Ways that SUD care coordination has been modeled also differed administratively to how care coordination was modeled for mental health according to one stakeholder. As such, there was a difference in the degree of approaches and individual engagement that can be utilized for those with SUD compared to those under Mental Health CPS. There were also concerns raised by some of the stakeholders interviewed that some providers are still adhering to rules about when to close a case which had been eliminated for several years. Despite this, the adherence to this "legacy rule" meant that care coordination was hindered for some patients. Other outdated regulations which hinder care, such as the notion that an extensive assessment and ASAM level of care needs to be done before treatment can be rendered (rather than brief assessments which do not require multiple visits), were discussed.

H. Conclusions and Policy Implications

Ohio's SUD Section 1115 Demonstration Waiver is an innovative program designed to improve access and use of the full continuum of evidence-based treatment for SUD, including comprehensive treatment and prevention services, residential treatment, MAT, and improve coordination and transitions between LOCs. Key components of the program that have been implemented to date include creation of access standards for SUD in MCP contracts along with a focus on sufficient SUD provider capacity, requirements to increase MOUD utilization in residential treatment settings, and improvements to the credentialling process for SUD residential providers.

Many of these components are in the early stages of implementation. Additional time in the post-implementation phase will permit a comprehensive assessment of cost, quality, and member experience outcomes. In what follows is a summary of interim findings associated with each of the evaluation hypotheses and their implications in relation to state policies and other state and federal other initiatives.

Q1. Did the demonstration increase access to SUD treatment services?

Several interventions were specifically designed to increase access to SUD providers, particularly in underserved areas of the state where the average provider-to-patient ratio in the pre-intervention period was approximately 60% lower than for the state as a whole. To address these gaps in SUD services, the state fielded a comprehensive provider availability assessment and implemented policies requiring that Medicaid managed care plans focus on sufficient SUD provider capacity and adopt access requirements for all ASAM Levels of Care. The interim findings suggest that the ratio of all SUD providers to patients was on a very slight downward trend during the pre-intervention period, and that trend only marginally increased in the post-intervention period. However, there was evidence that access to all provider subtypes (LOC 1-3) improved during the post-intervention period.

The slight downward trend in access to all SUD providers in the pre-intervention period and the lack of an immediate change at the start of the post-intervention period may be attributed to several factors. First, the largest decrease in access was observed immediately following the onset of the COVID-19 PHE and was likely related to that event. Second, there was a substantial increase in the number of beneficiaries with SUD over time, which required an increase in the number of SUD providers in order to keep pace with increasing demand. Third, there were delays in several of the planned action items that were expected to improve provider availability. For example, several policy changes that would have created access standards in MCP contracts were not put in place until the Next Generation of MCP contracts were established in February 2023. With additional time in the remaining waiver period, it is possible that the new access standards will improve access to SUD providers in the later demonstration quarters.

Interestingly, the pattern in underserved areas differed from the rest of the state. Within underserved areas, there was a positive trend in access to SUD providers over time in the pre-intervention period and there was also a significant immediate improvement in the provider-to-beneficiary ratio associated with the intervention. However, there was an estimated downward trend in access to SUD providers in the post intervention period. The immediate improvement in access to SUD providers aligns with goals of the demonstration to improve access to care in

underserved areas where the gaps in access are greatest. Improvement was notable immediately following the PHE and may also be related to advances in telehealth that are a particularly effective means of overcoming workforce shortages and addressing transportation barriers in underserved areas. The decline in access since Q4 2021 may be partially related to a decrease in the use of telehealth services as many providers resumed in-person services. With the remaining waiver periods it will be possible to observe whether these trends continue.

Access to MOUD providers increased over time during both the pre-intervention and post-intervention periods, although there was no significant change associated with the intervention. Many of the waiver provisions that were expected to improve access to MOUD, such as establishing regional access standards in the MCP contracts, were only implemented within the past year. Therefore, additional time is needed to observe the impact of those interventions. The upward trend observed during the pre-intervention period was likely the result of other state and federal efforts directed at improving access to MOUD providers and utilization of MOUD in recent years. For example, resources were focused on increasing the number of providers eligible to prescribe MOUD, reducing stigma, eliminating or clarifying prior authorization requirements, and establishing treatment guidelines.

Q2: Does the demonstration increase utilization of SUD treatment by enrollees with SUD?

The demonstration included several interventions targeting utilization of SUD treatment including MOUD. These activities included the residential and withdrawal management of SUD services rule (OAC 5122-29-09), which was designed to ensure that residential treatment services, including access to MOUD, are delivered in accordance with ASAM LOCs. Additional strategies to increase SUD treatment utilization included data and analysis review to identify the needs of individuals with SUD and development and implementation of care coordination models to meet those needs. Other enhancements to the overall managed care coordination model were embedded in the Next Generation Managed Care contracts.

The interim findings suggested that MOUD utilization increased steadily during the pre-implementation period and continued to improve, though at a slower pace, in the post-implementation period. MOUD utilization during residential treatment

stays showed a brief immediate drop in the post-intervention period but was followed by an estimated trend of a faster rate of increase than in the pre-intervention period.

Additional time is needed to assess whether this improvement will continue. As described previously, many state and federal policies and programs were enacted to increase access and utilization of MOUD, but several action items aimed at improving MOUD utilization in residential treatment settings were delayed until July 2023. More time will be needed to observe the impact of these action items, including the new requirement of offering MOUD and monitoring utilization during RT stays.

The interim findings show that the rate of initiation of treatment for new SUD episodes was slightly declining during the pre-intervention period, with a steady downward trend during the PHE (2020 and 2021). Results are not yet available for the post-intervention period, but this may be an area for examination if rates of initiation of treatment do not begin to improve in those additional timepoints as healthcare utilization returns to pre-pandemic patterns.

Q3: Does the demonstration improve coordination and management of care?

Interventions aimed at improving care coordination and management included enhancements to the state's PDMP to identify persons at risk for drug overdose, increased data exchange among inpatient and RT providers, and overall improvements to the managed care coordination model in the Next Generation Managed Care contracts.

The findings suggest that there was an upward trend during the pre-intervention period in follow up after IP discharge, ED visits, and RT stays. Findings associated with the intervention were mixed. There were only three timepoints available to observe trends: there was a trend downward in follow-up after IP discharge and ED visits in the post-intervention period, while follow-up after RT stays continued to trend upward without any significant change.

Timely follow up care has been viewed as a key strategy to engage individuals in ongoing SUD treatment in order to potentially improve outcomes and reduce the

likelihood of readmission and overall cost of care. HEDIS quality measures for follow up after ED visits[25], and high-intensity care for substance use treatment[26] were established in recent years, paving the way for payor incentives and improvement efforts. Additional timepoints are needed to determine whether some of the waiver action items focused on coordination of care and transitions between levels of care that were established in 2022 under the new managed care plans such as care coordination entities (CCEs), the OhioRISE program, and care management entities (CMEs) will have an impact on timely follow-up care.

For measures of high-risk utilization of opioids, including prescriptions from multiple providers and high dosages >=90 MME, there was steady reduction throughout the pre-intervention period. Because these measures require data over a full year, additional time will be needed to observe post-intervention trends. There have been a host of policy changes in recent years that may affect these outcomes, and the state medical board established guidance for safe prescribing, including limits on opioid prescriptions for acute and chronic pain.[27] Ohio's Automated Rx Reporting System (OARRS) provided easy access to vital data to help prescribers and pharmacies provide better care for their patients. Through the waiver, additional enhancements are planned, such as EHR and pharmacy dispensing system integration. These changes could allow more clinicians to identify and avoid high risk prescribing and dispensing practices. Additional time will be needed to observe the impact of these changes.

Q4: Does the demonstration reduce the utilization of ED and IP hospital settings for OUD and other SUD treatment?

Improvement in access, utilization, and coordination of care were expected to reduce use of ED and IP treatment. In particular, improvements in availability and quality of RT, including new RT standards, were expected to contribute to reductions in the costliest care. The interim findings support this hypothesis. ED and IP utilization for SUD decreased significantly in the post-implementation

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[25] Follow-up after ED visit for alcohol and other drug abuse or dependence (FUA)
[26] Follow-up after high-intensity care for substance use disorder (FUI)
[27] Opioid Prescribing Guidelines | Department of Mental Health and Addiction Services (ohio.gov)

period. The rate of 30-day readmission to IP after RT stay and 30-day readmission to ED following an ED visit decreased during the pre-implementation period. Since this measure requires a full year of data, no post implementation findings are available. Additional time is needed to observe post-implementation trends.

Q5: Does the demonstration improve adherence to SUD treatment?

The interim findings show that continuity of pharmacotherapy for OUD was generally increasing during the pre-intervention period; however, conclusions about the effect of the demonstration cannot be made until there are additional data points in the post-intervention period. There was a small positive trend in continuity of care in the pre-implementation period, after accounting for seasonal variation.

Q6: Do beneficiaries receiving SUD services experience an improved quality of care?

Access to preventive ambulatory care and screening for HIV/HCV/HBC were also expected to increase as a result of improvements in access, utilization, and coordination of care. Post intervention data are not yet available to observe the impact of the demonstration on these measures. The rate of screening generally improved over time during the pre-implementation period; however, there were what appear to be effects from the COVID-19 pandemic on these measures.

The interim findings concerning early engagement with SUD treatment showed a small downward trend during the pre-implementation period, with signs that the change in healthcare utilization during the PHE may have influenced this measure. Data are not yet available for the post-implementation period to estimate the impact of the demonstration, and these will be the first time points available in the "post-pandemic" period.

Q7: Does the demonstration reduce rates of opioid-related overdose deaths?

The primary purpose of Ohio's demonstration was to reduce the overdose death rate, including overdose deaths due to opioids. During the pre-implementation time period these rates steadily increased. The interim findings are only available

for the first four timepoints of the post-intervention period, but initial findings suggest a drop in the rate of overdose deaths (11 per 100,000 fewer deaths) and opioid overdose deaths (10 per 100,000 fewer deaths) associated with the start of the post-intervention period. The timing of these changes suggests a causal association between the interventions implemented through Ohio's demonstration and a reduction in overdose deaths. Though there is evidence of an overall decrease during the post-intervention period, the trajectory of the rate over time still shows an increasing pattern similar to the pattern in the pre-intervention period.

Other factors may have also contributed to the immediate decrease observed at the start of the post-intervention period. This trend may reflect a change in the sharp increase in overdose deaths that was seen during the pandemic and attributed to stress, anxiety, job loss, financial strain, and altered living arrangements as described in our qualitative analysis and in other research.[28] The remaining post-implementation periods will clarify whether these improvements continue and are sustained.

Q8. How do costs related to the demonstration waiver change throughout the pre- and post-demonstration periods?

A key consideration for this evaluation was the impact on the cost of care. The demonstration provided Ohio with flexibility in the administration of services that could improve efficiency and quality without increasing the cost of care. The demonstration was expected to increase SUD-IMD, SUD-other, and non-SUD costs, but decrease more costly services including IP and ED costs. The overall impact was expected to be cost neutral or result in savings.

The interim findings supported these expectations -- the demonstration was associated with a decrease in the total cost of care per member-month at the start of the post- implementation period, as well as a decrease in the cost trend over time during the post-intervention period. In particular, there was an immediate decrease in total ED and IP costs per member-month that aligned with the timing of

[28] CDC drug overdose COVID data brief

the demonstration. There was also a decrease in the trend of ED and IP costs over time in the post-intervention period suggesting that ED and IP costs continued to decline post-intervention. There was also a decrease in the trend over time for outpatient costs in the post-intervention period and a decrease in non-SUD treatment costs associated with the demonstration. Interim findings showed the trend in pharmacy costs was so far primarily unchanged in the post-intervention period and continues to increase. However, improving MOUD access and utilization was a core focus of demonstration activities.

I. Interactions with Other State and Federal Initiatives

Other federal awards may have an impact on measures of service delivery, cost, and outcomes that are the focus of this evaluation. For example, the Provider Relief Fund, which was established through the 2020 CARES Act, provided funding directed at healthcare-related expenses and lost revenue attributable to COVID-19. This funding may have helped to minimize the impact of the pandemic on access to services. The American Rescue Plan Act of 2022 (ARPA) provided funding that is intended to strengthen the mental health and addiction services system, primary directed toward prevention and early intervention, which may reduce the prevalence and minimize the long-term impact of substance use disorders. However, the impact of these efforts is unlikely to be fully realized during the timeframe of this evaluation.

Ohio's State Opioid Response/State Opioid and Stimulant Response (SOR/SOS) program was funded by SAMHSA, in 2018, 2020, and 2023. With a budget of $97.4 million in 2023, the program will support programs across Ohio that focus on implementation of evidence-based prevention, treatment, and recovery services, naloxone distribution, programs to expand access to MOUD, innovative telehealth strategies directed at rural and underserved areas, access to peer support, recovery housing, and employment, disparity reduction for minority populations disproportionately affected by SUD, and community collaborations to address complex social needs of underserved populations. Because this funding stream has been present throughout the pre and post waiver periods, it is not expected to have a substantial impact on the evaluation metrics.

J. Lessons Learned and Recommendations

Based on the interim evaluation findings, there are several key takeaways and lessons learned regarding the impact of the demonstration that can guide implementation and evaluation activities during the remaining waiver period.

1. The COVID-19 pandemic limited our ability to isolate the impact of the demonstration from the impact of the PHE. In addition, Ohio's response to the pandemic required the behavioral health system to divert resources and delay implementation of some of demonstration activities. As a result, several important provisions of the demonstration were not implemented until 2023, including the state requirement for residential treatment facilities to provide access to MAT, an on-site review process of residential provider qualifications aligned with State requirements for ASAM, and policies requiring that Medicaid managed care plans focus on sufficient SUD provider capacity. The impact of these delays combined with impact of the pandemic on many of our evaluation measures limited our ability to make causal inferences about the effectiveness of the demonstration. Additional sensitivity analyses will be conducted during the remaining waiver period to evaluate the timing of changes relative to the pandemic and assess the impact of interventions not completed by the October 2021 target date. More time may be needed to evaluate the impact of interventions still underway. However, the remaining waiver period may not be sufficient to fully assess the impact of the demonstration on the quality of healthcare and outcomes since some of the most crucial interventions were only recently implemented.

2. The interim findings revealed some evidence suggesting a reduction in the rate of overdose death and in the rate of opioid overdose death. These findings are encouraging as a reduction in overdose death was identified as the demonstration's main purpose.

   The timing of these changes aligns with the timing of the demonstration, suggesting a causal relationship. However, the decline in severity of COVID-19 infections in 2022 may have been an additional factor in that prompted a reduction overdose death. Additional observations in the post-intervention period will allow us to determine whether these trends persist in the post-

pandemic period when the waiver interventions are fully implemented. Nationwide, the overdose death rate climbed during the pandemic. Ohio fared better than other states, dropping from 5th to 7th place in opioid overdose deaths in 2021.[29] This may suggest that Ohio's demonstration activities helped to minimize the impact of the pandemic and reduce overdose death in the period after October 2021.

3. There was evidence of improvement in many of the primary and secondary drivers that were key milestones established by CMS for this demonstration. There were signs of improvement in access to SUD treatment providers, and MOUD providers, particularly in underserved areas, and utilization of MOUD in residential treatment settings. It was notable that the number of beneficiaries diagnosed with SUD grew since the waiver began. Provide capacity scaled up to keep pace with the increase in demand.

   An important provision of the demonstration was establishing minimum access standards across Ohio. This provision was not put in place until 2023. Therefore, it may not be possible to fully assess the impact of this intervention until after fall of 2024, which is the end of the waiver period.

   There is evidence that policy changes implemented through the PHE, particularly telehealth, may have been effective in improving access to care in underserved areas. The state may wish to explore expansion of telehealth services in underserved areas as an approach to maintain access in these areas.

4. The findings suggest there was a statistically significant reduction in the cost of care associated with the demonstration's timing, with large reductions in inpatient and ED costs and outpatient services. This finding supports expectations that the waiver could improve utilization of evidence-based treatments that could minimize costly ED and IP care. The timing of the cost savings in relation to the pandemic complicates efforts to isolate the impact of the demonstration for this evaluation. With additional measurement periods in the post-implementation phase, it may be possible to distinguish changes that

[29] KFF - Opioid Overdose Death Rates

are likely to be related to the waiver interventions versus the decline of the pandemic.

Overall, the interim results highlight encouraging trends related to quality of care, cost, and patient outcomes. The impact of the COVID-19 pandemic and associated delays in implementation of several waiver interventions has limited our ability to make causal inferences about the findings. With additional data points in the remaining waiver period, the evaluation can focus on assessing the impact of interventions that were delayed and isolating the impact of waiver interventions on performance measures.

K. Appendices

K.1 Evaluation Measure Specifications

H1A1: SUD provider availability ratio

- **Numerator:** The number of providers who were enrolled in Medicaid and delivered SUD services during the measurement period
- **Denominator:** The number of beneficiaries ages 18-64 during the measurement period with a primary or secondary SUD diagnosis
- **Measurement period:** Quarter
- **Notes:**
    - We also calculate this measure using billing providers rather than rendering providers as a supplemental measure. See Appendix K.2 for results.

Construction Overview

Denominator

- For eligible adults ages 18-64 during the measurement period, count the number of persons who had a claim with a primary or secondary diagnosis of SUD during the measurement period

Numerator

- Identify providers enrolled in Medicaid who provided SUD services (including office-based MOUD) during the measurement period
- Count the number of distinct providers

H1A2: SUD provider availability ratio – MOUD

- **Numerator:** The number of providers who were enrolled in Medicaid and delivered MOUD (buprenorphine, methadone, or naltrexone) during the measurement period
- **Denominator:** The number of beneficiaries ages 18-64 during the measurement period with a primary or secondary OUD diagnosis
- **Measurement period:** Quarter
- **Notes:**

- In the approved evaluation design this measure was labeled as "SUD provider availability ratio - MAT" although the denominator was restricted to beneficiaries with an OUD diagnosis and the numerator-compliant MAT is predominantly used for treating OUD. The evaluators decided to relabel this measure to clarify that it is capturing provider availability for MOUD, rather than MAT for SUD more broadly. Therefore, the measure label has been updated to "SUD provider availability ratio – MOUD" to more accurately reflect the measure content.
- We also calculate this measure using billing providers rather than rendering providers as a supplemental measure. See Appendix K.2 for results.

Construction Overview

Denominator

- For eligible adults ages 18-64 during the measurement period, count the number of persons who had a claim with a primary or secondary diagnosis of OUD during the measurement period

Numerator

- Identify rendering providers enrolled in Medicaid who provided MOUD during the measurement period
- Count the number of distinct rendering providers

H1B1: SUD provider availability ratio by level of care

- **Numerator:** The number of providers who were enrolled in Medicaid and delivered SUD services during the measurement period by category and ASAM sublevels
- **Denominator:** The number of beneficiaries ages 18-64 during the measurement period with a primary or secondary SUD diagnosis
- **Measurement period:** Quarter
- **Notes:**
  - We also calculate this measure using billing providers rather than rendering providers as a supplemental measure. See Appendix K.2 for results.

Construction Overview

Denominator

- For eligible adults ages 18-64 during the measurement period, count the number of persons (quarter) who had a claim with a primary or secondary diagnosis of SUD during the measurement period

Numerator

- Identify rendering providers enrolled in Medicaid who provided SUD services (including office-based MOUD) during the measurement period
- Count the number of distinct rendering providers
- Report by ASAM Levels of Care (1-3)

H1C1: SUD provider availability ratio within underserved areas

- **Numerator:** The number of providers who were enrolled in Medicaid and delivered SUD services during the measurement period in select counties determined to be underserved based on the number, percentage, and ratio of provider to beneficiaries
- **Denominator:** The number of beneficiaries ages 18-64 during the measurement period with a primary or secondary SUD diagnosis within selected counties
- **Measurement period:** Quarter
- **Notes:**
    - We also calculate this measure using billing providers rather than rendering providers as a supplemental measure. See Appendix K.2 for results.

Construction Overview

The counties identified as underserved areas are those counties that have a combination of a large number and percentage of beneficiaries with SUD and a small ratio of providers to beneficiaries during 2018-2020. These three elements were combined to form an index by calculating and averaging z-scores to standardize the magnitude of differences across the three variables. Eleven counties were selected by looking at the bottom quartile and histogram of the index scores. Those counties were: Vinton, Meigs, Jackson, Hocking, Harrison, Brown, Noble, Morgan, Adams, Preble, and Perry. Figure 35 shows a map of the selected counties.

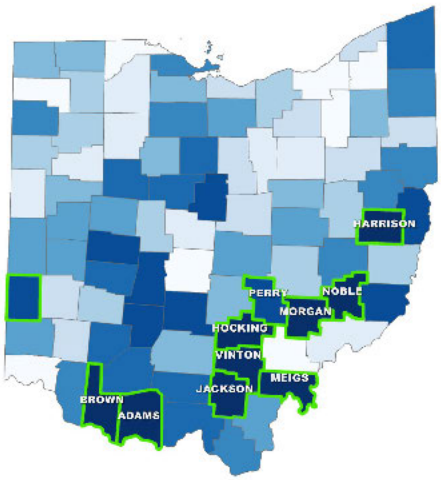
Denominator

- For eligible adults ages 18-64 during the measurement period, count the number of persons who had a claim with a primary or secondary diagnosis of SUD during the measurement period whose address at the time was in the selected counties

Numerator

- Count the unique number of rendering providers enrolled in Medicaid who provided SUD services (including office-based MOUD) during the measurement period whose address was in the identified counties.

Figure 35: Selected counties identified as underserved related to measure H1c1



Note: Darker colors represent lower values of the index score computed to identify the counties

H2A1: Initiation of SUD treatment

- **Numerator:** The number of beneficiaries ages 18-64 during the measurement period who initiated treatment through an IP SUD admission, outpatient visit, intensive outpatient encounter or partial hospitalization, telehealth, or MOUD within 14 days of diagnosis
- **Denominator:** The number of beneficiaries ages 18-64 during the measurement period with a new episode of SUD abuse or dependence
- **Measurement period:** Rolling quarters, 1-year windows
- **Notes:**
    - This measure is based off MM15 with an adjusted measurement period to allow the measure to be calculated quarterly with a one-year window.

Construction Overview

Denominator

- Identify beneficiaries with a new episode of SUD abuse or dependence based on a negative diagnosis history and who are continuously enrolled.

Numerator

- Among the beneficiaries identified in the denominator identify initiation events.

H2B1: MOUD usage

- **Numerator:** The number of beneficiaries ages 18-64 during the measurement period with an OUD diagnosis who have a claim for MOUD during the measurement period
- **Denominator:** The number of beneficiaries ages 18-64 during the measurement period with a primary or secondary OUD diagnosis
- **Measurement period:** Quarter
- **Notes:**
    - This measure is based off MM12 with an adjusted measurement period and MODRN metric "Medications for opioid use disorder (OUD) measure" with a modified age range (MODRN uses 12-64).
    - In the approved evaluation design this measure was labeled as "MAT usage," although the denominator was restricted to beneficiaries with an

OUD diagnosis. The evaluators decided to relabel this measure to clarify that it is capturing medication for OUD (MOUD) among the OUD subpopulation, rather than MAT for SUD more broadly. Therefore, the measure label has been updated to "MOUD usage" to more accurately reflect the measure content.

Construction Overview

Denominator

- For eligible adults ages 18-64 during the measurement period, count the number of persons who had a claim with a primary or secondary diagnosis of OUD during the measurement period.

Numerator

- Amongst the population defined in the denominator, consider all Professional, Outpatient, Inpatient, and Pharmacy claims
- Count the number of persons with a claim for MOUD within any of the claim types

H2B2: RT stays with MOUD

- **Numerator:** The number of RT stays for beneficiaries ages 18-64 with an OUD primary diagnosis with MOUD administered or prescribed during the stay or 15 days before the start or after the end of the stay
- **Denominator:** The number of RT stays for beneficiaries ages 18-64 with an OUD primary diagnosis during the measurement period
- **Measurement period:** Quarter
- **Notes:**
  - In the approved evaluation design this measure was labeled as "RT stays with MAT" and included any RT stay with a SUD diagnosis. The evaluators decided to narrow the scope of the measure to focus on RT for OUD and the use of medication assisted treatment for OUD (MOUD), because it is not always medically appropriate to use MAT during residential treatment for a SUD stay. Therefore, the measure label has been updated to "RT stays with MOUD" to more accurately reflect the modified measure content.

Construction

Denominator

- For eligible adults ages 18-64 during the measurement period, create RT stay spans from professional, inpatient and outpatient claims
  - RT claims are defined as those with appropriate procedure code and an OUD primary diagnosis code
  - Allow for a 2-day gap in billing to accommodate weekends
- Count the number of unique RT stay spans during the measurement period

Numerator

- For beneficiaries identified in RT stay spans in the denominator, create MOUD spans, accounting for differences between date prescribed and dates administered, from professional, inpatient, outpatient, and RX claims
- Define an RT stay with MOUD based on 3 scenarios:
  - MOUD span starts up to 15 days before RT and does not end before RT starts
  - MOUD span starts during RT
  - MOUD span starts up to 15 days after RT
- Count the number of unique RT stay spans with MOUD during the measurement period

H3A1: IP follow-up

- **Numerator:** The number of IP visits with a primary SUD diagnosis among beneficiaries ages 18-64 who had a follow-up visit with a corresponding primary SUD diagnosis within 30 days
- **Denominator:** The number of IP visits with a primary SUD diagnosis among beneficiaries ages 18-64
- **Measurement period:** Rolling quarters, six-month windows
- **Notes:**
  - This measure is based off MM17 with an adjusted measurement period.

Construction

Denominator

- For eligible adults ages 18-64 during the measurement period, create inpatient stay spans by combining claims for the same beneficiary and provider that have a <= one-day gap between claims
    - For multiple stays within a 31-day period, include only the first eligible inpatient stay discharge
    - Keep stays where the patient is continuously enrolled from the discharge date through 30 days after the discharge date
- Remove stays for beneficiaries that have a hospice claim in the measurement period
- Remove stays that ended within 30 days of the end of the measurement period
- Count the number of inpatient stays

Numerator

- Consider professional and outpatient claims, including denied claims
    - Find claims with a procedure code, revenue, code, or place of service code that qualifies as a follow-up visit and a primary SUD diagnosis
- Combine with the inpatient stays constructed in the denominator dataset
- Count the number of inpatient stays with a follow-up visit within the 30 days following the inpatient discharge date

H3B1: RT follow-up

- **Numerator:** The number of RT visits for beneficiaries ages 18–64 who have a primary SUD diagnosis and who had a follow-up visit with a corresponding primary SUD diagnosis within 30 days
- **Denominator:** The number of RT visits for beneficiaries ages 18–64 who have a primary SUD diagnosis
- **Measurement period:** Rolling quarters, six-month windows
- **Notes:**
    - This measure is based off MM17 with an adjusted measurement period.

Construction

Denominator

- For eligible adults ages 18-64 during the measurement period, consider outpatient and professional claims, including denied claims
- Create RT stay spans by combining claims for the same beneficiary and provider, allowing for a 2-day gap in billing to accommodate weekends
    - For multiple stays within a 31-day period, include only the first eligible RT stay discharge
    - Keep stays where the patient is continuously enrolled from the discharge date through 30 days after the discharge date
- Remove stays for beneficiaries that have a hospice claim in the measurement period
- Count the number of RT stays

Numerator

- Consider professional and outpatient claims, including denied claims
    - Find claims with a primary SUD diagnosis that qualify as a follow-up visit
- Combine with the RT stays constructed in the denominator dataset
- Count the number follow-up visits within the 30 days of the RT discharge date

H3C1: ED follow-up

- **Numerator:** The number of ED visits for beneficiaries ages 18-64 who have a primary SUD diagnosis and who had a follow-up visit with a corresponding primary SUD diagnosis within 30 days
- **Denominator:** The number of ED visits for beneficiaries ages 18 – 64 who have a primary SUD diagnosis
- **Measurement period:** Rolling quarters, six-month windows
- **Notes:**
    - This measure is based off MM17 with an adjusted measurement period.

Construction

Denominator

- For eligible adults ages 18-64 during the measurement period, consider professional and outpatient claims, including denied claims
- Identify claims with a procedure code or revenue code for an ED visit
    - For multiple ED visits within a 31-day period, include only the first eligible ED visit
    - Keep ED visits where the patient is continuously enrolled from the event date through 30 days after the ED visit
- Remove visits for beneficiaries that have a hospice claim in the measurement period
- Count the number of ED visits

Numerator

- Consider professional and outpatient claims, including denied claims
    - Find claims with a primary SUD diagnosis that qualify as a follow-up visit
- Combine with ED visits constructed in the denominator dataset
- Count the number of follow-up visits within 30 days of the ED visit date

H3D1: Use of opioids from multiple providers in persons without cancer

- **Numerator:** The number of beneficiaries ages 18-64 without cancer who received prescriptions for opioids from 4 or more prescribers and 4 or more pharmacies during the measurement period
- **Denominator:** The number of beneficiaries ages 18-64 without cancer during the measurement period
- **Measurement period:** Rolling quarters, one-year windows
- **Notes:**
    - This measure is based off MM19 with an adjusted measurement period.
    - Due to the temporal specifications of this measure (opioid episode length > 90 days), we calculated this measure quarterly with a one year look forward period.
    - In the approved evaluation design, the numerator for the measure was incorrectly specified as including beneficiaries who received

prescriptions for opioids from 4 or more prescribers "or" 4 or more pharmacies. This has been corrected to "and" to better adhere with the corresponding monitoring metric (#19).

Construction

Denominator

- For eligible beneficiaries ages 18-64 in the measurement period, identify individuals with 2 or more prescription claims for opioid medications (same or different opioids) on different dates of service and with a cumulative days' supply of at least 15 days during the measurement period.
- Among these beneficiaries, identify individuals with an opioid episode of at least 90 days, with the episode start at least 90 days before the end of the measurement period
- Exclude individuals receiving hospice care, with a sickle cell diagnosis, or with a cancer diagnosis during the measurement period
- Count the number of distinct beneficiaries

Numerator

- Among beneficiaries identified in the denominator, identify individuals who received prescriptions for opioids from at least 4 unique prescribers AND at least 4 unique pharmacies during the evaluation period, which is from the beginning of an opioid episode (defined above) to the end of an episode or 180 days, whichever is shorter.
- Count the number of distinct beneficiaries.

H3D2: Use of opioids at high dosage in persons without cancer

- **Numerator:** The number of beneficiaries ages 18-64 without cancer who received prescriptions for opioids at high dosage (>= 90 morphine milligram equivalents) during the measurement period
- **Denominator:** The number of beneficiaries ages 18-64 without cancer during the measurement period
- **Measurement period:** Rolling quarters, one-year windows
- **Notes:**

- This measure is based off MM18 with an adjusted measurement period. The approved evaluation design indicated that the measure steward was MM20, which was incorrect.
- Due to the temporal specifications of this measure (opioid episode length > 90 days), we calculated this measure quarterly with a one-year look forward period.
- The evaluation design specified the high dosage cutoff at 120 MME, but we updated this to 90 MME to better adhere to MM18 specifications.

Construction

Denominator

- This is identical to the H3D1 denominator. See description above.

Numerator

- Among beneficiaries identified in the denominator, identify individuals who had an average daily dosage of >= 90 morphine milligram equivalents (MME) during an opioid episode of at least 90 days
- Count the number of distinct beneficiaries

H4A1: ED utilization for SUD

- **Numerator:** The number of ED visits for SUD among beneficiaries ages 18-64 during the measurement period
- **Denominator:** The number of beneficiaries with SUD ages 18-64 during the measurement period
- **Measurement period:** Quarterly, with 11-month lookback window for defining SUD diagnosis
- **Notes:**
  - This measure is based off MM23 with an adjusted measurement period.
  - We also calculate this measure for the OUD subpopulation as a supplemental measure by including only eligible beneficiaries who had a primary or secondary OUD diagnosis in the lookback window. See Appendix K.2 for results.

Construction

Denominator

- For eligible adults ages 18-64 during the measurement period, count the number of persons (quarter) who had a claim with a primary or secondary diagnosis of SUD during the measurement period or in the prior 11 months.

Numerator

- Amongst the population defined in the denominator, consider all Professional, Outpatient, and Outpatient Claims
- Count the number of persons with ED claims for SUD within any of the claim types during the measurement period

H4A2: IP stays for SUD

- **Numerator:** The number of IP discharges related to a SUD stay among beneficiaries ages 18-64 during the measurement period
- **Denominator:** The number of beneficiaries with SUD ages 18-64 during the measurement period
- **Measurement period:** Quarterly, with 11-month lookback window for defining SUD diagnosis
- **Notes:**
  - This measure is based off MM24 with an adjusted measurement period.
  - We also calculate this measure for the OUD subpopulation as a supplemental measure by including only eligible beneficiaries who had a primary or secondary OUD diagnosis in the lookback window. See Appendix K.2 for results.

Construction

Denominator

- For eligible adults ages 18-64 during the measurement period, count the number of persons (quarter) who had a claim with a primary or secondary diagnosis of SUD during the measurement period or in the prior 11 months.

Numerator

- Among the population identified in the denominator, find unique inpatient stay spans related to SUD
- Calculate the total number of IP events using the discharge dates

H4B1: 30-day IP admission rate for SUD following an RT stay among beneficiaries with SUD

- **Numerator:** The count of inpatient admissions within 30 days of the index date: at least one acute admission for SUD within 30 days of the index discharge date
- **Denominator:** Residential treatment discharges among beneficiaries with a primary SUD diagnosis
- **Measurement period:** Rolling quarters, 1-year windows
- **Notes:**
  - This measure is based off MM25 with an adjusted measurement period and index locations.

Construction

Denominator

- For eligible adults ages 18-64 during the measurement period, consider inpatient, outpatient, and professional claims for the measurement period
- Create RT stay spans by combining claims for the same beneficiary and provider, allowing for a 2-day gap in billing to accommodate weekends, with only one RT stay within a 30 day period
- Count records that occur between the first day of the quarter and 11 months after the first day of the quarter.

Numerator

- For eligible adults ages 18-64 during the measurement period, identify persons who had an inpatient claim with a primary diagnosis of SUD during the measurement period
- Create inpatient stay spans by combining claims for the same beneficiary and provider that have less than a one-day break between claims
- Combine with the inpatient stays with the RT stays identified in the denominator
- Count records that occur between the first day of the quarter and one year after the first day of the quarter

H4B2: 30-day ED visit rate for SUD following an RT stay among beneficiaries with SUD

- **Numerator:** The count of ED visits within 30 days of the index date: at least one acute visit for SUD within 30 days of the index discharge date
- **Denominator:** Residential treatment discharges among beneficiaries with a primary SUD diagnosis
- **Measurement period:** Rolling quarters, 1-year windows
- **Notes:**
  - This measure is based off MM25 with an adjusted measurement period and index locations.

Construction

Denominator

- For eligible adults ages 18-64 during the measurement period, consider inpatient, outpatient, and professional claims for the measurement period
- Create RT stay spans by combining claims for the same beneficiary and provider, allowing for a 2-day gap in billing to accommodate weekends, with only one RT stay within a 30-day period
- Count records that occur between the first day of the quarter and 11 months after the first day of the quarter.

Numerator

- For eligible adults ages 18-64 during the measurement period, consider professional and outpatient claims
- Identify claims with a procedure code or revenue code for an ED visit
- Combine the ED visits with the RT stays identified in the denominator
  - Consider only cases where the ED visit date either occurs on the day of the RT discharge or within the 29 days after
- Count records that occur between the first day of the quarter and one year after the first day of the quarter

H4B3: 30-day ED visit rate for SUD following an ED visit among beneficiaries with SUD

- **Numerator:** The count of ED visits within 30 days of the index date: at least one acute visit for SUD within 30 days of the index discharge date
- **Denominator:** ED visits among beneficiaries with an SUD diagnosis
- **Measurement period:** Rolling quarters, 1-year windows
- **Notes:**
  - This measure is based off MM23 and MM25 with an adjusted measurement period.

Construction

Denominator

- For eligible adults ages 18-64 during the measurement period, consider professional and outpatient claims
- Identify ED claims among beneficiaries with a primary or secondary diagnosis of SUD within any of the claim types during the measurement period
- Consider only those were continuously enrolled for at least 30 days within the measurement period
- Count records that occur between the first day of the quarter and 11 months after the first day of the quarter

Numerator

- Use the ED visits dataset from the denominator
- Count records that have another ED visit occurring within 30 days of any given ED visit in the denominator

H5A1: Continuity of pharmacotherapy for opioid use disorder

- **Numerator:** Number of beneficiaries ages 18-64 who had a diagnosis of OUD and who have at least 180 days of continuous pharmacotherapy with an OUD medication without a gap of more than seven days during the measurement period
- **Denominator:** Beneficiaries ages 18-64 who had a diagnosis of OUD and at least one claim for an OUD medication during the measurement period
- **Measurement period:** Rolling quarters, one-year windows

- **Notes:**
  - This measure is based off MM22 with an adjusted measurement period, as well as MODRN metric "Continuity of medications for OUD measure," the latter being based on the specification from the National Quality Forum (NQF).
  - The current numerator construction does not adjust for surplus retainable medications. Evaluators are exploring the most appropriate method for this adjustment, which will be implemented in the summative analyses.

Construction

Denominator

- For eligible adults ages 18-64 during the measurement period, identify persons (quarter) who had a claim with a primary or secondary diagnosis of OUD during the measurement period.
- Identify first MOUD claim in the measurement period from pharmacy, professional, outpatient, and inpatient claims
  - Relevant claims are identified using appropriate procedure or revenue codes, including a state-specific definition of residential treatment. Diagnoses are identified using appropriate ICD-10 codes.
  - Exclude those who had < 180 data of continuous Medicaid enrollment following the first MOUD claim
- Count the number of distinct beneficiaries.

Numerator

- Among beneficiaries identified in the denominator, identify individuals with at least 180 days of continuous MOUD
  - allowing gaps up to 7 days
- Count the number of distinct beneficiaries.

H6A1: Access to preventive/ambulatory health services for adult Medicaid beneficiaries with SUD

- **Numerator:** The number of beneficiaries ages 20-64 with SUD who had an ambulatory or preventive care visit during a 12-month period during the measurement period

- **Denominator:** The number of beneficiaries ages 20-64 with SUD during the measurement period
- **Measurement period:** Rolling quarters, one-year windows
- **Notes:**
  - This measure is based off MM32 with an adjusted measurement period and with a state-specific set of codes to identify claims for residential treatment.
  - This measure uses a different age criterion than most other measures, requiring that the beneficiary be age 20 or older by the end of the measurement period.
  - Evaluators updated the measure specification to change 12-month lookback period to a 12-month look-forward period to more closely align with the associated monitoring metric (#32).

Construction

Denominator

- For eligible beneficiaries ages 20-64 at the end of the measurement period, identify individuals with a primary or secondary SUD diagnosis during the measurement period. Exclude individuals receiving hospice care.
- Count the number of distinct beneficiaries.

Numerator

- Among beneficiaries identified in the denominator, identify individuals who have a claim for an ambulatory visit, preventive care visit, telephone visit, online assessment, or residential treatment stay, from paid and denied professional, inpatient, and outpatient claim. Also identify individuals with an ambulatory diagnosis from professional and outpatient diagnosis files.
  - Relevant claims are identified using appropriate procedure or revenue codes, including a state-specific definition of residential treatment. Diagnoses are identified using appropriate ICD-10 codes.
- Count the number of distinct beneficiaries.

H6A2: Screening for HIV/HCV/HBV

- **Numerator:** The number of beneficiaries ages 18-64 with SUD who were screened for HIV/HCV/HBV during a 12-month period during the measurement period

- **Denominator:** The number of beneficiaries ages 18-64 with SUD during the measurement period
- **Measurement period:** Rolling quarters, one-year windows
- **Notes:**
    - This measure is based off MODRN metric, "Screening for HIV, HCV, HBV among Enrollees with an OUD diagnosis", with an adjusted measurement period, modified age criteria, and includes enrollees with a SUD diagnosis.
    - Evaluators updated the measure specification to change 12-month lookback period to a 12-month look-forward period to more closely align with the associated MODRN metric.

Construction

Denominator

- For eligible beneficiaries ages 18-64, identify individuals with a primary or secondary SUD diagnosis during the measurement period.
- Count the number of distinct beneficiaries.

Numerator

- Among beneficiaries identified in the denominator, identify individuals who have a claim for a HIV, HBV, or HCV screening from professional, outpatient, and inpatient paid claims during the measurement period. Relevant claims are identified using appropriate procedure codes.
- Count the number of distinct beneficiaries.

H6B1: Initiation and engagement of alcohol and other drug abuse or dependence treatment

- **Numerator:** The number of beneficiaries aged 18 – 64 who initiated treatment and who had two or more additional SUD services or MOUD within 34 days of the initiation visit
- **Denominator:** The number of beneficiaries ages 18-64 with a new episode of alcohol or other drug abuse or dependence SUD during the measurement period
- **Measurement period:** Rolling quarters, one-year window
- **Notes:**

- This measure is based off MM 15 with an adjusted measurement period.

Construction

Denominator

- This measure uses the same denominator as H2A1 (see H2A1 Initiation of SUD Treatment)

Numerator

- This measure uses the same numerator as H2A (see H2A1 Initiation of SUD Treatment) with the additional criterion:
  - Keep beneficiaries ages 18 – 64 who had two or more additional SUD services or MOUD within 34 days of the initiation visit

H7A1: Rate of overdose deaths

- **Numerator:** Number of overdose deaths among beneficiaries ages 18 – 64
- **Denominator:** The number of beneficiaries ages 18 – 64 divided by 1000
- **Measurement period:** Quarter
- **Notes:**
  - This measure is based off MM 27 with an adjusted measurement period.

Construction

Denominator

- Count the number of eligible beneficiaries ages 18 – 64 during the measurement period who had at least 30 days of continuous enrollment in the measurement period or the 30 days prior to the start of the measurement period.

Numerator

- Among those in the denominator, identify persons who died of a drug overdose and who were Medicaid eligible during the quarter of their death
  - Drug overdose deaths (unintentional, intentional, and undetermined) are identified with ICD-10 death codes in death certificate data
- Count the number of distinct beneficiaries

H7A2: Rate of overdose deaths due to opioids

- **Numerator:** Number of overdose deaths among beneficiaries ages 18 – 64 due to opioids
- **Denominator:** The number of beneficiaries ages 18 – 64 divided by 1000
- **Measurement period:** Quarter
- **Notes:**
    - This measure is based off MM 27 with an adjusted measurement period.

Construction

Denominator

- Count the number of eligible beneficiaries ages 18 – 64 during the measurement period who had at least 30 days of continuous enrollment in the measurement period or the 30 days prior to the start of the measurement period.

Numerator

- Among those in the denominator, identify persons who died of an opioid overdose and who were Medicaid eligible during the quarter of their death
    - Drug overdose deaths (unintentional, intentional, and undetermined) are identified with ICD-10 death codes in death certificate data
- Count the number of distinct beneficiaries

H8A1: Total costs

- **Numerator:** The total costs from fee-for-service and encounter claims, including inpatient, outpatient, professional medical, pharmacy, dental, and long-term care for the population of beneficiaries with a SUD diagnosis
- **Denominator:** Total member-months for beneficiaries with SUD
- **Measurement period:** Quarter
- **Notes:**

Construction

Denominator

- Identify eligible beneficiaries ages 18 – 64 during the measurement period

- Combine eligible beneficiaries with SUD claims and identify beneficiaries who did not go more than 11 months without an SUD claim
- Count the number of total months each beneficiary that was identified above was eligible during the measurement period and calculate the total number of months for all beneficiaries

Numerator

- Total the inpatient, outpatient ED, outpatient non-ED, pharmacy, long-term care, dental, and professional costs, as were defined in other cost measures

H8A2: Total federal costs

- **Numerator:** Total Medicaid costs * Federal Medicaid percentage, for the population of beneficiaries with a SUD diagnosis
- **Denominator:** Total member-months for beneficiaries with SUD
- **Measurement period:** Quarter
- **Notes:**

Construction

Denominator

- This measure uses the same denominator as H8A1 (see H8A1 Total Costs)

Numerator

- For each claim, multiply the cost associated with that claim by the federal reimbursement rate.
- Combine with eligible beneficiaries from the denominator
- Total the federal costs for all inpatient, outpatient ED, outpatient non-ED, pharmacy, long-term care, dental, and professional claims

H8A3: SUD-IMD costs

In this report, we are not yet reporting on measure H8A3.

H8A4: SUD-other costs

- **Numerator:** Costs with SUD diagnosis and/or SUD-related code (procedure, revenue, POS, provider type) for the population of beneficiaries with an SUD diagnosis
- **Denominator:** Total member-months for beneficiaries with SUD
- **Measurement period:** Quarter
- **Notes:** The measure specifications for MM 28 were followed for the construction of this measure

Construction

Denominator

- This measure uses the same denominator as H8A1 (see H8A1 Total Costs)

Numerator

- Total the cost of claims per beneficiary related to SUD treatment services across outpatient, professional, inpatient, and pharmacy claims
    - Create spans for RT stays and attribute the cost of the stay to the quarter when the RT stay ended.
    - Create spans for inpatient stays and attribute the cost of the stay to the quarter when the inpatient stay ended

H8A5: Non-SUD costs

- **Numerator:** Costs without SUD diagnosis and without SUD-related code (procedure, revenue, POS, provider type) for the population of beneficiaries with a SUD diagnosis
- **Denominator:** Total member-months for beneficiaries with SUD
- **Measurement period:** Quarter
- **Notes:**

Construction

Denominator

- This measure uses the same denominator as H8A1 (see H8A1 Total Costs)

Numerator

- Subtract the total SUD costs from the total costs.

H8A6: Outpatient costs – non-ED

- **Numerator:** Costs associated with outpatient and professional medical and dental, non-ED claims for the population of beneficiaries with a SUD diagnosis
- **Denominator:** Total member-months for beneficiaries with SUD
- **Measurement period:** Quarter
- **Notes:**

Construction

Denominator

- This measure uses the same denominator as H8A1 (see H8A1 Total Costs)

Numerator

- Among the beneficiaries identified in the denominator, total all the costs associated with outpatient, professional, or dental non-ED claims
  - Create spans for RT stays and attribute the cost of the stay to the quarter when the RT stay ended.
  - Exclude claims identified in H8A7 as Outpatient ED claims

H8A7: Outpatient costs – ED

- **Numerator:** Costs associated with ED claims that do not result in an inpatient admission for the population of beneficiaries with a SUD diagnosis
- **Denominator:** Total member-months for beneficiaries with SUD
- **Measurement period:** Quarter
- **Notes:**

Construction

Denominator

- This measure uses the same denominator as H8A1 (see H8A1 Total Costs)

Numerator

- Among the beneficiaries identified in the denominator, identify ED outpatient claims by appropriate revenue and procedure codes and calculate the total

H8A8: Inpatient costs

- **Numerator:** Costs associated with inpatient claims for the population of beneficiaries with a SUD diagnosis
- **Denominator:** Total member-months for beneficiaries with SUD
- **Measurement period:** Quarter
- **Notes:**

Construction

Denominator

- This measure uses the same denominator as H8A1 (see H8A1 Total Costs)

Numerator

- Among beneficiaries identified in the denominator, calculate the total of costs associated with inpatient stays
    - Calculate inpatient stay spans
    - The inpatient discharge date determines the quarter for the entire stay

H8A9: Pharmacy costs

- **Numerator:** Costs associated with pharmacy claims for the population of beneficiaries with a SUD diagnosis
- **Denominator:** Total member-months for beneficiaries with SUD
- **Measurement period:** Quarter
- **Notes:**

Construction

Denominator

- This measure uses the same denominator as H8A1 (see H8A1 Total Costs)

Numerator

- Among beneficiaries identified in the denominator total all the costs associated with pharmacy claims

H8A10: Long-term costs

- **Numerator:** Costs associated with long-term care claims for the population of beneficiaries with a SUD diagnosis
- **Denominator:** Total member-months for beneficiaries with SUD
- **Measurement period:** Quarter
- **Notes:**

Construction

Denominator

- This measure uses the same denominator as H8A1 (see H8A1 Total Costs)

Numerator

- Among beneficiaries identified in the denominator total all the costs associated with long-term care

K.2 Evaluation Measure Tables

Table 31: (H1A1) SUD provider availability ratio

Year	Quarter	Numerator	Denominator	Ratio
2017	Q1	12119	121173	0.100
2017	Q2	12277	123879	0.099
2017	Q3	12358	123551	0.100
2017	Q4	11932	120282	0.099
2018	Q1	15296	124585	0.123
2018	Q2	15801	126997	0.124
2018	Q3	22460	127613	0.176
2018	Q4	22450	126037	0.178
2019	Q1	23131	129396	0.179
2019	Q2	23632	132978	0.178
2019	Q3	24243	135256	0.179
2019	Q4	24436	133964	0.182
2020	Q1	24969	137475	0.182
2020	Q2	23022	133821	0.172
2020	Q3	25213	145798	0.173
2020	Q4	25141	144505	0.174
2021	Q1	26448	150504	0.176
2021	Q2	27271	155715	0.175
2021	Q3	27251	155364	0.175
2021	Q4	26033	151536	0.172
2022	Q1	26843	155028	0.173
2022	Q2	27357	159869	0.171
2022	Q3	27356	158770	0.172

Table 32: (H1A1) SUD provider availability ratio (alternative specification: billing provider)

Year	Quarter	Numerator	Denominator	Ratio
2017	Q1	4885	121173	0.040
2017	Q2	5070	123879	0.041
2017	Q3	4878	123551	0.039
2017	Q4	4766	120282	0.040
2018	Q1	4963	124585	0.040

2018	Q2	5070	126997	0.040
2018	Q3	5437	127613	0.043
2018	Q4	5423	126037	0.043
2019	Q1	5526	129396	0.043
2019	Q2	5746	132978	0.043
2019	Q3	5762	135256	0.043
2019	Q4	5732	133964	0.043
2020	Q1	5845	137475	0.043
2020	Q2	5617	133821	0.042
2020	Q3	5886	145798	0.040
2020	Q4	5971	144505	0.041
2021	Q1	6229	150504	0.041
2021	Q2	6418	155715	0.041
2021	Q3	6702	155364	0.043
2021	Q4	6234	151536	0.041
2022	Q1	6401	155028	0.041
2022	Q2	6522	159869	0.041
2022	Q3	6591	158770	0.042

Table 33: (H1A2) SUD provider availability ratio – MOUD

Year	Quarter	Numerator	Denominator	Ratio
2017	Q1	2119	61034	0.035
2017	Q2	2268	62306	0.036
2017	Q3	2366	62445	0.038
2017	Q4	2432	61330	0.040
2018	Q1	2681	63445	0.042
2018	Q2	2792	64526	0.043
2018	Q3	2985	64908	0.046
2018	Q4	3110	65339	0.048
2019	Q1	3378	66565	0.051
2019	Q2	3595	68331	0.053
2019	Q3	3694	70182	0.053
2019	Q4	3682	70107	0.053
2020	Q1	3653	72139	0.051
2020	Q2	3474	70307	0.049
2020	Q3	3739	74862	0.050
2020	Q4	3768	75303	0.050
2021	Q1	3970	76936	0.052

2021	Q2	4188	78529	0.053
2021	Q3	4608	79474	0.058
2021	Q4	4091	78665	0.052
2022	Q1	4167	79667	0.052
2022	Q2	4263	80174	0.053
2022	Q3	4411	79991	0.055

Table 34: (H1A2) SUD provider availability ratio – MOUD (alternative specification: billing provider)

Year	Quarter	Numerator	Denominator	Ratio
2017	Q1	2005	61034	0.033
2017	Q2	2145	62306	0.034
2017	Q3	2204	62445	0.035
2017	Q4	2282	61330	0.037
2018	Q1	2404	63445	0.038
2018	Q2	2475	64526	0.038
2018	Q3	2586	64908	0.04
2018	Q4	2673	65339	0.041
2019	Q1	2835	66565	0.043
2019	Q2	2951	68331	0.043
2019	Q3	3005	70182	0.043
2019	Q4	3073	70107	0.044
2020	Q1	3147	72139	0.044
2020	Q2	3037	70307	0.043
2020	Q3	3198	74862	0.043
2020	Q4	3310	75303	0.044
2021	Q1	3452	76936	0.045
2021	Q2	3558	78529	0.045
2021	Q3	3864	79474	0.049
2021	Q4	3455	78665	0.044
2022	Q1	3575	79667	0.045
2022	Q2	3642	80174	0.045
2022	Q3	3777	79991	0.047

Table 35: (H1B1) SUD provider availability ratio by level of care

Year	Quarter	Level	Numerator	Denominator	Ratio
2018	Q1	Level 1	14104	124585	113.208
2018	Q2	Level 1	14536	126997	114.459
2018	Q3	Level 1	21154	127613	165.767
2018	Q4	Level 1	21086	126037	167.300
2019	Q1	Level 1	21666	129396	167.439
2019	Q2	Level 1	21994	132978	165.396
2019	Q3	Level 1	22491	135256	166.285
2019	Q4	Level 1	22792	133964	170.135
2020	Q1	Level 1	23323	137475	169.653
2020	Q2	Level 1	21417	133821	160.042
2020	Q3	Level 1	23486	145798	161.086
2020	Q4	Level 1	23417	144505	162.05
2021	Q1	Level 1	24644	150504	163.743
2021	Q2	Level 1	25371	155715	162.932
2021	Q3	Level 1	25192	155364	162.148
2021	Q4	Level 1	24473	151536	161.500
2022	Q1	Level 1	25379	155028	163.706
2022	Q2	Level 1	25831	159869	161.576
2022	Q3	Level 1	25730	158770	162.058
2018	Q1	Level 2	688	124585	5.522
2018	Q2	Level 2	727	126997	5.725
2018	Q3	Level 2	2486	127613	19.481
2018	Q4	Level 2	2431	126037	19.288
2019	Q1	Level 2	2535	129396	19.591
2019	Q2	Level 2	2533	132978	19.048
2019	Q3	Level 2	2661	135256	19.674
2019	Q4	Level 2	2695	133964	20.117
2020	Q1	Level 2	2643	137475	19.225
2020	Q2	Level 2	2281	133821	17.045
2020	Q3	Level 2	2648	145798	18.162
2020	Q4	Level 2	2715	144505	18.788
2021	Q1	Level 2	2638	150504	17.528
2021	Q2	Level 2	2700	155715	17.339
2021	Q3	Level 2	2795	155364	17.990
2021	Q4	Level 2	2803	151536	18.497
2022	Q1	Level 2	2823	155028	18.210
2022	Q2	Level 2	2969	159869	18.571
2022	Q3	Level 2	3094	158770	19.487

2018	Q1	Level 3	42	124585	0.337
2018	Q2	Level 3	52	126997	0.409
2018	Q3	Level 3	115	127613	0.901
2018	Q4	Level 3	113	126037	0.897
2019	Q1	Level 3	119	129396	0.920
2019	Q2	Level 3	101	132978	0.760
2019	Q3	Level 3	85	135256	0.628
2019	Q4	Level 3	114	133964	0.851
2020	Q1	Level 3	124	137475	0.902
2020	Q2	Level 3	129	133821	0.964
2020	Q3	Level 3	102	145798	0.700
2020	Q4	Level 3	107	144505	0.740
2021	Q1	Level 3	92	150504	0.611
2021	Q2	Level 3	96	155715	0.617
2021	Q3	Level 3	102	155364	0.657
2021	Q4	Level 3	110	151536	0.726
2022	Q1	Level 3	117	155028	0.755
2022	Q2	Level 3	110	159869	0.688
2022	Q3	Level 3	138	158770	0.869

Table 36: (H1B1) SUD provider availability ratio by level of care (alternative specification: billing provider)

Year	Quarter	Level	Numerator	Denominator	Ratio
2018	Q1	Level 1	2594	124585	20.821
2018	Q2	Level 1	2627	126997	20.686
2018	Q3	Level 1	2880	127613	22.568
2018	Q4	Level 1	2791	126037	22.144
2019	Q1	Level 1	2752	129396	21.268
2019	Q2	Level 1	2861	132978	21.515
2019	Q3	Level 1	2829	135256	20.916
2019	Q4	Level 1	2727	133964	20.356
2020	Q1	Level 1	2810	137475	20.440
2020	Q2	Level 1	2654	133821	19.832
2020	Q3	Level 1	2749	145798	18.855
2020	Q4	Level 1	2736	144505	18.934
2021	Q1	Level 1	2863	150504	19.023
2021	Q2	Level 1	2914	155715	18.714

2021	Q3	Level 1	2889	155364	18.595
2021	Q4	Level 1	2868	151536	18.926
2022	Q1	Level 1	2937	155028	18.945
2022	Q2	Level 1	2966	159869	18.553
2022	Q3	Level 1	2872	158770	18.089
2018	Q1	Level 2	224	124585	1.798
2018	Q2	Level 2	238	126997	1.874
2018	Q3	Level 2	457	127613	3.581
2018	Q4	Level 2	411	126037	3.261
2019	Q1	Level 2	373	129396	2.883
2019	Q2	Level 2	381	132978	2.865
2019	Q3	Level 2	386	135256	2.854
2019	Q4	Level 2	369	133964	2.754
2020	Q1	Level 2	342	137475	2.488
2020	Q2	Level 2	360	133821	2.69
2020	Q3	Level 2	379	145798	2.599
2020	Q4	Level 2	371	144505	2.567
2021	Q1	Level 2	395	150504	2.625
2021	Q2	Level 2	403	155715	2.588
2021	Q3	Level 2	387	155364	2.491
2021	Q4	Level 2	413	151536	2.725
2022	Q1	Level 2	449	155028	2.896
2022	Q2	Level 2	451	159869	2.821
2022	Q3	Level 2	470	158770	2.960-
2018	Q1	Level 3	30	124585	0.241
2018	Q2	Level 3	34	126997	0.268
2018	Q3	Level 3	60	127613	0.470
2018	Q4	Level 3	54	126037	0.428
2019	Q1	Level 3	58	129396	0.448
2019	Q2	Level 3	63	132978	0.474
2019	Q3	Level 3	54	135256	0.399
2019	Q4	Level 3	62	133964	0.463
2020	Q1	Level 3	72	137475	0.524
2020	Q2	Level 3	66	133821	0.493
2020	Q3	Level 3	65	145798	0.446
2020	Q4	Level 3	73	144505	0.505
2021	Q1	Level 3	68	150504	0.452
2021	Q2	Level 3	76	155715	0.488
2021	Q3	Level 3	72	155364	0.463
2021	Q4	Level 3	73	151536	0.482
2022	Q1	Level 3	78	155028	0.503

2022	Q2	Level 3	81	159869	0.507
2022	Q3	Level 3	81	158770	0.510

Table 37: (H1C1) SUD provider availability ratio within underserved areas

Year	Quarter	Numerator	Denominator	Ratio
2017	Q1	129	3583	0.036
2017	Q2	119	3733	0.032
2017	Q3	127	3772	0.034
2017	Q4	127	3653	0.035
2018	Q1	167	3795	0.044
2018	Q2	168	3865	0.043
2018	Q3	275	3991	0.069
2018	Q4	283	4089	0.069
2019	Q1	288	4223	0.068
2019	Q2	298	4199	0.071
2019	Q3	297	4295	0.069
2019	Q4	293	4169	0.070
2020	Q1	304	4274	0.071
2020	Q2	288	4153	0.069
2020	Q3	306	4583	0.067
2020	Q4	311	4533	0.069
2021	Q1	353	4580	0.077
2021	Q2	369	4643	0.079
2021	Q3	369	4553	0.081
2021	Q4	398	4436	0.090
2022	Q1	387	4606	0.084
2022	Q2	403	4732	0.085
2022	Q3	384	4705	0.082

Table 38: (H1C1) SUD provider availability ratio within underserved areas (alternative specification: billing provider)

Year	Quarter	Numerator	Denominator	Ratio
2017	Q1	82	3583	0.023
2017	Q2	82	3733	0.022
2017	Q3	73	3772	0.019
2017	Q4	73	3653	0.020
2018	Q1	77	3795	0.020
2018	Q2	79	3865	0.020
2018	Q3	97	3991	0.024
2018	Q4	106	4089	0.026
2019	Q1	79	4223	0.019
2019	Q2	94	4199	0.022
2019	Q3	87	4295	0.020
2019	Q4	94	4169	0.023
2020	Q1	92	4274	0.022
2020	Q2	91	4153	0.022
2020	Q3	91	4583	0.020
2020	Q4	91	4533	0.020
2021	Q1	102	4580	0.022
2021	Q2	106	4643	0.023
2021	Q3	104	4553	0.023
2021	Q4	100	4436	0.023
2022	Q1	100	4606	0.022
2022	Q2	101	4732	0.021
2022	Q3	104	4705	0.022

Table 39: (H2A1) Initiation of SUD Treatment

Year	Quarter	Numerator	Denominator	Rate
2018	Q1	58587	120476	0.486
2018	Q2	56177	114529	0.491
2018	Q3	56798	114445	0.496
2018	Q4	55323	113129	0.489
2019	Q1	55792	116367	0.479
2019	Q2	55264	114686	0.482
2019	Q3	54472	112262	0.485

2019	Q4	54988	112688	0.488
2020	Q1	57833	118452	0.488
2020	Q2	58210	120544	0.483
2020	Q3	61623	128652	0.479
2020	Q4	63556	133113	0.477
2021	Q1	65648	137963	0.476
2021	Q2	63945	134249	0.476
2021	Q3	64535	135779	0.475
2021	Q4	63715	136399	0.467

Table 40: (H2B1) MOUD Usage

Year	Quarter	Numerator	Denominator	Ratio
2017	Q1	33700	61034	0.552
2017	Q2	35017	62306	0.562
2017	Q3	35933	62445	0.575
2017	Q4	36133	61330	0.589
2018	Q1	37743	63445	0.595
2018	Q2	38645	64526	0.599
2018	Q3	39425	64908	0.607
2018	Q4	41019	65339	0.628
2019	Q1	42596	66565	0.640
2019	Q2	44482	68331	0.651
2019	Q3	45554	70182	0.649
2019	Q4	46305	70107	0.660
2020	Q1	47575	72139	0.659
2020	Q2	48311	70307	0.687
2020	Q3	51644	74862	0.690
2020	Q4	52610	75303	0.699
2021	Q1	53616	76936	0.697
2021	Q2	54767	78529	0.697
2021	Q3	56027	79474	0.705
2021	Q4	55997	78665	0.712
2022	Q1	56957	79667	0.715
2022	Q2	57586	80174	0.718
2022	Q3	57645	79991	0.721

Table 41: (H2B2) RT Treatment Stays with MOUD

Year	Quarter	Numerator	Denominator	Ratio
2018	Q1	1009	2085	0.484
2018	Q2	916	1834	0.499
2018	Q3	1324	2615	0.506
2018	Q4	1395	2974	0.469
2019	Q1	1484	2825	0.525
2019	Q2	1582	2836	0.558
2019	Q3	1654	3168	0.522
2019	Q4	1636	3048	0.537
2020	Q1	1658	2963	0.560
2020	Q2	1222	2053	0.595
2020	Q3	1604	2621	0.612
2020	Q4	1635	2641	0.619
2021	Q1	1594	2527	0.631
2021	Q2	1652	2586	0.639
2021	Q3	1807	2838	0.637
2021	Q4	1573	2597	0.606
2022	Q1	1664	2668	0.624
2022	Q2	1655	2525	0.655
2022	Q3	1684	2481	0.679

Table 42: (H3A1) IP Follow-Up

Year	Quarter	Numerator	Denominator	Rate
2017	Q1	2176	5338	0.408
2017	Q2	2334	5750	0.406
2017	Q3	2457	5854	0.420
2017	Q4	2494	5816	0.429
2018	Q1	2504	5767	0.434
2018	Q2	2633	6156	0.428
2018	Q3	2669	6216	0.429
2018	Q4	2524	5830	0.433
2019	Q1	2332	5347	0.436
2019	Q2	2456	5567	0.441
2019	Q3	2455	5439	0.451
2019	Q4	2270	5017	0.452
2020	Q1	2119	4590	0.462

2020	Q2	2209	4947	0.447
2020	Q3	2309	5321	0.434
2020	Q4	2252	5035	0.447
2021	Q1	2431	5367	0.453
2021	Q2	2487	5535	0.449
2021	Q3	2284	4944	0.462
2021	Q4	1909	4228	0.452
2022	Q1	1984	4434	0.447
2022	Q2	1991	4589	0.434

Table 43: (H3B1) RT Follow-Up

Year	Quarter	Numerator	Denominator	Rate
2017	Q1	2	14	0.143
2017	Q2	0	4	0
2017	Q3	1	2	0.500
2017	Q4	1042	1456	0.716
2018	Q1	2550	3669	0.695
2018	Q2	2987	4480	0.667
2018	Q3	3702	5658	0.654
2018	Q4	4094	6154	0.665
2019	Q1	4453	6735	0.661
2019	Q2	4830	7300	0.662
2019	Q3	5304	7843	0.676
2019	Q4	5541	7894	0.702
2020	Q1	5132	7317	0.701
2020	Q2	4313	6239	0.691
2020	Q3	4990	7262	0.687
2020	Q4	5122	7305	0.701
2021	Q1	5134	7321	0.701
2021	Q2	5661	8070	0.701
2021	Q3	5722	8209	0.697
2021	Q4	5605	7975	0.703
2022	Q1	6038	8536	0.707
2022	Q2	6412	9039	0.709

Table 44: (H3C1) ED Follow-Up

Year	Quarter	Numerator	Denominator	Rate
2017	Q1	2545	10468	0.243
2017	Q2	2662	11260	0.236
2017	Q3	2407	10478	0.230
2017	Q4	2189	9297	0.235
2018	Q1	2171	9342	0.232
2018	Q2	2441	10363	0.236
2018	Q3	2590	10347	0.250
2018	Q4	2492	9362	0.266
2019	Q1	2833	10323	0.274
2019	Q2	3317	11861	0.280
2019	Q3	3342	11838	0.282
2019	Q4	3057	10672	0.286
2020	Q1	2794	10094	0.277
2020	Q2	2971	11399	0.261
2020	Q3	3154	11854	0.266
2020	Q4	2955	10762	0.275
2021	Q1	3256	12010	0.271
2021	Q2	3497	13132	0.266
2021	Q3	3315	12180	0.272
2021	Q4	2828	10078	0.281
2022	Q1	2851	10450	0.273
2022	Q2	3063	11266	0.272

Table 45: (H3D1) Use of Opioids from Multiple Providers in Persons Without Cancer

Year	Quarter	Numerator	Denominator	Rate
2017	Q1	2502	87965	28.443
2017	Q2	1892	78225	24.187
2017	Q3	1476	71616	20.610
2017	Q4	1272	65769	19.340
2018	Q1	1272	63481	20.037
2018	Q2	1168	58756	19.879
2018	Q3	1120	56362	19.872
2018	Q4	1080	53928	20.027
2019	Q1	1049	52378	20.027
2019	Q2	984	49130	20.028
2019	Q3	873	48578	17.971
2019	Q4	726	48377	15.007

2020	Q1	681	48966	13.908
2020	Q2	602	47818	12.589
2020	Q3	577	48092	11.998
2020	Q4	536	47174	11.362
2021	Q1	510	46566	10.952
2021	Q2	465	44085	10.548
2021	Q3	477	43173	11.049
2021	Q4	451	42227	10.680

Table 46: (H3D2) Use of Opioids at High Dosage in Persons Without Cancer

Year	Quarter	Numerator	Denominator	Rate
2017	Q1	3589	87965	40.800
2017	Q2	3155	78225	40.332
2017	Q3	2987	71616	41.709
2017	Q4	2719	65769	41.342
2018	Q1	2524	63481	39.760
2018	Q2	2234	58756	38.022
2018	Q3	2002	56362	35.520
2018	Q4	1844	53928	34.194
2019	Q1	1739	52378	33.201
2019	Q2	1535	49130	31.244
2019	Q3	1446	48578	29.767
2019	Q4	1378	48377	28.485
2020	Q1	1368	48966	27.938
2020	Q2	1262	47818	26.392
2020	Q3	1212	48092	25.202
2020	Q4	1166	47174	24.717
2021	Q1	1075	46566	23.086
2021	Q2	967	44085	21.935
2021	Q3	926	43173	21.449
2021	Q4	920	42227	21.787

Table 47: (H4A1) Emergency Department Visits for SUD

Year	Quarter	Numerator	Denominator	Rate
2018	Q1	39448	238803	165.191

2018	Q2	43232	238663	181.142
2018	Q3	45384	237726	190.909
2018	Q4	39876	235148	169.578
2019	Q1	39872	235212	169.515
2019	Q2	44288	238418	185.758
2019	Q3	46412	240214	193.211
2019	Q4	41108	240985	170.583
2020	Q1	43189	243805	177.146
2020	Q2	43564	246752	176.550
2020	Q3	50808	257344	197.432
2020	Q4	44230	262213	168.680
2021	Q1	46884	268313	174.736
2021	Q2	52350	277631	188.560
2021	Q3	50953	283650	179.633
2021	Q4	43227	284136	152.135
2022	Q1	41920	288250	145.429
2022	Q2	47647	290503	164.016
2022	Q3	47415	291002	162.937

Table 48: (H4A1) OUD: Emergency Department Visits for OUD (Supplementary Measure)

Year	Quarter	Numerator	Denominator	Rate
2018	Q1	16987	105343	161.254
2018	Q2	18418	105254	174.986
2018	Q3	19892	105174	189.134
2018	Q4	17676	104432	169.258
2019	Q1	17527	104262	168.105
2019	Q2	19418	105716	183.681
2019	Q3	21152	106810	198.034
2019	Q4	18481	106915	172.857
2020	Q1	19085	108143	176.479
2020	Q2	18660	109313	170.702
2020	Q3	22063	113488	194.408
2020	Q4	19151	115325	166.061
2021	Q1	20180	116936	172.573
2021	Q2	22124	119179	185.637
2021	Q3	22275	121219	183.758
2021	Q4	18532	121330	152.740
2022	Q1	17256	122285	141.113

2022	Q2	18686	121845	153.359
2022	Q3	19257	121507	158.485

Table 49: (H4A2) IP Admissions for SUD

Year	Quarter	Numerator	Denominator	Rate
2018	Q1	19724	238803	82.595
2018	Q2	21905	238663	91.782
2018	Q3	22704	237726	95.505
2018	Q4	20841	235148	88.629
2019	Q1	20395	235212	86.709
2019	Q2	21444	238418	89.943
2019	Q3	22317	240214	92.905
2019	Q4	20947	240985	86.922
2020	Q1	20781	243805	85.236
2020	Q2	20878	246752	84.611
2020	Q3	23751	257344	92.293
2020	Q4	21777	262213	83.051
2021	Q1	22472	268313	83.753
2021	Q2	24571	277631	88.502
2021	Q3	23963	283650	84.481
2021	Q4	20899	284136	73.553
2022	Q1	19962	288250	69.252
2022	Q2	21266	290503	73.204
2022	Q3	21099	291002	72.505

Table 50: (H4A2) OUD: IP Admissions for OUD (Supplementary Measure)

Year	Quarter	Numerator	Denominator	Rate
2018	Q1	9574	105343	90.884
2018	Q2	10450	105254	99.284
2018	Q3	11132	105174	105.844
2018	Q4	10119	104432	96.896
2019	Q1	9657	104262	92.622
2019	Q2	10021	105716	94.792
2019	Q3	10641	106810	99.626
2019	Q4	9883	106915	92.438

2020	Q1	9762	108143	90.269
2020	Q2	9526	109313	87.144
2020	Q3	10717	113488	94.433
2020	Q4	9879	115325	85.662
2021	Q1	10012	116936	85.619
2021	Q2	10751	119179	90.209
2021	Q3	10934	121219	90.200
2021	Q4	9163	121330	75.521
2022	Q1	8522	122285	69.690
2022	Q2	8862	121845	72.732
2022	Q3	9140	121507	75.222

Table 51: (H4B1) The 30-day IP Admission Rate for SUD Following a RT Stay Among Beneficiaries with SUD

Year	Quarter	Numerator	Denominator	Rate
2018	Q1	73	10346	0.007
2018	Q2	77	12268	0.006
2018	Q3	76	13938	0.005
2018	Q4	79	15426	0.005
2019	Q1	123	16567	0.007
2019	Q2	98	17547	0.006
2019	Q3	95	17097	0.006
2019	Q4	80	16794	0.005
2020	Q1	113	16744	0.007
2020	Q2	93	16192	0.006
2020	Q3	82	17074	0.005
2020	Q4	71	17850	0.004
2021	Q1	104	18261	0.006
2021	Q2	86	18737	0.005
2021	Q3	77	19412	0.004
2021	Q4	84	19942	0.004

Table 52: (H4B2) The 30-day ED Visit Rate for SUD Following a RT Stay Among Beneficiaries with SUD

Year	Quarter	Numerator	Denominator	Rate
2018	Q1	1960	10346	0.189
2018	Q2	2330	12268	0.190
2018	Q3	2713	13938	0.195
2018	Q4	3055	15426	0.198
2019	Q1	3288	16567	0.198
2019	Q2	3475	17547	0.198
2019	Q3	3208	17097	0.188
2019	Q4	3058	16794	0.182
2020	Q1	3072	16744	0.183
2020	Q2	3018	16192	0.186
2020	Q3	3249	17074	0.190
2020	Q4	3456	17850	0.194
2021	Q1	3517	18261	0.193
2021	Q2	3528	18737	0.188
2021	Q3	3709	19412	0.191
2021	Q4	3780	19942	0.190

Table 53: (H4B3) The 30-day ED Visit Rate for SUD Following an ED Visit Among Beneficiaries with SUD

Year	Quarter	Numerator	Denominator	Rate
2017	Q1	182389	407611	0.447
2017	Q2	176398	397712	0.444
2017	Q3	170897	388507	0.440
2017	Q4	169773	387232	0.438
2018	Q1	171121	391261	0.437
2018	Q2	171344	390981	0.438
2018	Q3	171084	390664	0.438
2018	Q4	172334	392551	0.439
2019	Q1	175067	399161	0.439
2019	Q2	176262	402625	0.438
2019	Q3	165269	380868	0.434
2019	Q4	161599	375030	0.431
2020	Q1	161275	376300	0.429

2020	Q2	157369	369001	0.426
2020	Q3	164847	389512	0.423
2020	Q4	167235	396620	0.422
2021	Q1	168842	402784	0.419
2021	Q2	165350	396563	0.417
2021	Q3	161092	388174	0.415
2021	Q4	157517	382785	0.412

Table 54: (H5A1) Continuity of Pharmacotherapy for Opioid Use Disorder

Year	Quarter	Numerator	Denominator	Percent
2017	Q1	16903	38808	43.555
2017	Q2	18682	39168	47.697
2017	Q3	19373	39296	49.300
2017	Q4	20221	40589	49.819
2018	Q1	19208	41392	46.405
2018	Q2	21220	42084	50.423
2018	Q3	21870	42470	51.495
2018	Q4	21577	41940	51.447
2019	Q1	21614	45274	47.740
2019	Q2	21868	43694	50.048
2019	Q3	22535	43805	51.444
2019	Q4	23473	45430	51.669
2020	Q1	24648	50295	49.007
2020	Q2	25447	50282	50.608
2020	Q3	26647	52379	50.873
2020	Q4	26772	52800	50.705
2021	Q1	26738	56945	46.954
2021	Q2	26859	55622	48.288
2021	Q3	27624	55586	49.696
2021	Q4	28321	56617	50.022

Table 55: (H6A1) Access to Preventive/ Ambulatory Health Services for Adult Medicaid Beneficiaries with SUD

Year	Quarter	Numerator	Denominator	Rate
2018	Q1	183121	206723	0.886
2018	Q2	185091	208166	0.889
2018	Q3	186957	209906	0.891
2018	Q4	189537	212064	0.894
2019	Q1	191113	213182	0.896
2019	Q2	194294	216479	0.898
2019	Q3	200963	225125	0.893
2019	Q4	209071	234348	0.892
2020	Q1	214200	239446	0.895
2020	Q2	218889	244071	0.897
2020	Q3	227698	252980	0.9
2020	Q4	231943	257088	0.902
2021	Q1	234154	259315	0.903
2021	Q2	235579	260796	0.903
2021	Q3	236360	261516	0.904
2021	Q4	237946	263394	0.903

Table 56: (H6A2) Screening for HIV/HBV/HCV

Year	Quarter	Numerator	Denominator	Rate
2018	Q1	72849	245438	0.297
2018	Q2	74021	248117	0.298
2018	Q3	75406	248905	0.303
2018	Q4	76842	251617	0.305
2019	Q1	77909	250949	0.31
2019	Q2	78171	255222	0.306
2019	Q3	73605	253204	0.291
2019	Q4	74715	256253	0.292
2020	Q1	75811	254648	0.298
2020	Q2	77423	259399	0.298
2020	Q3	84381	269980	0.313
2020	Q4	86318	274552	0.314
2021	Q1	87037	275737	0.316
2021	Q2	87349	278352	0.314

2021	Q3	87915	279530	0.315
2021	Q4	88236	281720	0.313

Table 57: (H6B1) Initiation and engagement of alcohol and other drug abuse or dependence treatment

Year	Quarter	Numerator	Denominator	Rate
2018	Q1	24172	120476	0.201
2018	Q2	22889	114529	0.200
2018	Q3	23579	114445	0.206
2018	Q4	22893	113129	0.202
2019	Q1	23499	116367	0.202
2019	Q2	23105	114686	0.201
2019	Q3	23039	112262	0.205
2019	Q4	23055	112688	0.205
2020	Q1	24284	118452	0.205
2020	Q2	24018	120544	0.199
2020	Q3	25224	128652	0.196
2020	Q4	25936	133113	0.195
2021	Q1	26951	137963	0.195
2021	Q2	26509	134249	0.197
2021	Q3	27087	135779	0.199
2021	Q4	26964	136399	0.198

Table 58: (H7A1) Rate of Overdose Deaths (per 1000 Beneficiaries)

Year	Quarter	Numerator	Denominator	Rate
2019	Q4	585	1323306	0.442
2020	Q1	527	1322187	0.399
2020	Q2	796	1340721	0.594
2020	Q3	694	1410197	0.492
2020	Q4	711	1486931	0.478
2021	Q1	797	1530545	0.521
2021	Q2	839	1552683	0.54
2021	Q3	826	1586594	0.521
2021	Q4	753	1634569	0.461
2022	Q1	730	1664840	0.438

2022	Q2	690	1680086	0.411
2022	Q3	802	1709306	0.469
2022	Q4	831	1755401	0.473

Note that data concerning overdose deaths in 2022 is not yet final, though it is not expected to change meaningfully.

Table 59: (H7A2) Rate of Overdose Deaths Due to Opioids (per 1000 Beneficiaries)

Year	Quarter	Numerator	Denominator	Rate
2019	Q4	499	1323306	0.377
2020	Q1	446	1322187	0.337
2020	Q2	687	1340721	0.512
2020	Q3	599	1410197	0.425
2020	Q4	618	1486931	0.416
2021	Q1	664	1530545	0.434
2021	Q2	696	1552683	0.448
2021	Q3	724	1586594	0.456
2021	Q4	641	1634569	0.392
2022	Q1	617	1664840	0.371
2022	Q2	590	1680086	0.351
2022	Q3	690	1709306	0.404
2022	Q4	732	1755401	0.417

Note that data concerning overdose deaths in 2022 is not yet final, though it is not expected to change meaningfully.

H8 Cost Measure Full Model Parameter Estimates

Table 60: (H8A1) Total costs

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Intercept	5.83658	342.60717	0.05926	98.49	0.00000
Cond	Time	0.00346	1.00347	0.00051	6.86	0.00000
Cond	Intervention	-0.07997	0.92315	0.00725	-11.03	0.00000
Cond	Time Since Intervention x Intervention	-0.00616	0.99386	0.00323	-1.90	0.05702
Cond	Male	-0.13222	0.87615	0.00772	-17.13	0.00000
Cond	Black, Non-Hispanic	-0.01084	0.98922	0.05895	-0.18	0.85408

Cond	Hispanic	0.09458	1.09920	0.06300	1.50	0.13330
Cond	Missing Race-Ethnicity	0.07680	1.07983	0.06082	1.26	0.20666
Cond	Some Other Race, Non-Hispanic	0.06751	1.06984	0.07473	0.90	0.36634
Cond	White, Non-Hispanic	0.12146	1.12914	0.05867	2.07	0.03842
Cond	Age 25-34	0.21307	1.23747	0.00987	21.59	0.00000
Cond	Age 35-44	0.33224	1.39409	0.01088	30.53	0.00000
Cond	Age 45-54	0.54019	1.71633	0.01179	45.81	0.00000
Cond	Age 55-64	0.74937	2.11568	0.01284	58.38	0.00000
ZI	Intercept	-2.58106	0.07569	0.10928	-23.62	0.00000
ZI	Time	0.01562	1.01574	0.00116	13.45	0.00000
ZI	Intervention	0.10277	1.10824	0.01620	6.34	0.00000
ZI	Time Since Intervention x Intervention	0.02488	1.02519	0.00713	3.49	0.00048
ZI	Male	1.04184	2.83442	0.01510	69.01	0.00000
ZI	Black, Non-Hispanic	0.09776	1.10270	0.10826	0.90	0.36652
ZI	Hispanic	-0.15233	0.85870	0.11614	-1.31	0.18963
ZI	Missing Race-Ethnicity	0.02334	1.02361	0.11183	0.21	0.83469
ZI	Some Other Race, Non-Hispanic	-0.12787	0.87997	0.13898	-0.92	0.35755
ZI	White, Non-Hispanic	-0.28573	0.75147	0.10777	-2.65	0.00802
ZI	Age 25-34	-0.17835	0.83665	0.01870	-9.54	0.00000
ZI	Age 35-44	-0.46814	0.62617	0.02084	-22.47	0.00000
ZI	Age 45-54	-1.03531	0.35512	0.02369	-43.70	0.00000
ZI	Age55-64	-1.51492	0.21983	0.02692	-56.28	0.00000

Table 61: (H8A2) Total federal costs

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Intercept	5.51369	248.06464	0.05922	93.11	0.00000
Cond	Time	0.00485	1.00486	0.00051	9.57	0.00000
Cond	Intervention	-0.07150	0.93100	0.00727	-9.83	0.00000
Cond	Time Since Intervention x Intervention	-0.00693	0.99309	0.00324	-2.14	0.03257
Cond	Male	-0.04114	0.95970	0.00771	-5.33	0.00000
Cond	Black, Non-Hispanic	-0.02940	0.97102	0.05891	-0.50	0.61766
Cond	Hispanic	0.08841	1.09244	0.06296	1.40	0.16021
Cond	Missing Race-Ethnicity	0.11942	1.12684	0.06078	1.96	0.04943

Cond	Some Other Race, Non-Hispanic	0.08754	1.09148	0.07467	1.17	0.24108
Cond	White, Non-Hispanic	0.12980	1.13861	0.05863	2.21	0.02682
Cond	Age 25-34	0.24045	1.27182	0.00988	24.34	0.00000
Cond	Age 35-44	0.36752	1.44415	0.01089	33.75	0.00000
Cond	Age 45-54	0.58960	1.80326	0.01180	49.97	0.00000
Cond	Age 55-64	0.75916	2.13648	0.01284	59.13	0.00000
ZI	Intercept	-2.58409	0.07546	0.10930	-23.64	0.00000
ZI	Time	0.01563	1.01576	0.00116	13.45	0.00000
ZI	Intervention	0.10297	1.10845	0.01621	6.35	0.00000
ZI	Time Since Intervention x Intervention	0.02468	1.02498	0.00713	3.46	0.00054
ZI	Male	1.04293	2.83753	0.01511	69.01	0.00000
ZI	Black, Non-Hispanic	0.09756	1.10248	0.10828	0.90	0.36758
ZI	Hispanic	-0.15232	0.85871	0.11616	-1.31	0.18977
ZI	Missing Race-Ethnicity	0.02366	1.02394	0.11186	0.21	0.83249
ZI	Some Other Race, Non-Hispanic	-0.12742	0.88036	0.13901	-0.92	0.35935
ZI	White, Non-Hispanic	-0.28593	0.75131	0.10779	-2.65	0.00799
ZI	Age 25-34	-0.17691	0.83785	0.01871	-9.46	0.00000
ZI	Age 35-44	-0.46683	0.62698	0.02085	-22.39	0.00000
ZI	Age 45-54	-1.03422	0.35550	0.02370	-43.63	0.00000
ZI	Age 55-64	-1.51472	0.21987	0.02699	-56.13	0.00000

Table 62: (H8A4) SUD-other costs

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Intercept	4.52273	92.08706	0.08165	55.39	0.00000
Cond	Time	0.00320	1.00321	0.00066	4.85	0.00000
Cond	Intervention	-0.00054	0.99946	0.00957	-0.06	0.95529
Cond	Time Since Intervention x Intervention	-0.00276	0.99724	0.00427	-0.65	0.51753
Cond	Male	0.23487	1.26475	0.01014	23.16	0.00000
Cond	Black, Non-Hispanic	0.08282	1.08635	0.08121	1.02	0.30778
Cond	Hispanic	0.26149	1.29887	0.08633	3.03	0.00245
Cond	Missing Race-Ethnicity	0.47849	1.61363	0.08346	5.73	0.00000
Cond	Some Other Race, Non-Hispanic	0.31101	1.36480	0.10069	3.09	0.00201

Cond	White, Non-Hispanic	0.44623	1.56240	0.08077	5.52	0.00000
Cond	Age 25-34	0.34281	1.40891	0.01350	25.40	0.00000
Cond	Age 35-44	0.37634	1.45694	0.01469	25.62	0.00000
Cond	Age 45-54	0.23902	1.27000	0.01608	14.87	0.00000
Cond	Age 55-64	0.21689	1.24221	0.01777	12.21	0.00000
ZI	Intercept	1.24353	3.46783	0.08921	13.94	0.00000
ZI	Time	0.00570	1.00571	0.00083	6.84	0.00000
ZI	Intervention	0.11677	1.12386	0.01194	9.78	0.00000
ZI	Time Since Intervention x Intervention	0.02709	1.02746	0.00531	5.10	0.00000
ZI	Male	-0.10566	0.89973	0.01162	-9.09	0.00000
ZI	Black, Non-Hispanic	0.10553	1.11130	0.08866	1.19	0.23391
ZI	Hispanic	-0.38459	0.68073	0.09475	-4.06	0.00005
ZI	Missing Race-Ethnicity	-0.46463	0.62837	0.09142	-5.08	0.00000
ZI	Some Other Race, Non-Hispanic	-0.54676	0.57882	0.11227	-4.87	0.00000
ZI	White, Non-Hispanic	-0.72909	0.48235	0.08823	-8.26	0.00000
ZI	Age 25-34	-0.51871	0.59529	0.01525	-34.02	0.00000
ZI	Age 35-44	-0.60499	0.54608	0.01679	-36.03	0.00000
ZI	Age 45-54	-0.37194	0.68939	0.01823	-20.40	0.00000
ZI	Age 55-64	-0.15589	0.85565	0.01986	-7.85	0.00000

Table 63: (H8A5) Non-SUD costs

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Intercept	5.64806	283.74185	0.10343	54.61	0.00000
Cond	Time	-0.00323	0.99677	0.00105	-3.07	0.00213
Cond	Intervention	-0.00864	0.99140	0.01540	-0.56	0.57494
Cond	Time Since Intervention x Intervention	-0.02217	0.97807	0.00688	-3.22	0.00126
Cond	Male	-0.49800	0.60774	0.01328	-37.49	0.00000
Cond	Black, Non-Hispanic	-0.10828	0.89737	0.10262	-1.06	0.29135
Cond	Hispanic	-0.19516	0.82271	0.10962	-1.78	0.07504
Cond	Missing Race-Ethnicity	-0.35782	0.69920	0.10593	-3.38	0.00073
Cond	Some Other Race, Non-Hispanic	-0.17153	0.84237	0.12969	-1.32	0.18594
Cond	White, Non-Hispanic	-0.31629	0.72885	0.10213	-3.10	0.00196
Cond	Age 25-34	0.03009	1.03054	0.01870	1.61	0.10756

Cond	Age 35-44	0.17904	1.19606	0.02012	8.90	0.00000
Cond	Age 45-54	0.70729	2.02848	0.02156	32.80	0.00000
Cond	Age 55-64	1.12295	3.07390	0.02312	48.57	0.00000
ZI	Intercept	-2.65759	0.07012	0.11616	-22.88	0.00000
ZI	Time	0.01103	1.01109	0.00129	8.57	0.00000
ZI	Intervention	0.10145	1.10678	0.01789	5.67	0.00000
ZI	Time Since Intervention x Intervention	0.01395	1.01405	0.00794	1.76	0.07889
ZI	Male	1.27769	3.58833	0.01651	77.39	0.00000
ZI	Black, Non-Hispanic	0.12852	1.13715	0.11498	1.12	0.26368
ZI	Hispanic	-0.07595	0.92686	0.12343	-0.62	0.53834
ZI	Missing Race-Ethnicity	0.13153	1.14057	0.11882	1.11	0.26829
ZI	Some Other Race, Non-Hispanic	-0.07656	0.92629	0.14869	-0.51	0.60662
ZI	White, Non-Hispanic	-0.17404	0.84026	0.11446	-1.52	0.12836
ZI	Age 25-34	-0.16168	0.85071	0.02028	-7.97	0.00000
ZI	Age 35-44	-0.47848	0.61972	0.02252	-21.25	0.00000
ZI	Age 45-54	-1.14860	0.31708	0.02585	-44.44	0.00000
ZI	Age 55-64	-1.72144	0.17881	0.02976	-57.85	0.00000

Table 64: (H8A6) Outpatient cost-non ED

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Intercept	5.36189	213.12679	0.04974	107.80	0.00000
Cond	Time	0.00457	1.00458	0.00046	10.00	0.00000
Cond	Intervention	-0.07306	0.92955	0.00663	-11.02	0.00000
Cond	Time Since Intervention x Intervention	-0.00476	0.99526	0.00296	-1.61	0.10757
Cond	Male	-0.13731	0.87170	0.00647	-21.22	0.00000
Cond	Black, Non-Hispanic	0.05104	1.05236	0.04942	1.03	0.30174
Cond	Hispanic	0.12573	1.13397	0.05275	2.38	0.01714
Cond	Missing Race-Ethnicity	0.14009	1.15038	0.05102	2.75	0.00604
Cond	Some Other Race, Non-Hispanic	0.18303	1.20085	0.06246	2.93	0.00339
Cond	White, Non-Hispanic	0.18922	1.20831	0.04918	3.85	0.00012
Cond	Age25-34	0.18847	1.20741	0.00860	21.91	0.00000
Cond	Age35-44	0.25463	1.28999	0.00938	27.16	0.00000
Cond	Age45-54	0.37287	1.45190	0.01012	36.83	0.00000

Cond	Age55-64	0.47907	1.61458	0.01100	43.56	0.00000
ZI	Intercept	-2.08932	0.12377	0.09224	-22.65	0.00000
ZI	Time	0.01251	1.01259	0.00101	12.36	0.00000
ZI	Intervention	0.10930	1.11549	0.01434	7.62	0.00000
ZI	Time Since Intervention x Intervention	0.01382	1.01392	0.00633	2.18	0.02899
ZI	Male	0.82114	2.27308	0.01241	66.14	0.00000
ZI	Black, Non-Hispanic	0.07406	1.07687	0.09136	0.81	0.41756
ZI	Hispanic	-0.07536	0.92741	0.09774	-0.77	0.44068
ZI	Missing Race-Ethnicity	0.12679	1.13517	0.09425	1.35	0.17856
ZI	Some Other Race, Non-Hispanic	-0.20666	0.81330	0.11726	-1.76	0.07799
ZI	White, Non-Hispanic	-0.16443	0.84838	0.09093	-1.81	0.07058
ZI	Age25-34	-0.14293	0.86681	0.01636	-8.74	0.00000
ZI	Age35-44	-0.30151	0.73970	0.01784	-16.90	0.00000
ZI	Age45-54	-0.65040	0.52184	0.01979	-32.87	0.00000
ZI	Age55-64	-0.98169	0.37468	0.02210	-44.42	0.00000

Table 65: (H8A7) Outpatient cost-ED

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Intercept	4.28828	72.84133	0.00413	1,037.65	0.00000
Cond	Time	0.02833	1.02873	0.00045	62.62	0.00000
Cond	Intervention	-0.13792	0.87117	0.00762	-18.09	0.00000
Cond	Time Since Intervention x Intervention	-0.01649	0.98365	0.00341	-4.83	0.00000
ZI	Intercept	0.70213	2.01804	0.07247	9.69	0.00000
ZI	Time	0.02366	1.02395	0.00080	29.71	0.00000
ZI	Intervention	0.09859	1.10361	0.01219	8.09	0.00000
ZI	Time Since Intervention x Intervention	-0.03767	0.96303	0.00544	-6.92	0.00000
ZI	Male	0.25165	1.28615	0.00927	27.13	0.00000
ZI	Black, Non-Hispanic	-0.35555	0.70079	0.07186	-4.95	0.00000
ZI	Hispanic	-0.18778	0.82880	0.07670	-2.45	0.01435

ZI	Missing Race-Ethnicity	0.12387	1.13187	0.07429	1.67	0.09542
ZI	Some Other Race, Non-Hispanic	-0.15006	0.86066	0.09068	-1.65	0.09796
ZI	White, Non-Hispanic	-0.00556	0.99446	0.07155	-0.08	0.93809
ZI	Age 25-34	0.12817	1.13675	0.01300	9.86	0.00000
ZI	Age 35-44	0.17090	1.18637	0.01403	12.18	0.00000
ZI	Age 45-54	0.23052	1.25925	0.01524	15.13	0.00000
ZI	Age 55-64	0.37383	1.45329	0.01656	22.57	0.00000

Table 66: (H8A8) Inpatient costs

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Intercept	7.49451	1,798.13541	0.06364	117.77	0.00000
Cond	Time	0.01456	1.01467	0.00082	17.77	0.00000
Cond	Intervention	-0.02773	0.97266	0.01341	-2.07	0.03868
Cond	Time Since Intervention x Intervention	-0.02194	0.97829	0.00609	-3.60	0.00032
Cond	Male	0.12947	1.13823	0.00799	16.20	0.00000
Cond	Black, Non-Hispanic	0.02109	1.02131	0.06294	0.34	0.73760
Cond	Hispanic	-0.07136	0.93113	0.06685	-1.07	0.28575
Cond	Missing Race-Ethnicity	-0.03524	0.96537	0.06473	-0.54	0.58612
Cond	Some Other Race, Non-Hispanic	-0.11911	0.88771	0.07873	-1.51	0.13030
Cond	White, Non-Hispanic	-0.09481	0.90955	0.06267	-1.51	0.13033
Cond	Age 25-34	0.10021	1.10541	0.01207	8.30	0.00000
Cond	Age 35-44	0.23950	1.27061	0.01297	18.47	0.00000
Cond	Age 45-54	0.42995	1.53718	0.01350	31.84	0.00000
Cond	Age 55-64	0.57725	1.78114	0.01381	41.80	0.00000
ZI	Intercept	2.53832	12.65836	0.10132	25.05	0.00000
ZI	Time	0.01307	1.01315	0.00117	11.15	0.00000
ZI	Intervention	0.14412	1.15502	0.01858	7.75	0.00000
ZI	Time Since Intervention x Intervention	-0.00122	0.99878	0.00841	-0.14	0.88505
ZI	Male	0.21179	1.23589	0.01293	16.39	0.00000

ZI	Black, Non-Hispanic	-0.08864	0.91518	0.10030	-0.88	0.37687
ZI	Hispanic	-0.10946	0.89632	0.10698	-1.02	0.30624
ZI	Missing Race-Ethnicity	-0.11857	0.88819	0.10333	-1.15	0.25118
ZI	Some Other Race, Non-Hispanic	-0.04151	0.95934	0.12663	-0.33	0.74306
ZI	White, Non-Hispanic	0.02573	1.02606	0.09986	0.26	0.79669
ZI	Age 25-34	0.16566	1.18017	0.01879	8.82	0.00000
ZI	Age 35-44	0.22448	1.25167	0.02025	11.08	0.00000
ZI	Age 45-54	-0.08591	0.91767	0.02135	-4.02	0.00006
ZI	Age 55-64	-0.39387	0.67444	0.02232	-17.65	0.00000

Table 67: (H8A9) Pharmacy costs

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Intercept	4.00895	55.08908	0.00763	525.55	0.00000
Cond	Time	0.01009	1.01014	0.00082	12.33	0.00000
Cond	Intervention	-0.05374	0.94768	0.01309	-4.11	0.00004
Cond	Time Since Intervention x Intervention	0.00444	1.00445	0.00587	0.76	0.44957
ZI	Intercept	-1.37868	0.25191	0.12520	-11.01	0.00000
ZI	Time	0.02094	1.02116	0.00113	18.54	0.00000
ZI	Intervention	0.02030	1.02051	0.01540	1.32	0.18730
ZI	Time Since Intervention x Intervention	-0.00579	0.99422	0.00687	-0.84	0.39907
ZI	Male	1.42609	4.16238	0.01732	82.33	0.00000
ZI	Black, Non-Hispanic	0.32817	1.38843	0.12454	2.63	0.00841
ZI	Hispanic	0.05394	1.05542	0.13322	0.40	0.68556
ZI	Missing Race-Ethnicity	0.22453	1.25173	0.12859	1.75	0.08080
ZI	Some Other Race, Non-Hispanic	-0.01513	0.98498	0.15879	-0.10	0.92407
ZI	White, Non-Hispanic	-0.27611	0.75873	0.12399	-2.23	0.02596
ZI	Age 25-34	-0.42808	0.65176	0.01963	-21.81	0.00000
ZI	Age 35-44	-0.93690	0.39184	0.02248	-41.67	0.00000
ZI	Age 45-54	-1.76619	0.17098	0.02595	-68.07	0.00000
ZI	Age 55-64	-2.36883	0.09359	0.02980	-79.50	0.00000

Table 68: (H8A10) Long term care costs

Model	Variable	Estimate	exp(Estimate)	SE	z	p-value
Cond	Intercept	7.87417	2,628.51253	0.02610	301.69	0.00000
Cond	Time	0.00690	1.00692	0.00286	2.41	0.01596
Cond	Intervention	-0.02880	0.97161	0.04767	-0.60	0.54570
Cond	Time Since Intervention x Intervention	0.00817	1.00821	0.02173	0.38	0.70683
ZI	Intercept	13.82636	1,010,910.56136	1.14630	12.06	0.00000
ZI	Time	-0.04445	0.95652	0.00466	-9.53	0.00000
ZI	Intervention	-0.04992	0.95130	0.06515	-0.77	0.44355
ZI	Time Since Intervention x Intervention	0.06552	1.06771	0.02999	2.18	0.02891
ZI	Male	-0.27387	0.76043	0.09956	-2.75	0.00595
ZI	Black, Non-Hispanic	-0.76845	0.46373	1.13162	-0.68	0.49709
ZI	Hispanic	-0.49765	0.60796	1.18597	-0.42	0.67477
ZI	Missing Race-Ethnicity	-1.04232	0.35264	1.14177	-0.91	0.36130
ZI	Some Other Race, Non-Hispanic	-0.79005	0.45382	1.29729	-0.61	0.54253
ZI	White, Non-Hispanic	-0.75322	0.47085	1.12924	-0.67	0.50476
ZI	Age 25-34	-0.15136	0.85954	0.20178	-0.75	0.45320
ZI	Age 35-44	-0.71060	0.49135	0.20935	-3.39	0.00069
ZI	Age 45-54	-1.74268	0.17505	0.20628	-8.45	0.00000
ZI	Age 55-64	-2.35152	0.09522	0.20801	-11.31	0.00000

K.3 Key Informant Interviews

K.3.1 *Email Introduction*

E-mail Introduction draft:

Hello _____,
The Ohio Colleges of Medicine Government Resource Center (GRC) has been selected by the Ohio Department of Medicaid (ODM) to conduct components of the SUD 1115 Waiver Demonstration, including evaluation, metric monitoring, and the Interim Evaluation Report. The Interim Evaluation Report includes key informant interviews designed to gain a better understanding of the challenges and successes associated with implementation. You have been identified as a key informant due to your area of expertise.

Our discussion will focus on three key components of the Substance Use Disorder (SUD) 1115 Waiver which reflect the key goals and objectives for the waiver demonstration:

1. Access to care along the continuum
2. Access to Medication Assisted Treatments (MAT)
3. Impact of COVID-19 on the Waiver

Your participation is completely voluntary. In the next week I will be contacting you to schedule a one- hour interview to gather your perspective regarding waiver implementation. In the next week I will be contacting you to schedule a one hour interview to gather your perspective regarding waiver implementation. If you have questions about the interview process or believe someone else in your organization should be interviewed, please let me know.

We look forward to hearing your insights regarding the SUD 1115 Waiver.

K.3.2 ***Consent Language***

Hello, my name is _____ and today I am joined by _____. We are part of the GRC research team from the Substance Use Disorder (SUD) 1115 Waiver Demonstration Study. Thank you for speaking with us today. Before beginning, we thought it would be helpful to review the goals and process of this interview as well as answer any questions you have.

Part of SUD 1115 Waiver Interim Evaluation Report involves interviews with key stakeholders, like you, who have been involved in the planning and/or implementation of the waiver. The goals of these interviews are:

(1) To understand the factors that may hinder or facilitate implementation of the SUD 1115 Waiver, such as access to appropriate levels of care, national program standards and staff credentials, and care coordination;
(2) To gain insight into how organizations, including state agencies, treatment providers, advocacy groups, and managed care organizations are addressing access to Medication-Assisted Treatment (MAT)
(3) To understand how COVID-19 has impacted waiver implementation.

We understand it may be difficult to differentiate the impact of changes due to COVID vs. the waiver. We ask that you try to think about changes brought about by COVID and those implemented under the waiver demonstration separately, although we recognize differentiating the two may not be always be possible. We will discuss these issues throughout our conversation today.

Your participation in today's interview will help us gain valuable insight into the factors contributing to the success of the waiver implementation as well as the challenges. Our discussion will last about one hour. Your participation is voluntary. You do not have to answer any questions you do not want to answer. Know that we will keep everything you say confidential. Our discussion today will be recorded via the Zoom video conferencing application, which will also produce a verbatim transcript of our conversation. We will also be taking notes during our discussion. Please feel free to share your ideas, even if you feel like they are different from others in your field. There is no right or wrong answer. Remember that everything that is said during our discussion today is confidential and specifics of what is said

will not be repeated. The information you share will only be presented in summary form. If at any time you wish to discontinue participation, we can end our discussion.

Do you have any questions for us before we begin? Do we have your permission to begin the interview?

K.3.3 ***Interview Guide for State Agency Leadership (ODM, OhioMHAS)***

1. We are trying to understand how SUD 1115 Waiver Demonstration implementation is going in Ohio right now, and we value your expertise and contributions. Can you tell us about your role in implementation of the SUD 1115 Waiver, and what you hope to achieve?
2. When the waiver implementation plan was being developed, what did you hope would be the most significant benefits?
   - ☐ For payers?
   - ☐ For providers?
   - ☐ For individuals seeking treatment?

Access to care along the continuum

The SUD 1115 Waiver aims to reduce overdose and overdose death through a series of policy and practice changes that improve access to high-quality treatment at all ASAM levels of care. We would like to spend some talking about the changes that you have seen or anticipate in access to care.

3. Within your organization, what changes have been or are being made to ensure access to or placement in the appropriate levels of care?
   - ☐ Policy/rule changes?
   - ☐ Data analysis/use of data?
   - ☐ Access standards for each level of care?
4. What, if any, changes has your organization made or planned to make to assure compliance with nationally recognized program standards and provider qualifications?
5. How will utilization management change within your organization under the waiver?
6. How do structural factors such as racism, sexism, classism, heteronormativity, and other "isms" impact access to SUD treatment?
7. What other factors lead to disparities in access to care right now?
   - ☐ Substance (certain substances increase access to Tx?)

- ☐ Geography
- ☐ Disability
- ☐ Other

8. How do you think waiver implementation will impact non-clinical care services, such as peer-support, 12-step programs, and other mutual aid services?

Medication Assisted Treatment

Under the waiver, residential treatment programs will be required to offer MAT or facilitate access to MAT. We are interested in your thoughts regarding the potential impacts of this new requirement.

9. How will access to MAT in residential treatment settings change as a result of the waiver?
10. What challenges and benefits do you anticipate for residential treatment providers and patients?

Impact of COVID-19 on SUD treatment

COVID-19 has had a significant impact on access to and delivery of healthcare in Ohio and across the nation. We are interested in better understanding the impact of COVID-19 on delivery of SUD treatment in the state.

11. How has COVID impacted SUD treatment in Ohio?
    - ☐ For instance, changes in demand for services or changes in the levels of care needed?
    - ☐ Access to care or a greater impact on certain levels of care? MAT?
12. How has COVID impacted waiver planning and implementation?
    - ☐ Application of program standards?
    - ☐ Timeline changes?
    - ☐ Have you seen unexpected consequences, both beneficial and challenging?

Wrap Up

13. What are your primary concerns about the future of SUD 1115 waiver implementation within and outside the context of COVID-19?
14. What other important issues should we be considering or specific questions we should consider asking other key informants?
    - ☐ State leadership?
    - ☐ MCPs?
    - ☐ Residential or Community Treatment Providers?
    - ☐ Medicaid beneficiaries?

K.3.4 *Interview Guide for Residential & Community Treatment Providers and for Treatment & Recovery Advocates*

1. We are trying to understand how SUD 1115 Waiver Demonstration implementation is going in Ohio right now, and we value your expertise and contributions. Can you tell us about your role in implementation of the SUD 1115 Waiver, and what you hope to achieve?

Access to care along the continuum

The SUD 1115 Waiver aims to reduce overdose and overdose death through a series of policy and practice changes that improve access to high-quality treatment at all ASAM levels of care. We would like to spend some talking about the changes that you have seen or anticipate in access to care.

2. How does your organization contribute to assessing individual treatment needs and assuring access to the appropriate levels of care?
3. What, if any, changes has your organization made or planned to make in assessing the level of care an individual should be receiving?
    - ☐ How are/will those changes ensure individuals are placed in the appropriate level of care?
    - ☐ What, if any, challenges are providers and beneficiaries facing, or anticipating, as they implement these changes?
    - ☐ What, in any, improvements are providers and beneficiaries seeing or anticipating?
4. How do structural factors such as racism, sexism, classism, heteronormativity, and other "isms" impact access to SUD treatment?
    - ☐ Can you talk about a specific client experience that highlights access inequity?
    - ☐ How might another client experience access (African American woman, Latin mom, transgendered person, etc.) to care?
5. What other factors lead to disparities in access to care right now?
    - ☐ Substance (certain substances increase access to Tx?)

- ☐ Geography
- ☐ Disability
- ☐ Other

6. What is your organization's experience with coordination of care and how has it changed over time?
   - ☐ What among those changes have been most beneficial?
   - ☐ Have any of those changes been less helpful, perhaps even harmful?
   - ☐ How might the 1115 Waiver and its beneficial resources be most useful in improving care coordination?
   - ☐ What are the challenges associated with coordinating transition across levels of care?
   - ☐ How are physical healthcare needs and behavioral healthcare needs being coordinated differently?
7. How can coordination of care, starting at the point of entry into treatment, improve an individual's long-term recovery outcomes?
   - ☐ Reduce overdose?
   - ☐ Can you tell us about a specific example of a care coordination success?
8. How do you think waiver implementation will impact non-clinical care services, such as peer-support, 12-step programs, and other mutual aid services?

Medication Assisted Treatment

Under the waiver, residential treatment programs will be required to offer MAT or facilitate access to MAT. We are interested in your thoughts regarding the potential impacts of this new requirement.

9. What role does your organization play in delivery of or access to MAT?
   - ☐ How might your organizational role change with the 1115 SUD Waiver?
10. What are the challenges, if any, for providers who will be required to offer MAT under the Waiver?
    - ☐ What are the potential risks?

11. What benefits do you anticipate with the new requirement?

Impact of COVID-19 on SUD treatment

COVID-19 has had a significant impact on access to and delivery of healthcare in Ohio and across the nation. We are interested in better understanding the impact of COVID-19 on delivery of SUD treatment in the state.

1. In what ways has COVID impacted individuals experiencing SUD, including those in treatment or recovery, differently than other individuals?
   - ☐ Differences by treatment setting, i.e. residential vs. community, etc.?
   - ☐ How does this intersect with the disparities we discussed earlier?
2. How has COVID impacted SUD treatment in Ohio?
   - ☐ For instance, changes in demand for services or changes in the levels of care needed?
   - ☐ Access to care or a greater impact on certain levels of care?
   - ☐ Treatment/facility capacity (for residential)
   - ☐ MAT?
3. How has COVID impacted staffing within your organization/treatment community?
   - ☐ Staffing levels?
   - ☐ Morale

Wrap Up

4. What else would you like us to know about the state of SUD treatment services in Ohio right now?
5. Prior to COVID-19, we were planning to convene focus groups of individuals who had received treatment services in the prior six months to gather their perspectives about treatment services in their communities. Now, the risks associated with bringing groups of people together make focus groups an unlikely option for us. How would you recommend we reach out to this

population to gain their insights and a better understanding of their experiences?

- ☐ What should we be asking them?

K.3.5 *Interview Guide for Managed Care Plans*

1. We are trying to understand how SUD 1115 Waiver Demonstration implementation is going in Ohio right now, and we value your expertise and contributions. Can you tell us about your role in implementation of the SUD 1115 Waiver, and what you hope to achieve?

Access to care along the continuum

The SUD 1115 Waiver aims to reduce overdose and overdose death through a series of policy and practice changes that improve access to high-quality treatment at all ASAM levels of care. We would like to spend some talking about the changes that you have seen or anticipate in access to care.

2. Within your organization, what changes have been or are being made to ensure access to or placement in the appropriate levels of care?
   - ☐ Policy/rule changes?
   - ☐ Data analysis/use of data?
   - ☐ Access standards for each level of care?
3. What, if any, changes has your organization made or planned to make to assure compliance with nationally recognized program standards and provider qualifications?
4. How will utilization management change within your organization under the waiver?
5. How do structural factors such as racism, sexism, classism, heteronormativity, and other "isms" impact access to SUD treatment?
   - ☐ Can you talk about a specific client experience that highlights access inequity?
   - ☐ How might another client experience access (African American woman, Latin mom, transgendered person, etc.) to care?
6. What other factors lead to disparities in access to care right now?
   - ☐ Substance (certain substances increase access to Tx?)
   - ☐ Geography

- ☐ Disability
- ☐ Other

7. What is your organization's role in coordination of care and how has it evolved over time?
   - ☐ What future changes do you anticipate?
   - ☐ What are the challenges associated with coordinating transition across levels of care?
   - ☐ How are physical healthcare needs and behavioral healthcare needs being coordinated differently?
8. What, if any, benefits have you seen with regard to changes in coordination of care?

Medication Assisted Treatment

Under the waiver, residential treatment programs will be required to offer MAT or facilitate access to MAT. We are interested in your thoughts regarding the potential impacts of this new requirement.

9. How will access to MAT in residential treatment settings change as a result of the waiver?
10. What challenges and benefits do you anticipate for residential treatment providers and patients?

Impact of COVID-19 on SUD treatment

COVID-19 has had a significant impact on access to and delivery of healthcare in Ohio and across the nation. We are interested in better understanding the impact of COVID-19 on delivery of SUD treatment in the state.

11. How has COVID impacted SUD treatment in Ohio?
    - ☐ For instance, changes in demand for services or changes in the levels of care needed?
    - ☐ Access to care or a greater impact on certain levels of care?
    - ☐ MAT?

12. How has COVID impacted application of program standards?
    - ☐ Have you seen unexpected consequences, both beneficial and challenging?

Wrap Up

13. What are your primary concerns about the future of SUD 1115 waiver implementation within and outside the context of COVID-19?
14. What else would you like us to know about the state of SUD treatment services in Ohio right now?

K.4 Focus Groups with Beneficiaries with Lived Experience

K.4.1 *Informed Consent*

Hello, my name is _____ and today I am joined by _____. We are part of a research team working on behalf of the Ohio Department of Medicaid to better understand the issues faced by those seeking drug and alcohol treatment. Thank you for speaking with us today. Before beginning, we thought it would be helpful to review the goals and process of this focus group as well as answer any questions you have.

We are part of a project looking at access to drug and alcohol treatment across the state. To better understand the issues faced by people trying to get into treatment, we are facilitating focus groups with people who are enrolled in Medicaid and have been in some type of substance use treatment and/or recovery services in the past 6 months. Our hope is that your stories can help improve access to care and recovery outcomes for other Ohioans enrolled in Medicaid. We hope that you will feel free to discuss your experience or the experiences of others close to you.

[Skip this section if all participants are in the same room] During our conversation today, we ask that you mute your microphone when you are not speaking. You can do this by clicking the microphone picture at the bottom of your screen or pressing *6 on your phone. We also ask that you change your Zoom display name to your first name. To change your Zoom name click on the "Participants" button at the top or bottom of the **Zoom** window. Next, hover **your** mouse over **your name** in the "Participants" list on the right side of the **Zoom** window. Click on "More" then click "Rename" and type in your first name. If you on a phone or unable to change your display name, please say your first name before speaking.

Our discussion will last about an hour and a half. Your participation is voluntary. You do not have to answer any questions you do not want to answer. Our discussion today will be recorded via the Zoom video conferencing application, which will also produce a word-for-word transcript of our conversation. *[this portion*

only for participants in the same room] Before speaking, please say your first name so the recording is correct. Everything said today is confidential. The information you share will only be presented in summary form, and none of your personal information will be shared with anyone. If at any time you wish to discontinue participation, we can end our discussion. We appreciate there are many pathways to recovery and we want to understand your experiences and observations on what helps and what may get in the way of recovery. We also appreciate that each person and each community is different, and our goal is to gather information about a variety of experiences. Again, what you share here is confidential and will not be attributed to any one person. Do you have any questions for us before we begin? Do we have your permission to begin recording?

K.4.2 ***Interview Guide***

1. To begin today, it would be helpful for us to understand what "treatment" means to you.
2. From your experience, how do people in your community typically get into treatment?
    - ☐ Recognizing there are many paths to recovery, what helped you find treatment services that met your needs? What helped you most in accessing those services? Were the services you needed different from what you thought you wanted?
    - ☐ What factors influence a person's decision to seek treatment?
    - ☐ Do you have an example of a person or community resource that has been successful in helping people seek treatment or get into treatment?
    - ☐ When people are focusing on the internal drivers (i.e. being ready, reaching bottom, being tired of the lifestyle): Was there a person or organization that helped you get from that point where you were ready for treatment to actually walking through the door?
3. What are the biggest barriers to treatment?

- ☐ What problems in your community make it difficult to access treatment?
  - Wait list
  - Insurance
  - Types of treatment available in your community
  - Medication Assisted Treatment
  - Telehealth
- ☐ How easy or difficult is it to find a treatment program that offers medication for treatment, such as methadone, buprenorphine, or suboxone?
- ☐ How might court involvement create barriers to treatment in your community?
  - Do you feel that others' experiences with the court system match your own?
- ☐ How has COVID-19 impacted access to treatment? Did you participate in telehealth services and how was that experience for you?
- ☐ *Are there other personal issues, such as childcare or work schedules, that can limit access to care for some people?*
  - *Housing*
  - *Physical healthcare needs*
- ☐ *What role does stigma play in getting a person into treatment?*

4. What makes people want to leave treatment?
   - ☐ Are there triggers in treatment or in the community that influence people's decisions about staying in treatment?
   - ☐ How do people in treatment experience stigma? Does that influence decisions about seeking or staying in care?
5. What keeps people in treatment?
   - ☐ Are there specific supportive services that make staying in treatment easier?
     - Housing
     - Access to healthy food
     - Healthcare access

- Supported employment/vocational training
- Childcare

6. How does the recovery community support treatment services?
   - ☐ What has your experience been with peer recovery services?
   - ☐ Have you accessed recovery operated services (RCO), recovery communities, or recovery-oriented support services?
   - ☐ If you were interested in recovery housing options, were they available or difficult to find?
7. If you had to pick one word/short phrase to describe your strength in recovery, what would it be?

Thank you all again for your time today and for sharing your experiences. We are truly grateful to you for sharing your stories. If you have any further questions, thoughts, or information you want to share with us after we end our conversation today, we welcome you to reach out via our project email account SUDwaiver@osumc.edu. You will get an email within the next few days with your digital gift card information. Thank you again, and we wish you all the best on your continued journey.

K.5 Attachment - Evaluation Design

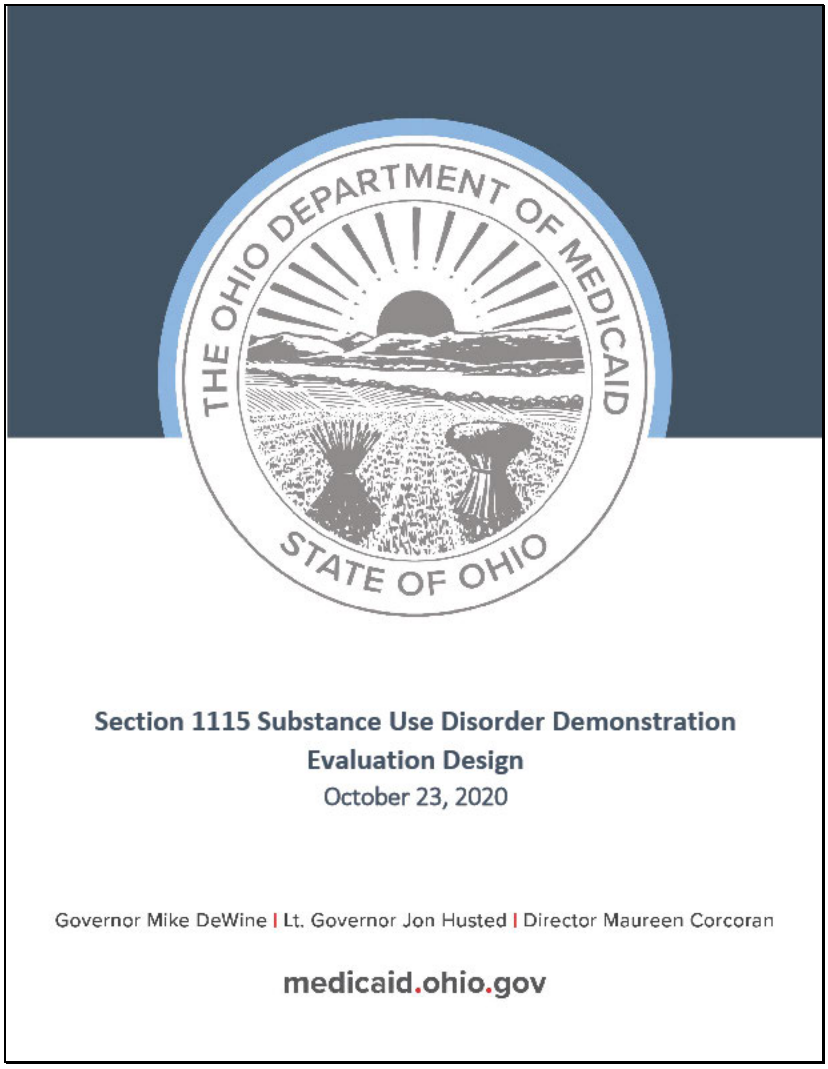

THE OHIO DEPARTMENT OF MEDICAID
STATE OF OHIO
Section 1115 Substance Use Disorder Demonstration
Evaluation Design
October 23, 2020
Governor Mike DeWine | Lt. Governor Jon Husted | Director Maureen Corcoran
medicaid.ohio.gov

Table of Contents

1. General Background Information

Ohio's Substance Use Disorder (SUD) Section 1115 Demonstration Waiver, approved by the Centers for Medicare and Medicaid Services (CMS) on September 24, 2019, encompasses a five-year period, which began October 1, 2019, and will end September 30, 2024.

As described in the implementation plan, the number of individuals enrolled in Ohio Medicaid with an SUD diagnoses continues to grow. The largest increase (23%) occurred between 2014 and 2015, with Ohio's Medicaid eligibility expansion reflecting a large unmet treatment need among that newly eligible population. Since Medicaid expansion, the rate of SUD diagnoses has continued to increase by 8% in 2015-2016 and 4% in 2016-2017. As of 2018, approximately 9% of the non-dually eligible adult population (18-64) had a primary SUD diagnosis. Opioid overdose deaths have also increased in the state from 1,914 in 2012 to 4,293 in 2017.[1]

Recent behavioral health system changes in Ohio expanded access to evidence-based practices, increased provider capacity to render medication assisted treatment (MAT), strengthened efforts to integrate behavioral and physical health care and expanded services to individuals diagnosed with mental illness and SUDs. Beginning in 2011, Ohio mandated use of the prescription drug monitoring program (PDMP) to monitor dispensing of controlled prescription drugs for suspected abuse or diversion. Since 2012, Ohio implemented five sets of opiate prescribing guidelines to address the easiest sources of uncoordinated prescription medications, such as prescriptions obtained via hospital emergency departments. Since 2015, Ohio took important steps to extend access to the opiate overdose reversal drug, Naloxone, by permitting pharmacists to dispense the drug without a prescription.

In January 2018, Ohio implemented broad policy changes to modernize Medicaid behavioral health benefits. This initiative, called Behavioral Health Redesign, revised Ohio's Medicaid behavioral health benefit to align with national coding and health care billing standards. Changes included:

- Adding coverage for primary care billing codes rendered by community behavioral health agencies;
- Expanding the service array for mental health and SUD treatment services;
- Requiring that SUD treatment services align with the American Society of Addiction Medicine (ASAM) levels of care;
- Establishing a unique benefit package for opiate treatment programs (OTP) offering MAT; and
- Adding new evidence-based behavioral health services for adults and youth with high intensity treatment needs.

Since January 1, 2019, working in partnership with the State's managed care plans (MCPs), Ohio eliminated prior authorization in most instances for MAT for opioid use disorder. Beginning January 1, 2020, the state began implementation of a unified preferred drug list that insured consistency in coverage across fee-for-service (FFS) and the MCPs.

The approved SUD 1115 demonstration waiver gives Ohio the opportunity to continue progress with additional flexibility and tools to counter the state's elevated levels of SUD, including opi-

[1] http://publicapps.odh.ohio.gov/EDW/DataBrowser/Browse/Mortality

oid use disorder (OUD). The waiver authorizes Ohio to implement programmatic changes that address the waiver milestones established by CMS, which will impact all Medicaid beneficiaries with a SUD.

Ohio Medicaid currently covers all the ASAM levels of care and administers treatment services based on the ASAM Patient Placement Criteria. Through this demonstration, Ohio will take additional steps to ensure providers utilize SUD-specific, multi-dimensional assessment tools, permitting patients to receive the appropriate level of care (LOC) that reflects evidence-based clinical treatment guidelines. The Medicaid Behavioral Health Provider Manual, managed care provider agreement, and/or Ohio Administrative Code (OAC) will be modified to establish provider responsibilities for screening, assessment and treatment plan review. ODM will conduct reviews of provider and plan utilization management (UM) processes, while using findings to improve UM and prior authorization approaches as the waiver demonstration evolves.

Ohio will also revise licensure requirements, policies, and managed care contracts. This will allow for services to be aligned with national standards and evidence-based practices. All service definitions, eligibility criteria, and program requirements and provider qualifications will be aligned with ASAM in the published Medicaid provider manual. Residential program standards will be updated to include more detail about particular types of services, hours of clinical care, and credentials of staff for residential treatment settings. Educational efforts and licensure standards will be revised to assure that all residential organizations offer MAT onsite or through coordination with offsite providers.

In order to improve access to each critical LOC, Ohio will assess availability of treatment providers focusing on geographic distribution and anticipated penetration rates. The results will be utilized to update MCP access standards for the Behavioral Health State Plan services including all ASAM LOC and MAT.

Ohio will improve the utilization and functionality of the existing prescription drug monitoring system. Planned improvements include: (1) expanding the state's health IT functionality to improve utilization; (2) enhance available information that can inform treatment and referral (e.g., identify individuals with prior history of non-fatal overdose); (3) conduct analyses to demonstrate the impact of clinician prescribing patterns on long-term opioid use; and (4) implement an enforcement plan to minimize inappropriate overprescribing. Finally, the state will seek to improve care coordination and transitions between LOCs gathering data to identify opportunities for improvement and support the development of a new care coordination model.

To determine the impact of this demonstration Ohio has arranged for an independent evaluation to be conducted throughout the waiver time period. The proposed evaluation described in this document includes quantitative and qualitative methods to measure the impact of key waiver provisions on Medicaid enrolled adults and youth with SUD.

The demonstration period is October 1, 2019, through September 30, 2024. An interim evaluation will be completed by September 30, 2023, and a draft summative evaluation report will be submitted to CMS within 18 months after the end of the demonstration. The evaluation period ends on March 30, 2026.

1.1 Evaluation Overview and Process

As described previously, Ohio's SUD Waiver demonstration was designed to address the six major goals and six milestones established by CMS. These include:

Milestones:

1. Access to critical LOCs for OUD and other SUDs.
2. Use of ASAM placement criteria.
3. Use of ASAM program standards for residential provider qualifications.
4. Provider capacity of SUD treatment including MAT.
5. Implementation of OUD comprehensive treatment and prevention strategies.
6. Improved care coordination and transition between LOCs.

Goals:

1. Increased rates of identification, initiation, and engagement in treatment.
2. Increased adherence to and retention in treatment for OUD and other SUDs.
3. Reductions in overdose deaths, particularly those due to opioids.
4. Reduced utilization of emergency departments (EDs) and inpatient (IP) hospital settings for OUD and other SUD treatment where the utilization is preventable or medically inappropriate through improved access to other continuum of care services.
5. Fewer readmissions to the same or higher LOC where readmissions is preventable or medically inappropriate for OUD and other SUD.
6. Improved access to care for physical health conditions among beneficiaries with OUD or other SUDs.

ODM worked with an independent evaluator to clarify the relationships between the key provisions of Ohio's demonstration and the desired outcomes that aligned with the six goals established by CMS. Within the framework of a driver diagram, goal 3, reduction of overdose deaths, was viewed as the primary purpose of Ohio's demonstration, while other goals were viewed as primary drivers of reduction in overdose death. Goals 1, 2, 4, 5, and 6 were subsumed in three categories of primary drivers. Primary Driver 1, reduction in hospital-based SUD service use and treatment readmissions, aligned with goals 4 and 5. Primary Driver 2, increased adherence to and retention in treatment, corresponds to goal 2. Primary Driver 3 combines goal 1, initiation and engagement in treatment, and goal 6, access to physical health care, under the umbrella of health care quality. A driver diagram was developed to depict the hypothesized relationships between the desired outcomes of the demonstration and the factors that are expected to drive improvement (see Figure 1). A description of the hypothesized relationship between provisions of the demonstration, primary and secondary drivers, and the purpose of the demonstration are described in Section 2.

Purpose:

1. Reductions in overdose deaths, particularly those due to opioids.

Primary Drivers:

1. Reduce hospital-based SUD service use and treatment readmissions.
2. Increase adherence to and retention in treatment.
3. Improve quality of care.

Secondary Drivers:

1. Improve access to care.
2. Improve utilization of care.
3. Improve coordination and management of care.

2. Evaluation Questions and Hypotheses

The following section of the evaluation reflects the CMS-issued guidance for the evaluation of SUD demonstration waivers.[2] It includes a driver diagram describing key features of Ohio's demonstration and associated demonstration milestones and drivers established by CMS. It also describes the evaluation questions and hypotheses that assess the strength of those associations.

2.1 Driver Diagram

The driver diagram displayed in Figure 1 serves as the basis for this evaluation proposal. The driver diagram depicts the expected relationships between the demonstration's chief purpose, which is to reduce drug overdose deaths, and key drivers that contribute to reducing overdose deaths either directly or indirectly. The demonstration's purpose and primary drivers align with the six goals established by CMS for the SUD 1115 Waiver. The logic of the driver diagram suggests that drug overdose deaths (goal 3) will be reduced by implementing interventions to:

1. Reduce the need for preventable hospital-based care (goal 4) and readmissions (goal 5),
2. Improve treatment adherence (goal 2), including continuity of pharmacotherapy, and
3. Improve the quality of care through evidence-based treatment engagement (goal 1), and the integration of behavioral health and primary care (goal 6).

The primary drivers are dependent on three secondary drivers in the model: (1) access to care; (2) service utilization; and (3) care coordination and oversight. These secondary drivers represent the immediate outcomes of specific programmatic changes that Ohio will implement in response to the SUD 1115 Waiver. As depicted in the model:

1. Access to care will be improved through programmatic elements focused on coverage for all critical levels of care (LOC) (milestone 1), developing provider networks and certification of new provider types, and incorporating access standards in managed care contracts (milestone 4);
2. Utilization will be improved through new residential treatment (RT) program standards that require access to MAT in RT settings (milestone 3), and new care coordination approaches to assure patients are engaged in appropriate LOCs (milestone 6); and
3. Care coordination and oversight will be achieved through use of evidence-based patient placement criteria and utilization management approach to assure that services meet the appropriate level of need (milestone 2), expanded access and use of Ohio's prescription drug management program (PDMP) to prevent high-risk prescribing (milestone 5), as well as coordination of services to improve transitions between LOCs (milestone 6).

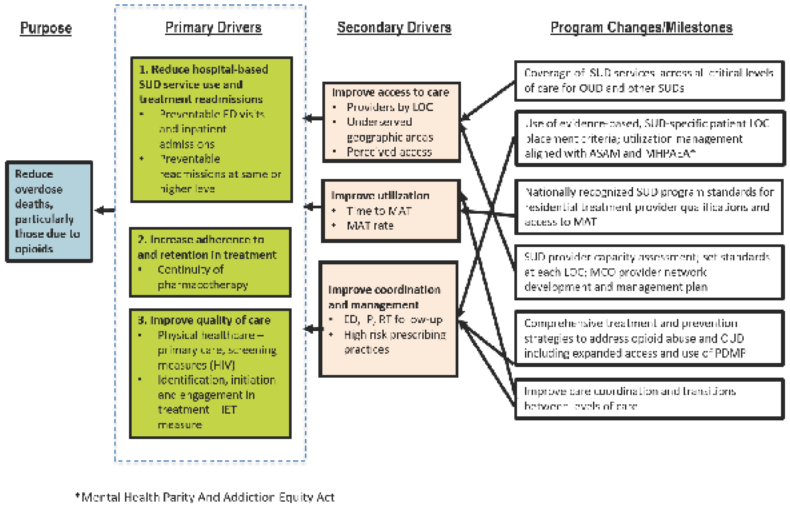
The proposed evaluation design follows the logic of this driver diagram. Each secondary driver is expected to exert influence on all three primary drivers, and all primary drivers are expected to impact drug overdose deaths. Thus, the primary drivers are grouped together with a dotted line. It is hypothesized that the planned programmatic changes will have a direct and immediate impact on secondary drivers. These hypotheses will be tested by assessing the causal impact of

[2] Centers for Medicare and Medicaid Services. Substance Use Disorder Section 1115 Demonstration Evaluation Design- Technical Assistance. March 6, 2019. Available at: https://www.medicaid.gov/medicaid/section-1115-demo/evaluation-reports/evaluation-designs-and-reports/index.html.

interventions on secondary drivers, including access to care, utilization patterns, and coordination and management.

The evaluation will also address the effects of the SUD demonstration waiver on drug overdose deaths and outcomes identified as primary drivers of drug overdose death, including hospital ED and inpatient admissions, readmissions, continuity of pharmacotherapy, physical health screening and utilization and treatment engagement.

Figure 1: Driver Diagram



*Mental Health Parity And Addiction Equity Act

9

2.2 Questions and Hypotheses

The following questions and hypotheses will be examined and tested as part of the evaluation:

- **Q1** Does the demonstration increase access to SUD treatment services?
  - *H1.a* The demonstration will increase the ratio of SUD providers to beneficiaries enrolled in Medicaid and qualified to deliver SUD services.
  - *H1.b* The demonstration will increase the ratio of providers to beneficiaries at each of the levels of care.
  - *H1.c* The demonstration will increase the ratio of providers to beneficiaries in geographic areas that are underserved at baseline.
- **Q2** Does the demonstration increase utilization of SUD treatment by enrollees with SUD?
  - *H2.a* The demonstration will reduce the time between initial diagnosis and treatment.
  - *H2.b* The demonstration will increase the rate of MAT usage.
- **Q3** Does the demonstration improve coordination and management of care?
  - *H3.a* The demonstration will increase the proportion of IP stays which have a timely follow-up visit with a corresponding primary diagnosis of SUD.
  - *H3.b* The demonstration will increase the proportion of RT visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.
  - *H3.c* The demonstration will increase the proportion of ED visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.
  - *H3.d* The demonstration will decrease high-risk prescribing practices (i.e., high dose, multiple prescribers and pharmacies, concurrent use of benzodiazepines).
- **Q4** Does the demonstration reduce the utilization of ED and IP hospital settings for OUD and other SUD treatment?
  - *H4.a* The demonstration will decrease the rate of ED and IP visits within the beneficiary population for SUD.
  - *H4.b* The demonstration will decrease the rate of readmissions to ED and IP settings.
- **Q5** Does the demonstration improve adherence to SUD treatment?
  - *H5.a* The demonstration will increase continuity of pharmaceutical care.
- **Q6** Do beneficiaries receiving SUD services experience an improved quality of care?
  - *H6.a* The demonstration will increase the percentage of beneficiaries with SUD who receive screening and care for co-morbid conditions.
  - *H6.b* The demonstration will increase early engagement in SUD treatment.
- **Q7** Does the demonstration reduce rates of opioid-related overdose deaths?
  - *H7.a* The demonstration will decrease the rate of overdose deaths, including those due to opioids.
- **Q8** How do costs related to the demonstration waiver change throughout the pre- and post-demonstration periods?
  - *H8.a* The demonstration will decrease or have no effect on total costs. The demonstration will increase SUD-IMD, SUD-other, and Non-SUD costs, but decrease IP, non-ED outpatient, ED outpatient, pharmacy and long-term care costs.

3. Methodology

3.1 Evaluation Methodology

This section describes the mixed methods strategy that will be used for the evaluation, including both quantitative and qualitative methods. Below are summaries of the quantitative and qualitative methods followed by Table 1 which lists specific measures, data sources, analytic approaches, and their relationship to specific evaluation questions and hypotheses. This is accompanied by a narrative description of the analytic approaches in Section 3.2 to provide additional detail. The target and comparison populations, evaluation period, data sources, and analytic methods are described in greater detail.

Quantitative Methods

A majority of measures will be quantitative and derived from Medicaid administrative data (claims/encounters, eligibility, and provider information). The use of Medicaid administrative data allows measures to not only be tracked prospectively but also calculated historically to measure trends. The primary causal analysis method of use is an interrupted time series (ITS). Medicaid administrative data are ideal for this method because measures can be constructed over repeated time periods and calculated historically, in many cases, allowing pre-intervention trends to be properly estimated. In addition, descriptive analysis such as demographic or geographic stratification of measures will add context to the results of the formal hypothesis tests where applicable. After careful consideration, Ohio has not been able to identify a feasible in-state or out-of-state comparison population to provide a counterfactual for causal inference. The topic of comparison populations is discussed in Section 3.3.

Qualitative Methods

Qualitative data will be gathered at two points during the demonstration from focus groups of people with a SUD insured by Medicaid. The goal of the focus groups is to gather consumer perspectives regarding the outcomes of Ohio's implementation strategy and better understand the lived experiences of individuals receiving treatment. The first set of focus groups will be conducted as part of the Midpoint Assessment required by CMS and scheduled between February and April 2021. While this timeframe begins 16 months after the demonstration start date, most of the demonstration interventions will not be fully implemented at that time. Therefore, the focus group participants may be able to identify barriers to access and recovery that could be addressed over the course of the demonstration. The second set of focus groups will take place near the end of the demonstration (approximately October through November 2024). The focus group questions will concentrate on perceptions regarding changes in access to care, coordination between LOCs, integration of primary care, and key factors that support recovery. Focus group participants will be engaged through RT facilities and/or community behavioral health providers. Facilities and providers will be asked to recruit consumers who received treatment in the previous six months. This target population is well suited since it is likely to include individuals who are subject to changes in services that are an important element of the demonstration. Individuals with recent experience in residential treatment facilities and community behavioral health are likely to understand the barriers to access at various LOCs within the behavioral health (BH) system.

A total of 10-15 focus groups will be conducted in a mix of residential and community behavior health provider settings located in both urban and rural areas, serving youth and adults. To

ensure focus groups reflect a diversity of perspectives, participant recruitment will focus on geographic, gender, age, racial, and ethnic diversity. Treatment facilities and other providers will be recruited from each of the three Ohio Medicaid Assessment Survey county types, metro, non-metro, and non-metro Appalachian to ensure geographic diversity. Treatment providers will be recruited with assistance from the Ohio SUD 1115 Stakeholder Advisory Committee, whose members were selected to represent diverse perspectives from recovery advocates, treatment providers, prescribers, and recovery housing. Focus group facilitators will work with participating treatment facilities and providers to recruit participants for gender, age, race, and ethnic diversity. Additional detail on the qualitative focus groups can be found in Section 3.7.

In addition to the qualitative information gathered as part of the focus group, the evaluation will seek to give a broad view of how Ohio's behavioral health treatment system changes during the demonstration period. This might include information on provider changes, such as adding or discontinuing the delivery of certain services, and different ways that consumers access services during the course of the demonstration. This information will help contextualize the quantitative results.

Table 1: Summary of Key Evaluation Questions, Hypotheses, Data Sources, and Analytic Approaches

Driver	Measure Description [period]	Steward	Numerator	Denominator	Data Source	Analytic Approach
Q1 Does the demonstration increase access to SUD treatment services?						
H1.a The demonstration will increase the ratio of SUD providers to beneficiaries enrolled in Medicaid and qualified to deliver SUD services.						
Secondary Driver: *(Improve access to care)*	SUD provider availability ratio [quarterly]		The number of providers who were enrolled in Medicaid and delivered SUD services during the measurement period	Number of beneficiaries with an SUD diagnosis during the measurement period	Medicaid administrative data	Interrupted time series, descriptive statistics
	SUD provider availability ratio – MAT [quarterly]		The number of providers who were enrolled in Medicaid and provided MAT (buprenorphine, methadone, or naltrexone)	Number of beneficiaries with an OUD diagnosis during the measurement period	Medicaid administrative data	Interrupted time series, descriptive statistics
H1.b The demonstration will increase the ratio of providers to beneficiaries at each of the levels of care.						
Secondary Driver: *(Improve access to care)*	SUD provider availability ratio by level of care [quarterly]		The number of providers who were enrolled in Medicaid and delivered SUD services during the measurement period by category (appropriate sublevels of 1, 2, and 3)	Number of beneficiaries with an SUD diagnosis during the measurement period	Medicaid administrative data	Interrupted time series, descriptive statistics
H1.c The demonstration will increase the ratio of providers to beneficiaries in geographic areas that are underserved at baseline.						
Secondary Driver: *(Improve access to care)*	SUD provider availability ratio within underserved areas [quarterly]		The number of providers who were enrolled in Medicaid and delivered SUD services during the measurement period in select counties determined to be underserved based on the number, percentage, and ratio of provider to beneficiaries.	Number of beneficiaries with an SUD diagnosis during the measurement period within selected counties	Medicaid administrative data and ODM Provider Address Database	Interrupted time series, descriptive statistics
Q2 Does the demonstration increase utilization of SUD treatment by enrollees with SUD?						
H2.a The demonstration will reduce the time between initial diagnosis and treatment.						
Secondary Drivers: *(Improve utilization)*	Initiation of SUD Treatment [quarterly]	Based on MM** 15	Number of beneficiaries who initiated treatment through an IP SUD admission, outpatient visit, intensive outpatient encounter or partial hospitalization, telehealth, or MAT within 14 days of diagnosis	Number of beneficiaries with a new episode of SUD abuse or dependence	Medicaid administrative data	Interrupted time series

MM** Same Measure as Monitoring Metric

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Table 1: Summary of Key Evaluation Questions, Hypotheses, Data Sources, and Analytic Approaches

Driver	Measure Description [period]	Steward	Numerator	Denominator	Data Source	Analytic Approach
H2.b The demonstration will increase the MAT usage rate.						
Secondary Drivers: *(Improve utilization)*	MAT usage [quarterly]	Based on MM12**; MODRN	The number of beneficiaries who have a claim for MAT during the measurement period.	The number of beneficiaries with an OUD diagnosis during the measurement period.	Medicaid administrative data	Interrupted time series
	RT stays with MAT [quarterly]		The number of RT stays with MAT administered or prescribed during the stay or 15 days before the start or after the end of the stay	RT stays during the measurement period	Medicaid administrative data	Interrupted time series
Q3 Does the demonstration improve coordination and management of care?						
H3.a The demonstration will increase the proportion of IP visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.						
Secondary Driver: *(Improve care coordination/ management)*	IP follow-up [quarterly]	Based on MM 17**; adjusted measurement period	Number of IP visits for beneficiaries who have a principal diagnosis of SUD abuse or dependence and who had a follow-up visit with a corresponding principal diagnosis for SUD within 30 days.	Number of IP visits for beneficiaries who have a principal diagnosis of SUD abuse or dependence.	Medicaid administrative data	Interrupted time series
H3.b The demonstration will increase the proportion of RT visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.						
Secondary Driver: *(Improve care coordination/ management)*	RT follow-up [quarterly]	Based on MM 17**; adjusted measurement period	Number of visits for beneficiaries who have a principal diagnosis of SUD abuse or dependence and who had a follow-up visit with a corresponding principal diagnosis for SUD within 30 days.	Number of RT visits for beneficiaries who have a principal diagnosis of SUD abuse or dependence.	Medicaid administrative data	Interrupted time series
H3.c The demonstration will increase the proportion of ED visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.						
Secondary Driver: *(Improve care coordination/ management)*	ED follow-up [quarterly]	MM 17**; adjusted measurement period	Number of ED visits for beneficiaries who have a principal diagnosis of SUD abuse or dependence and who had a follow-up visit with a corresponding principal diagnosis for SUD within 30 days.	Number of ED visits for beneficiaries who have a principal diagnosis of SUD abuse or dependence.	Medicaid administrative data	Interrupted time series

MM** Same Measure as Monitoring Metric

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Table 1: Summary of Key Evaluation Questions, Hypotheses, Data Sources, and Analytic Approaches

Driver	Measure Description [period]	Steward	Numerator	Denominator	Data Source	Analytic Approach
H3.d The demonstration will decrease high-risk prescribing practices.						
Secondary Driver: *(Improve care coordination and oversight)*	Use of opioids from multiple providers in persons without cancer [quarterly]	Based on MM 19**; adjusted requirement and measurement period	The number of beneficiaries without cancer who received prescriptions for opioids from four or more prescribers or four or more pharmacies	Beneficiaries without cancer/1000	Medicaid administrative data	Interrupted time series
	Use of opioids at high dosage in persons without cancer [quarterly]	Based on MM 20**; adjusted measurement period and no multiple provider requirement	The number of beneficiaries without cancer who received prescriptions for opioids at high dosage, ≥ 120 morphine milligram equivalents	Beneficiaries without cancer/1000	Medicaid administrative data	Interrupted time series
Q4 Does the demonstration reduce the utilization of ED and IP hospital settings for OUD and other SUD treatment?						
H4.a The demonstration will decrease the rate of ED and IP visits within the beneficiary population for SUD.						
Primary Driver: *(Reduce hospital-based SUD service use and treatment readmissions)*	Emergency department utilization for SUD [quarterly]	MM** 23	The number of ED visits for SUD during the measurement period	Beneficiaries with a SUD enrolled in Medicaid during the measurement period	Medicaid administrative data	Interrupted time series
	IP stays for SUD [quarterly]	MM** 24	The number of IP discharges related to a SUD stay during the measurement period	Beneficiaries with a SUD enrolled in Medicaid during the measurement period	Medicaid administrative data	Interrupted time series

MM** Same Measure as Monitoring Metric

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Table 1: Summary of Key Evaluation Questions, Hypotheses, Data Sources, and Analytic Approaches

Driver	Measure Description [period]	Steward	Numerator	Denominator	Data Source	Analytic Approach
H4.b The demonstration will decrease the rate of readmissions to ED and IP settings.						
Primary Driver: *(Reduce hospital-based SUD service use and treatment readmissions)*	The 30-day all-cause IP admission rate following a RT stay among beneficiaries with SUD [quarterly]	MM** 25; adjusted index locations and measurement period	The count of 30-day IP admissions: at least one acute admission for any diagnosis within 30 days of the index discharge date	Index RT	Medicaid administrative data	Interrupted time series
	The 30-day all-cause ED visit rate following a RT stay among beneficiaries with SUD [quarterly]	MM** 25; adjusted index locations and measurement period	The count of ED visits within 30-days of the index date: at least one acute visit for any diagnosis within 30 days of the index discharge date	Index RT	Medicaid administrative data	Interrupted time series
	The 30-day all-cause visit rate to an ED following an ED visit among beneficiaries with SUD [quarterly]	Based on MM** 23/25; adjusted measurement period	The count of ED visits within 30-days of the index date: at least one acute visit for any diagnosis within 30 days of the index discharge date	Index ED Visits	Medicaid administrative data	Interrupted time series
Q5 Does the demonstration improve adherence to SUD treatment?						
H5.a The demonstration will increase continuity of pharmaceutical care.						
Primary Driver: *(Increased adherence to and retention in treatment)*	Continuity of pharmacotherapy for opioid use disorder [quarterly]	MM 22*, adjusted measurement period, MODRN	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	Medicaid administrative data	Interrupted time series

MM** Same Measure as Monitoring Metric

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Table 1: Summary of Key Evaluation Questions, Hypotheses, Data Sources, and Analytic Approaches

Driver	Measure Description [period]	Steward	Numerator	Denominator	Data Source	Analytic Approach
Q6 Do beneficiaries receiving SUD services experience an improved quality of care?						
H6.a The demonstration will increase the percentage of beneficiaries with SUD who receive screening and care for co-morbid conditions.						
Primary Driver: *(Improve quality of care)*	Access to preventive/ ambulatory health services for adult Medicaid beneficiaries with SUD [quarterly]	MM** 32; adjusted measurement period	Number of beneficiaries with SUD who had an ambulatory or preventive care visit during past 12 months	Number of beneficiaries with SUD during the measurement period.	Medicaid administrative data	Interrupted time series
	Screening for HIV/HCV/HBV [quarterly]	MODRN	Number of benehciaries with SUD who were screened for HIV/HCV/HBV during past 12 months	Number of beneficiaries with SUD during the measurement period	Medicaid administrative data	Interrupted time series
H6.b The demonstration will increase early engagement in SUD treatment.						
Primary Driver *(Improve quality of care)*	Initiation and engagement of alcohol and other drug abuse or dependence treatment [quarterly]	MM** 15; adjusted measurement period	Number of beneficiaries who initiated treatment and who had two or more additional SUD services or MAT within 34 days of the initiation visit	Number of beneficiaries with a new episode of alcohol or other drug abuse or dependence	Medicaid administrative data	Interrupted time series
Q7 Does the demonstration reduce rates of opioid-related overdose deaths?						
H7.a The demonstration will decrease the rate of overdose deaths, including those due to opioids.						
Purpose: *(Reductions in overdose deaths particularly those due to opioids)*	Rate of overdose deaths [quarterly]	MM* 27	Number of overdose deaths	Number of beneficiaries/1000	Medicaid and ODH administrative data	Interrupted time series, descriptive statistics
	Rate of overdose deaths due to opioids [quarterly]	MM* 27	Number of overdose deaths due to opioids	Number of beneficiaries/1000	Medicaid and ODH administrative data	Interrupted time series, descriptive statistics

MM** Same Measure as Monitoring Metric

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Table 1: Summary of Key Evaluation Questions, Hypotheses, Data Sources, and Analytic Approaches

Driver	Measure Description [period]	Steward	Numerator	Denominator	Data Source	Analytic Approach
Q8 How do costs related to the demonstration waiver change throughout the pre- and post-demonstration periods?						
H8.a The demonstration will decrease or have no effect on total costs. The demonstration will increase SUD-IMD, SUD-other, and Non-SUD costs, but decrease IP, non-ED outpatient, ED outpatient, pharmacy and long-term care costs.						
	Total costs [quarterly]		Total costs from fee-for-service and encounter claims, including inpatient, outpatient, professional medical, pharmacy, dental, and long-term care	Total member-months	Medicaid administrative data	Beneficiary-level interrupted time series model
	Total federal costs [quarterly]		Total Medicaid costs * federal Medicaid percentage	Total member-months	Medicaid administrative data	Beneficiary-level interrupted time series model
	SUD-IMD costs [quarterly]		IMD costs	Total member-months	Medicaid administrative data	Beneficiary-level interrupted time series model
	SUD-other costs [quarterly]		Costs with SUD diagnosis and/or SUD-related code (procedure, revenue, POS, provider type)	Total member-months	Medicaid administrative data	Beneficiary-level interrupted time series model
	Non-SUD costs [quarterly]		Costs without SUD diagnosis and without SUD-related code (procedure, revenue, POS, provider type)	Total member-months	Medicaid administrative data	Beneficiary-level interrupted time series model
	Outpatient costs -non ED [quarterly]		Costs associated with outpatient and professional medical and dental, non ED claims	Total member-months	Medicaid administrative data	Beneficiary-level interrupted time series model
	Outpatient costs - ED [quarterly]		Costs associated with ED claims that do not result in an inpatient admission	Total member-months	Medicaid administrative data	Beneficiary-level interrupted time series model
	Inpatient costs [quarterly]		Costs associated with inpatient claims	Total member-months	Medicaid administrative data	Beneficiary-level interrupted time series model
	Pharmacy costs [quarterly]		Costs associated with pharmacy claims	Total member-months	Medicaid administrative data	Beneficiary-level interrupted time series model

MM** Same Measure as Monitoring Metric

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Table 1: Summary of Key Evaluation Questions, Hypotheses, Data Sources, and Analytic Approaches

Driver	Measure Description [period]	Steward	Numerator	Denominator	Data Source	Analytic Approach
	Long-term care costs [quarterly]		Costs associated with long-term care claims	Total member-months	Medicaid ad-ministrative data	Beneficiary-level interrupted time series model

MM** Same Measure as Monitoring Metric

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3.2 Descriptions of Analytic Approaches by Hypothesis

Hypothesis H1.a states that the demonstration will increase the ratio of qualified SUD providers to beneficiaries. To test this hypothesis, the ratio of providers to beneficiaries will be calculated and tracked quarterly and an ITS model will be applied to test for statistically significant changes in the trajectory of the measures over time. Providers and their locations will be identified using the methodology described in Section 3.6.

The approach of standardizing the number of providers by the number of beneficiaries with an SUD or OUD diagnosis rather than the total number of beneficiaries was chosen because it better reflects the relative population need. Descriptive statistics also will be calculated to assess changes in the distribution of MAT providers by MAT type (buprenorphine, methadone, or naltrexone), and to better understand the geographic distribution of providers and beneficiaries by calculating the provider-beneficiary ratio within each county.

Hypothesis H1.b considers whether the demonstration will produce an increase in the ratio of providers to beneficiaries at each LOC. This hypothesis will be tested by applying an ITS model to examine changes in the ratio of providers to beneficiaries at each ASAM LOC and applying descriptive statistics to examine the geographic distribution of providers by county.

Hypothesis H1.c examines access to care in areas that are underserved. Access will be defined in terms of the ratio of providers and beneficiaries in a given county. Preliminary analyses suggest that there is wide variation in provider-to-beneficiary ratios across the state. Underserved counties will be defined as those counties that have a combination of a large number and percentage of beneficiaries with OUD and a small provider access ratio. Ratios of providers-to-beneficiaries will be tracked over time in these counties to assess improvement over time and indicate a reduction in access gaps. Additional descriptive statistics mapping provider locations will be used to add context to the analysis.

Hypothesis H2.a considers timely utilization of treatment after diagnosis. The impact of the demonstration on timely utilization will be tested using an ITS analysis with the outcome based on a modified version of monitoring metric 15 (initiation and engagement of alcohol and other drug abuse or dependence treatment). The measurement periods will be reduced to quarters instead of the annual measurement period specified in the monitoring metric.

Hypothesis H2.b expects that access to all ASAM levels of care and MAT will improve the MAT utilization rate over the course of the demonstration. This hypothesis will be tested using an ITS model applied to identify improvement over time in MAT usage rates among beneficiaries with OUD and beneficiaries in RT for OUD.

As part of the demonstration's goal of improving coordination and management of care, *Hypotheses H3.a*, *H3.b*, and *H3.c* consider the demonstration's effect on timely follow-up care after an IP or RT stay or ED visit. These hypotheses will be tested using ITS models with the outcome measures based on monitoring metric 17. *Hypothesis H3.d* relates to the demonstration's effect on high-risk prescribing practices. Two measures based on monitoring metrics 19 and 20 will be calculated quarterly and used as the outcomes in ITS models to test whether there are reductions in the proportion of beneficiaries who are prescribed opioids at high dosages (≥ 120 morphine milligram equivalent [MME]) and the proportion of beneficiaries with opioids from four or more prescribers or pharmacies in the past year.

Hypothesis H4.a assesses changes in ED and IP utilization for SUD by applying ITS models to monitoring metrics 23 and 24. Similarly, the analysis for *Hypothesis H4.b* considers the rate of readmission to an ED following an ED visit, and the rate of admission to ED and IP settings following a RT stay. Monitoring metric 23 will be used to capture ED readmissions and an adapted version of monitoring metric 25 will be used to capture ED visits and IP stays following RT. An ITS model will be used to test for significant changes in the trajectories of these metrics over the course of the demonstration.

Adherence to treatment can support individuals in their pursuit of recovery and reduce risk of overdose. *Hypothesis H5.a* states that the demonstration will increase continuity of pharmaceutical care. The 180-day continuity of pharmacotherapy measure, based on monitoring metric 22, with an adjusted measurement period, will be used for this analysis.

Hypothesis H6.a assesses improvement in quality of care for beneficiaries receiving SUD services. The demonstration is expected to be associated with increases in the percentage of beneficiaries with SUD receiving primary care and screening for co-morbid conditions. ITS models will be used to assess changes in several measures over the course of the demonstration. The first is the proportion of beneficiaries with SUD who had an ambulatory or preventive care visit in the past year. This measure is based on monitoring metric 32 with an adjusted measurement period. The other measures assess proportions of beneficiaries receiving HIV, HCV, and HBV screening during the past year. These measures will be calculated quarterly with a rolling annual lookback period. *Hypothesis H6.b* assesses early engagement in SUD treatment. An ITS model will be used to test for changes over time in the proportion of beneficiaries who had two or more additional SUD services or MAT within 34 days of treatment initiation, based on monitoring metric 15.

Hypothesis H7.a addresses the fundamental goal of the demonstration to decrease the rate of drug overdose deaths, particularly those due to opioids. An ITS model will test for changes in drug overdoses and opioid overdoses over time as a result of the demonstration. In addition, descriptive statistics will show the breakdown of opioid overdose deaths by type (e.g. fentanyl, heroin).

Evaluation question Q8 considers changes in the cost of services that are due to program changes implemented in the demonstration. To estimate the effect of the demonstration on per-beneficiary cost, an interrupted time series model will be constructed for each outcome of interest. These models will be different from previous ITS analyses in that the modelled outcomes will be at the beneficiary level instead of the summary level. See Section 3.7 for additional details on the modelling methodology.

In addition to the analytic approaches, descriptive comparisons may be conducted with a group of states that are implementing SUD 1115 Waiver demonstration projects and participating in a distributed research network as described in Section 3.8. These comparisons may be used to evaluate unique elements of Ohio's implementation plan compared to those of other states. Descriptive comparisons may also be conducted to compare the impact of the waiver on demographic subpopulations of interest. See Section 3.8 for a full description.

3.3 Target and Comparison Populations

The demonstration will impact services for Medicaid enrollees of any age with a SUD. Adolescence is recognized as an important period of prevention and early intervention. However, ado-

lescents differ substantially in terms of the prevalence of SUD and aspects of treatment that are the focus of this evaluation. Therefore, the evaluation will focus on the target population of individuals ages 18 through 64 during a given measurement period. Adolescents, ages 12 through 17, will be considered as an additional population of interest for descriptive analysis for relevant measures given data availability. Beneficiaries who are dually enrolled in Medicaid and Medicare will be excluded from all analyses because it is not possible to observe all of their health care in Medicaid claims and encounters. Additional inclusion criteria for specific construct measures such as SUD/OUD diagnosis and/or continuous enrollment are described in Table 1.

In considering possible comparison populations, note that the interventions are state- and system-wide, and therefore apply to all Medicaid beneficiaries. Also, there is no readily available source of service data from persons who are not enrolled in Medicaid. Consequently, there are no opportunities to gather data from a comparison group of Ohio Medicaid enrollees not subject to interventions, or a comparison group of Ohioans who are not enrolled in Medicaid.

Several national data sources were considered to provide a state-level comparison group. However, because many states already have an 1115 SUD Waiver demonstration, or have submitted an application for a waiver to CMS, there are few remaining states to serve as candidates for a valid counterfactual comparison to Ohio. Summary measures for the states with similar characteristics to Ohio indicate that states without a waiver have much lower opioid-involved overdose death rates (Table 2). Therefore, these states make a poor counterfactual comparison to Ohio's experience with the opioid crisis. Furthermore, these states (Connecticut, New York, and South Carolina) may choose to apply for an SUD 1115 waiver in the coming years.

Since Ohio has limited options for a valid comparison group, the evaluation will utilize statistical methods that compare the outcomes across time. These methods compare pre- and post-intervention outcomes in a time series controlling for pre-intervention trends. The majority of the proposed evaluation outcomes are derived from Medicaid administrative data and are ideal candidates for a time series modelling approach, because they can be calculated over repeated intervals and gathered retrospectively for a period prior to implementation of the demonstration interventions.

Table 2: Opioid-involved overdose deaths and prescriptions for selected states

1115 SUD Waiver States	Opioid-Involved Overdose Deaths/100,000 persons (2017)	Opioid Prescriptions/100 persons (2017)
West Virginia	49.6	81.3
Ohio	39.2	63.5
New Hampshire	34.0	52.8
Maryland	32.2	51.7
Massachusetts	28.2	40.1
Kentucky	27.9	86.8
Michigan	21.2	74.0
Wisconsin	16.9	52.6
Non-SUD Waiver States	**Opioid-Involved Overdose Deaths/100,000 persons (2017)**	**Opioid Prescriptions/100 persons (2017)**
Maine[3]	29.9	55.7
Connecticut	27.7	48
Missouri[4]	16.5	71.8
New York	16.1	37.8
South Carolina	15.5	79.3

3.4 Evaluation Period

The demonstration waiver period began October 2019, and will continue for 5 years. Based on the state's implementation plan[5], the majority of the actions related to the milestones will take place within the first 12-24 months of the waiver time period (October 2020-October 2021) with a few actions that already have taken place. Evaluators will use data starting with January 2018, or earlier to model the outcome trends in the pre-demonstration period. January 2018 is significant because it marks the implementation of Ohio's behavioral health system redesign which included significant changes in Medicaid behavioral health benefits and billing codes.

January 1, 2018, was the earliest that certain relevant Medicaid claims codes were used. Since many of the outcome measures are dependent on Medicaid benefits structure, the start date for those measures will be set at Q1 2018. Those outcome measures unlikely to be affected by behavioral health system redesign will be measured starting in Q1 2017. As specified in Table 3, Q4 2021 will be treated as the start of the post-implementation period for ITS models because

[3] On November 26, 2019, MaineCare submitted a 1115 demonstration waiver application to CMS with the goal of improving the SUD service delivery system. If approved, this waiver would allow for additional federal funding for RT or IP SUD treatment for MaineCare-enrolled adults and would provide state flexibility to pilot four services focused on MaineCare-enrolled parents with SUD who are involved with or at-risk of involvement with Child Protective Services.

[4] In August 2018, the state of Missouri requested authority to amend the demonstration to include a substance use treatment benefit. The amendment request was approved with an implementation date of February 1, 2019, to cover outpatient substance use services in the primary care home, including pharmacotherapy, for SUD treatment of Gateway enrollees. Sources: MACPAC Report – States with approved or pending 1115 SUD waivers (as of July 2019), NIDA report (opioid summaries by state, 2017) https://www.macpac.gov/subtopic/section-1115-waivers-for-substance-use-disorder-treatment/, https://www.drugabuse.gov/drugs-abuse/opioids/opioid-summaries-by-state

[5] https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/oh/oh-substance-use-disorder-treatment-pa.pdf

that is when the majority of actions related to the milestones will be completed. As a result, 15 quarters of data will be available in the models' pre-implementation period and 13 quarters will be available for the models' post-implementation period. See Figure 6 for a visual reference to important policy time points.

Table 3: Summary of ITS Measures and Time Periods

Hypothesis	Measure	Earliest Data Point	Start of Post-Implementation Period for ITS Model
H1.a	SUD provider availability ratio [quarterly]	Q1 2018	Q4 2021
H1.a	SUD provider availability ratio – MAT [quarterly]	Q1 2017	Q4 2021
H1.b	SUD provider availability ratio by Level of Care [quarterly]	Q1 2018	Q4 2021
H1.c	SUD provider availability ratio within Underserved Areas [quarterly]	Q1 2018	Q4 2021
H2.a	Initiation of SUD Treatment [quarterly]	Q1 2018	Q4 2021
H2.b	MAT Usage [quarterly]	Q1 2017	Q4 2021
H2.b	RT Treatment Stays with MAT [quarterly]	Q1 2018	Q4 2021
H3.a	IP Follow-Up [quarterly]	Q1 2018	Q4 2021
H3.b	RT Follow-Up [quarterly]	Q1 2018	Q4 2021
H3.c	ED Follow-Up [quarterly]	Q1 2018	Q4 2021
H3.d	Use of Opioids from Multiple Providers in Persons Without Cancer [quarterly]	Q1 2017	Q4 2021
H3.d	Use of Opioids at High Dosage in Persons Without Cancer [quarterly]	Q1 2017	Q4 2021
H4.a	Emergency Department Visits for SUD-Related Diagnoses and Specifically for OUD [quarterly]	Q1 2017	Q4 2021
H4.a	IP Admissions for SUD, and Specifically OUD [quarterly]	Q1 2017	Q4 2021
H4.b	The 30-day All-Cause IP Admission Rate Following a RT Stay Among Beneficiaries with SUD [quarterly]	Q1 2018	Q4 2021
H4.b	The 30-day All-Cause ED Admission Rate Following a RT Stay Among Beneficiaries with SUD [quarterly]	Q1 2018	Q4 2021
H4.b	30-day Readmission Rate to an ED Following ED Visit for an SUD-Related Diagnosis, and Specifically for OUD [quarterly]	Q1 2018	Q4 2021
H5.a	Continuity of Pharmacotherapy for Opioid Use Disorder [quarterly]	Q1 2017	Q4 2021
H6.a	Access to Preventive/ Ambulatory Health Services for Adult Medicaid Beneficiaries with SUD [quarterly]	Q1 2018	Q4 2021
H6.a	Screening for HIV/HCV/HBV [quarterly]	Q1 2018	Q4 2021

Table 3: Summary of ITS Measures and Time Periods

Hypothesis	Measure	Earliest Data Point	Start of Post-Implementation Period for ITS Model
H6.b	Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment [quarterly]	Q1 2018	Q4 2021
H7.a	Rate of Overdose Deaths [quarterly]	Q1 2018	Q4 2021
H7.a	Rate of Overdose Deaths Due to Opioids [quarterly]	Q1 2018	Q4 2021
H8.a	Total Costs Per-Beneficiary [quarterly]	Q1 2018	Q4 2021
H8.a	Total Federal Costs Per-Beneficiary [quarterly]	Q1 2018	Q4 2021
H8.a	SUD-IMD Costs Per-Beneficiary [quarterly]	Q1 2018	Q4 2021
H8.a	SUD-other Costs Per-Beneficiary [quarterly]	Q1 2018	Q4 2021
H8.a	Non-SUD Costs Per-Beneficiary [quarterly]	Q1 2018	Q4 2021
H8.a	Outpatient non-ED Costs Per-Beneficiary [quarterly]	Q1 2018	Q4 2021
H8.a	Outpatient ED Costs Per-Beneficiary [quarterly]	Q1 2018	Q4 2021
H8.a	Inpatient Costs Per-Beneficiary [quarterly]	Q1 2018	Q4 2021
H8.a	Pharmacy costs - ED Costs Per-Beneficiary [quarterly]	Q1 2018	Q4 2021
H8.a	Long-term care costs - ED Costs Per-Beneficiary [quarterly]	Q1 2018	Q4 2021

3.5 Data Sources

This section provides additional detail on the data sources to be used in the evaluation. See Table 1 for additional specificity on hypotheses, measures and their associated data sources. The primary data source for the evaluation will be Medicaid administrative data as supplied to the Ohio Colleges of Medicine Government Resource Center (GRC) by the Ohio Department of Medicaid (ODM). Medical claims and encounter data for professional medical, outpatient facility, inpatient facility, and pharmacy will be used to assess service utilization. Eligibility and enrollment records will be used to determine eligibility and continuous enrollment criteria. Provider records from Medicaid administrative data, programmatic data, and additional information from ODM's provider capacity scan will be used to assess provider capacity and access. This data will be used to construct a majority of the proposed measures.

All quantitative data in the evaluation will be drawn from Medicaid administrative data. Cleaning of Medicaid administrative data primarily occurs through eligibility verification and claim adjudication processes. Eligibility verification occurs regularly at Ohio Medicaid to determine whether individuals are eligible for Medicaid benefits and the appropriate category of eligibility. The claims adjudication process validates submitted claims against Medicaid coverage policies. When multiple claims have been submitted by a provider for the same service(s), only the most recent version of the claim is retained for the evaluation. Due to the lag in submitting claims, the evaluation team will pull claims on a six-month delay (e.g., claims for services rendered in January 2020 will be analyzed in July 2020). The evaluation team will validate measure results through comparison to other Ohio SUD treatment data work, including but not limited to the

MODRN OUD project and other SUD work conducted by GRC on behalf of the Ohio Department of Medicaid and Ohio Department of Mental Health and Addiction Services.

In order to answer evaluation question Q7 about the number of overdose deaths, Vital Statistics death records from the Ohio Department of Health (ODH) will be linked to Medicaid administrative data to determine Medicaid beneficiary status. The Vital Statistics–Medicaid record linkage methods will be based on prior established methods as approved by ODM.

To add context to the quantitative findings, 10-15 beneficiary focus groups will be conducted at two post-implementation time points with enrolled members who have received SUD treatment services. Residential treatment facilities and community behavior health providers will be asked to assist with recruitment of participants and host focus groups. Topics addressed may include perceptions regarding changes in access to care, coordination of transitions between levels of care, and integration of primary care. Questions will be aligned with topics from the Consumer Assessment of Healthcare Providers and Systems (CAHPS)[6] survey series where possible.

3.6 Identifying Providers

Medicaid claims include various provider identification numbers for billing, rendering (for medical), attending (for hospital outpatient and inpatient), and prescribing (for pharmacy) providers. Rendering providers can then be linked to a practice address file to determine the location. All three pieces of location information are often needed to get a full picture of all individual practitioners and practice locations. Billing providers will provide additional context, but as the primary identifier of providers for the ratio measures in Table 1, the rendering providers will be used. In addition, for MAT providers, the prescribing provider will be used for pharmacy claims and the rendering provider will be used for outpatient and professional claims.

ODM's administrative data on provider locations will be used to help geolocate providers for use in geographic-based measures. Evaluators also will consider using an alternative source of provider addresses such as the National Plan and Provider Enumeration System (NPPES) National Provider Identifier (NPI) Registry file. ODM researchers are developing a provider capacity scan that may be utilized to improve the accuracy of analyses that require provider location. Such methods will be considered for the evaluation if they can be applied consistently across time and the impact of the interventions are not confounded by changes in methodology.

3.7 Analytic Methods

The following section describes the proposed analytic methods for evaluation of the hypotheses and evaluation questions. These include descriptive statistics, a summary-level Interrupted Time Series (ITS), a beneficiary-level ITS, and qualitative focus groups. Additional information regarding descriptive analysis that falls outside of the formal hypotheses yet adds to the general context of the evaluation is found in Section 3.8.

Descriptive Statistics

As appropriate, descriptive statistics for metrics will be shown along with more formal statistical models. Depending on the particular metric, this could include information on sample size,

[6] https://www.ahrq.gov/cahps/index.html

trends in the metric over time and/or maps of the metric by county. These analyses will be used to give additional context and information to the evaluation of research questions.

Summary-Level Interrupted Time Series (ITS)

The majority of analysis will be conducted with a summary-level interrupted time series, meaning that unit of analysis is the summary measure (e.g. a ratio or percentage) at a given time period rather than individual's outcome at the given time period. Assume an outcome of interest Y, across $t = 0, \ldots, m$ time periods. Let Y_t represent the outcome at time t, T represent the time elapsed, and W_t represent an indicator variable specifying whether or not time t is part of the post-intervention period. Then the standard ITS regression model is given by:

$$Y_t = \beta_0 + \beta_1 T + \Delta_1 W_t + \Delta_2 W_t T + \epsilon_t, \quad (1)$$

where β_0, β_1 represent the pre-intervention intercept and slope respectively, and Δ_1, Δ_2, the represent the change in the intercept and slope respectively during the post-intervention period. The variable ϵ_t represents random error in the time series at time t. The coefficients Δ_1 and Δ_2 are the causal parameters of the interest in the model.

There may be specific outcomes of interest to examine changes in three time periods rather than two. In this case, additional parameters for the change in intercept and slope in the third time period would also be estimated giving the model the following form:

$$Y_t = \beta_0 + \beta_1 T + \Delta_1 W_{1t} + \Delta_2 W_{1t} T + \Delta_3 W_{2t} + \Delta_4 W_{2t} T \epsilon_t, \quad (2)$$

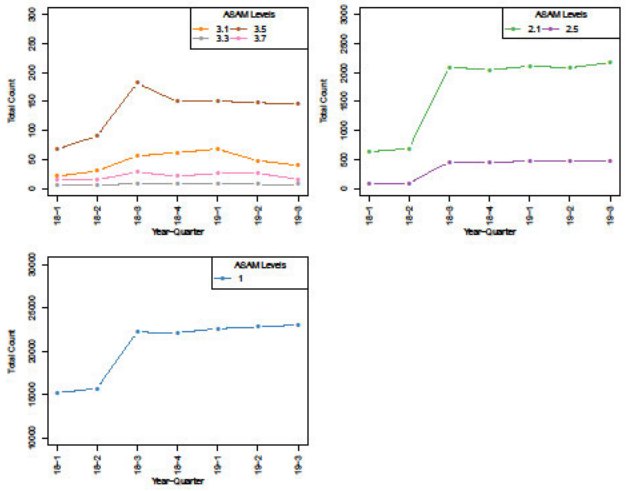
where W_{1t} and W_{2t} are indicators of the second and third time periods (post-intervention) respectively. The coefficients Δ_1 and Δ_2 represent the changes in the second time period relative to the first (pre-intervention) and Δ_3 and Δ_4 represent the changes in the third time period relative to the first.

One important consideration in time series models is autocorrelation, meaning the outcome at a point in time is correlated with its past values. Auto-correlation can violate the linear regression model's assumption that errors are independent over time. In order to account for auto-correlation, a correction to the standard errors such as the Newey-West estimator[7] is planned.

Figure 2 provides an example of the data that will be utilized in an interrupted time series model. It shows unique counts of rendering providers who were listed on at least one final paid inpatient, outpatient, or professional claim during the measurement period. For the time series model, the provider counts would be standardized by the number of OUD beneficiaries, and data would be extended into the future attempting to detect outcome shifts or changes in outcome slope.

[7] Newey, W. K., & West, K. D. (1986). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix.

Figure 2: Provider Totals by ASAM level by Service Quarter



Beneficiary-Level Interrupted Time Series (ITS)

As recommended in the CMS technical assistance, a beneficiary-level interrupted time series model will be used to model outcomes related to evaluation question Q8, concerning per-beneficiary quarterly cost data (capitation and claim cost). The unit of analysis in the model are individuals rather than aggregate measures. The beneficiary-level approach will allow for the model to control for individual-level demographics (e.g. age, race, gender) and potentially clinical characteristics (e.g. comorbidities, delivery system). Including these covariates should not only increase the predictiveness of the model itself, but also will help account for any changes in the underlying population over time that could affect costs.

Let Y be some outcome of interest. Then Y_{it}, the outcome for individual i at time t will be explicitly modelled. As advised in the CMS technical assistance, a few different modelling functional forms will be considered including log-transformed linear models and a zero-inflated (two-part) generalized linear models such as a zero-inflated Poisson or zero-inflated negative binomial. Zero-inflated models attempt to better capture zeros in the data by first modelling if the

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outcome is zero or greater than zero. Then, conditional on the outcome being greater than zero, a secondary model is used to estimate the outcome. The two model parts can, but do not need to, utilize the same set of predictor variables. Because multiple observations per beneficiary will be used, the outcomes will be correlated with one another. In order to take into account this within-beneficiary dependence, a GEE (Generalized Estimating Equations) version, and a random effects model of the model forms will be considered. GEE models take into account within-person dependence through a parameterized and estimated working correlation matrix. Random effects models take into account within-person dependence by assuming a person-level random effect that is constant over time.

In addition to parameters for time, post-implementation time periods, and an interaction thereof, fixed-effects for age, gender, race, and possibly calendar month will be included to control for changes in demographics over time and seasonal effects. A separate model will be fit for each cost outcome: total, total federal, SUD-IMD, SUD-other, non-SUD, outpatient non-ED, outpatient ED, IP, pharmacy, and long-term care costs.

Hypothesis Testing

Formal statistical tests will be conducted on model parameters that represent the change in the metric over time in order to determine statistically significant changes in trends. For summary-level ITS models this includes the parameters that represent the change in the intercept and slope respectively from pre- to post-intervention time periods. For beneficiary-level ITS models, this includes parameters for indicators of the post-implementation time periods and those of interactions of the post-implementation time periods with time. Depending on the specific model, a t-test (linear model) or Wald test (generalized linear or GEE model) will be used to test for non-zero parameter values. Descriptive statistics or exploratory analysis will focus on estimation and uncertainty quantification (confidence intervals) rather than statistical significance. In interpreting results, additional context and descriptive analysis will be considered in order to give a full picture of the findings.

Qualitative Focus Groups

Qualitative methods of data collection, including semi-structured interviews and focus groups, will be a unique component of the evaluation given their ability to answer the "how" and "why" questions. Beneficiary focus groups will be conducted at each of two post-implementation time points. Ten to fifteen focus groups will be conducted, targeting seven or more participants per group, with enrolled members who have received SUD treatment ser vices. Residential treatment facilities and community behavior health providers will be asked to host focus groups and assist with recruitment of participants.

Prior to each focus group, participants will complete a brief questionnaire on subjects like age, gender, race/ethnicity, city of residence, occupation (if any), major health concerns, and household composition. A member of the evaluation team will collect each questionnaire and label the seat location of each respondent (see Figure 3 below). During the focus group, the note taker will operate the audio-recorder and document SUD-associated major themes generated by the participants. The note taker will also highlight brief excerpts of compelling quotes and indicate the speaker by seat number and the time on the recording. For example, "Having Medicaid coverage...has changed my life." Time: 34:14.[8] This procedure will enable evaluators to

[8] See page 43 of 2018 Ohio Medicaid Group VIII Assessment https://medicaid.ohio.gov/Portals/0/Resources/

Figure 3: Focus Group Seating Arrangement

more easily find and transcribe compelling quotes from the audio-recording and link the quote to de-identified characteristics of the speaker (e.g., "A 45-year-old daycare worker in Hocking County").

Both the note taker and the facilitator will document the "mood" or feel for how the discussion is proceeding, a respondent's reactions, and the potential need to pause or otherwise sustain a supportive environment for all respondents. Given the sensitivity of focus group topics, the evaluation team will be responsive to the respondent's reactions to establish and sustain a comfortable environment. For qualitative semi-structured interviews and focus groups, the evaluator will develop an informed consent process guided by federal regulations detailed in 45 CFR 46.116, approved by the Institutional Review Board of the Ohio State University, and reviewed by ODM.

Focus group recordings will be transcribed by a third party. Transcripts will be reviewed by focus group facilitators for quality assurance. Transcripts will then be loaded into computer-assisted qualitative data analysis software to aide in the management of transcripts, coding, and emergent themes. Grounded theory will underpin the analyses conducted of these interviews with regard to access to care, coordination of care, and medication assisted therapy. Codes pertaining to the hypotheses described in Table 1 will be developed prior to the qualitative interviews, and evaluators also will inductively develop codes based on the data during review as concepts emerge. Subsequent discussion of the codes by evaluators will determine the salient themes present in the findings.

3.8 Additional Descriptive Analysis

Time and Distance Standards Analysis

Another marker of provider capacity is the time and distance that consumers need to travel from their residence to their provider. ODM requires Medicaid managed care plans to maintain certain minimum time and distance standards as part of their provider agreement.[9] Based on these standards and subject to availability, descriptive analysis will be completed in order to help describe changes in provider capacity. ODM's provider data along with beneficiaries address data from administrative records will be used in this analysis. This analysis will help provide additional context to the evaluation results.

Reports/Annual/Group-VIII-Final-Report.pdf

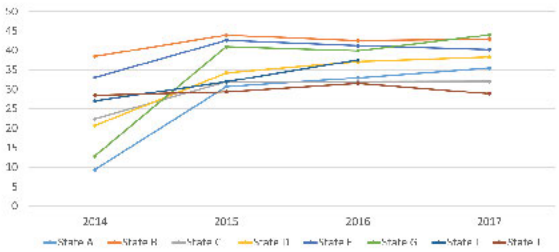
[9] https://medicaid.ohio.gov/Portals/0/Providers/ProviderTypes/Managed%20Care/Provider%20Agreements/01_2020_MMC_Final_Rates.pdf

MODRN State Comparisons

Ohio is part of a multi-state opioid-focused research network that provides an opportunity to contrast results of Ohio's SUD waiver to those of other states. The Medicaid Outcomes Distributive Research Network (MODRN), facilitated by AcademyHealth, is a collaborative effort to analyze data across multiple states to facilitate learning among Medicaid agencies. Academic institutions in 11 states (Delaware, Kentucky, Maryland, Michigan, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and Wisconsin) began working with their Medicaid state partners in 2014 to establish a set of common quality metrics for opioid use disorder treatment and outcomes. The majority of states in the MODRN collaborative have SUD waivers approved or pending, making them poor choices for a counterfactual comparison group. Instead, data from these other states will be used to describe how Ohio's outcomes change over the course of the waiver in reference to other states. See Figure 4 for a MODRN data example. Possible MODRN measures that may be informative are:

- Measure 1: Initiation and Engagement in Treatment (annual percent);
- Measure 3 Annual Rate of MAT among Enrollees with OUD (rate per 1,000 member months);
- Measure 4: Continuity of Pharmacotherapy $\geq$ 180 days (annual percent);
- Measure 12: Opioid Fills at High Dose (rate per 1,000 enrollees without cancer);
- Measure 13: Multiple Opioid Prescribers or Providers (rate per 1,000 enrollees); and
- Measure 14: Concurrent Use of Benzodiazepines with MAT (annual percent).

Figure 4: Initiation in treatment rate per 1,000 enrollees with an OUD diagnosis, 2014-2017, MODRN collaborative



Subpopulations

Evaluators may conduct descriptive analyses to assess the impact of the demonstration on Ohio's priority subpopulations identified by gender, race, and age subgroups. ODM is working in collaboration with other state agencies to address the needs of vulnerable populations who are involved in multiple systems of care. Examples include adolescents, multi-system youth (MSY) and their families, enrollees involved in the criminal justice system, individuals with chronic physi-

cal and/or mental health conditions, and women in the post-partum period who are at risk of morbidity and mortality. Ohio proposes to explore the waiver's impact on these subpopulations, given data availability, even though it is not a requirement of the demonstration evaluation.

4. Methodological Limitations

There are several major methodological limitations of the evaluation design that reduce the ability to draw causal arguments about the effect of the demonstration. Each is outlined below with discussion on how it will be addressed or considered in the evaluation.

First, there are minimal opportunities for a valid comparison group for the evaluation. While it would be ideal to draw comparison to a "control" population that was not subject to the policy changes within Ohio, it is not feasible due to the state-wide implementation of the demonstration and the lack of available non-Medicaid claims data. Data from other states exist through national surveys and summary data reports, but there are only a few states that are not participating the SUD waiver. Among these states, no candidates were found to be comparable to Ohio's opioid overdose rates. Further, it is not known whether these states will apply for the waiver in the future. Therefore, the interrupted time series (ITS) approach is the best option available for measures of Ohio administrative Medicaid data. Though it doesn't utilize an external comparison group, ITS remains a rigorous strategy to estimate the impact of a population-level health intervention that is implemented at a clearly-defined point in time.[10]

Another major methodological limitation is the impact of COVID-19 pandemic and resulting impact on services, behavioral health needs, and Medicaid enrollment. Emergency rules were enacted to temporarily extend the definition of telehealth to additional behavioral health services and communication modalities (e.g., telephone). Federal OTP requirements were relaxed to increase at-home administration of Methadone. There have been temporary interruptions in services as providers implemented safety measures. There also has been a reduction in demand due to fear of exposure and the closure of referral sources. Though the extent and length of this disruption is unknown, the primary and secondary drivers of overdose death will likely be affected. For example, access to care, treatment utilization, and coordination of care are likely to decrease temporarily, as consumers were concerned about seeking care and getting exposed, and providers had to develop telemedicine capacity. In the long run, this may have a negative impact on some of CMS's goals for the demonstration, including overdose and preventable hospitalizations.

It is also expected that there could be a surge of new Medicaid enrollees requiring SUD treatment due to increased stress related to this virus and the loss of employee sponsored health insurance coverage. As the emergency provisions expire and the virus eventually diminishes, the SUD treatment utilization and Medicaid coverage may return to levels observed before the pandemic. Information about policy changes and their impact will be gathered from ODM and the stakeholder advisory committee over time to assess the length and depth of pandemic's impact on the behavioral health system and individuals with SUD. The evaluation findings will be interpreted in the larger context of the pandemic and its effects and as appropriate, methodology will be adjusted to better take into account the effects of the pandemic. For example, baseline and comparison time frames may be adjusted to isolate the impact of the demonstration from the impact of COVID.

Beyond COVID-19, Ohio has already implemented numerous program and policy changes to address the opioid crisis. It may be challenging to isolate the effects of previous program and policy changes from those of the demonstration, particularly if additional policy changes take

[10] Bernal, J. L., Cummins, S., & Gasparrini, A. (2017). Interrupted time series regression for the evaluation of public health interventions: a tutorial. International journal of epidemiology, 46(1), 348-355.

place concurrent to the demonstration. As a result, evaluation findings will be considered in the context of the larger policy and economic environment. Major policy changes outside of the waiver during the demonstration period that could affect the evaluation outcomes will be noted and discussed.

It is possible that characteristics of the population (e.g. the age distribution) will change over time either as a result of the demonstration itself, or because of outside factors such as loss of employee-sponsored insurance in an economic crisis. A change to the population characteristics also could affect the outcome measures. If there are meaningful changes to population characteristics over time, a propensity score weighting methodology will be utilized to adjust for changes in the population characteristics to better estimate the effect of the demonstration itself, rather than demographic changes.

In addition, identifying providers and locating their practice address from claims, billing, and other administrative data is challenging because services are provided both by sites and individuals. Several of the proposed evaluation measures dealing with access to care rely on counting and possibly geolocating providers. As a result, a consistent methodology for identifying and locating practices must be applied over time so that increases in access to care can be attributed to the intervention itself rather than changes in accuracy of the provider identification methodology. As best possible, a consistent methodology will be used and any changes in the methodology over time will be noted in the evaluation.

Lastly, because there are many hypotheses, measures, and models that will be formally tested as part of the evaluation, it is important to keep in mind issues of statistical significance and multiple comparisons when interpreting results. To minimize the risk of erroneous inference, only pre-specified hypotheses will be tested and stricter significance thresholds may be considered. Conclusions will not be based solely on a p-value threshold in keeping with statistical best practices.[11] Any descriptive statistics or exploratory analysis will focus on estimation and uncertainty quantification (confidence intervals) rather than hypothesis testing.

[11] Ronald L. Wasserstein & Nicole A. Lazar (2016) The ASA Statement on p-Values: Context, Process, and Purpose, The American Statistician, 70:2, 129-133, DOI: https://doi.org/10.1080/00031305.2016.1154108

5. Attachments

5.1 Independent Evaluator

The 1115 SUD demonstration will be evaluated by an independent party. The Ohio Colleges of Medicine Government Resource Center (GRC) will conduct the evaluation. This entity is separate from ODM and has extensive experience evaluating Medicaid programs, including Ohio's State Innovation Model grant, and a legislatively mandated evaluation of Ohio's Group VIII population in 2016. GRC partners with public universities in Ohio to leverage methodological and subject matter expertise.

GRC will maintain communication with ODM staff throughout the evaluation period to better understand policy and program implementation, and to obtain ODM's assistance with access to administrative data. GRC will make independent decisions about the evaluation itself, including methodology, analytical strategy, analysis of evaluation data, and presentation of results.

GRC agrees that no agency, employment, joint venture, or partnership has been or will be created between ODM and GRC. GRC further agrees that as an independent entity, it assumes all responsibility for any federal, state, municipal or other tax liabilities along with workers compensation, unemployment compensation, and insurance premiums that may accrue as a result of funds received pursuant to this work. GRC agrees that it is an independent entity for all purposes including, but not limited to, the application of the Fair Labor Standards Act, the Social Security Act, the Federal Unemployment Tax Act, the Federal Insurance Contribution Act, provisions of the Internal Revenue Code, Ohio tax law, Workers Compensation law, and Unemployment Insurance law.

THE OHIO STATE UNIVERSITY

Office of Research

Office of Sponsored Programs

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February 7, 2020

I, Aimee Nielsen-Link, Director Health Sciences Office, Office of Sponsored Programs, warrant that: 1) I am an official authorized to bind the entity; and 2) to the best of my knowledge and belief, actual and potential organizational conflicts of interest have been identified, and disclosed to our institution's COI Administrator as of August 30, 2019.

I certify that The Ohio State University's Financial Conflicts of Interest policy complies with the requirements of the Department of Health and Human Services and 42 CFR Part 50 Subpart F. The full policy can be found at: http://orc.osu.edu/files/Policy-on-Faculty-Financial-Conflict-of-Interest.pdf

The Section 1115 Substance Use Disorder demonstration will be evaluated by an independent evaluator. The Ohio Colleges of Medicine Government Resource Center (GRC) will conduct the evaluation. This entity is separate from the Ohio Department of Medicaid (ODM) and has extensive experience evaluating Medicaid programs, including Ohio's State Innovation Model grant and a legislatively-mandated evaluation of Ohio's Medicaid expansion population in 2016. GRC partners with many public universities in Ohio to leverage methodological and subject matter expertise.

GRC will maintain communication with Ohio Department of Medicaid staff throughout the evaluation period in order to better understand policy and program implementation and to obtain ODM's assistance with access to administrative data, although GRC will make independent decisions about the evaluation itself, including methodology, analytical strategy, analysis of evaluation data, and presentation of results.

The Ohio State University agrees on behalf of GRC that no agency, employment, joint venture, or partnership has been or will be created between ODM and GRC. GRC further agrees that as an independent entity, it assumes all responsibility for any federal, state, municipal or other tax liabilities along with workers compensation, unemployment compensation and insurance premiums that may accrue as a result of funds received pursuant to this work. GRC agrees that it is an independent entity for all purposes including, but not limited to, the application of the Fair Labor Standards Act, the Social Security Act, the Federal Unemployment Tax Act, the Federal Insurance Contribution Act, provisions of the Internal Revenue Code, Ohio tax law, Workers Compensation law, and Unemployment Insurance law.

Aimee Nielsen-Link, Director, Health Sciences Office, Office of Sponsored Programs

5.2 Evaluation Budget

Table 4: Evaluation Budget for State Fiscal Years (SFY) 2020-2026

	SFY 2020	SFY 2021	SFY 2022	SFY 2023	SFY 2024	SFY 2025	SFY 2026
Estimated independent evaluator staff costs*	$159,816	$241,592	$224,212	$262,743	$310,100	$294,759	$228,525
Estimated other direct costs**	$50,000	$50,000	$50,000	$50,000	$125,747	$50,000	$50,000
Estimated administrative costs***	$20,982	$29,159	$27,421	$31,274	$43,585	$34,476	$27,853
Total Estimated Cost	$230,798	$320,751	$301,633	$344,017	$479,43	$379,235	$306,378

*Independent evaluator staffing costs
**Subcontractors will complete measurement development, qualitative data collection and cleaning, quantitative data cleaning, analyses, and report generation
***Facilities and Administrative costs

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5.3 Timeline and Major Milestones

Figure 5: Evaluation Timeline and Major Milestones

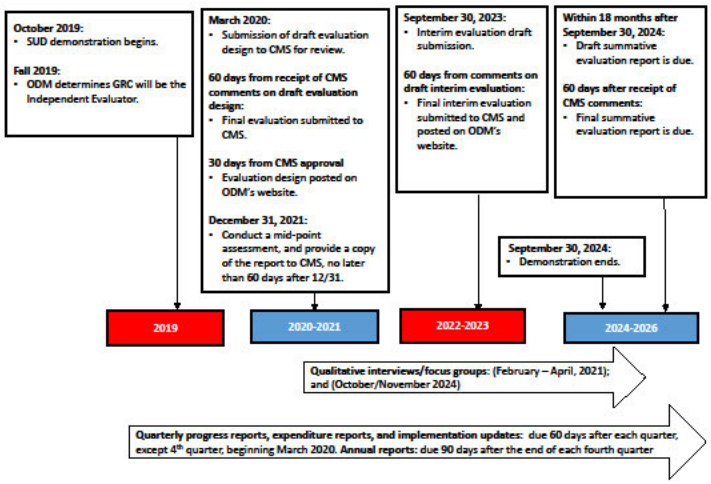

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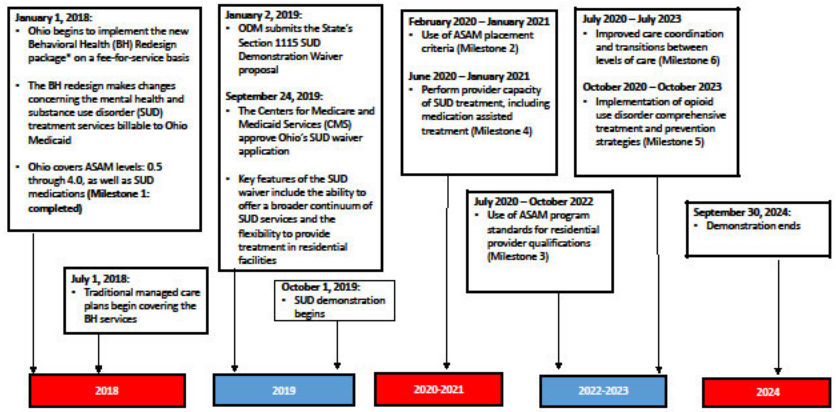
Figure 6: Timeline of Ohio Policy Changes



*The new BH benefit package was offered to outpatient hospitals beginning August 1, 2017

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6. Appendix

6.1 Common Acronym List

Table 5: Common Acronym List

Acronym	Full Name
ASAM	American Society of Addiction Medicine
BH	Behavioral Health
BHCC	Behavioral Health Care Coordination
CAHPS	Consumer Assessment of Healthcare Providers and Systems
CFR	Code of Federal Regulations
CMS	Centers for Medicare & Medicaid Services
COI	Conflict of Interest
ED	Emergency Department
GEE	Generalized Estimating Equations
GRC	Government Resource Center
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
IET	Initiation and Engagement of Alcohol and other Drug Dependence Treatment
IMD	Institutions for Mental Disease
IP	Inpatient
ITS	Interrupted Time Series
LOC	Level of Care
MACPAC	Medicaid and Children's Health Insurance Program Payment and Access Commission
MAT	Medication Assisted Treatment
MHPAEA	Mental Health Parity and Addiction Equity Act
MM	Monitoring Metric
MME	Morphine Milligram Equivalent
MODRN	Medicaid Outcomes Distributive Research Network
MSY	Multi-System Youth
NPI	National Provider Identifier
NPPES	National Plan & Provider Enumeration System
ODM	Ohio Department of Medicaid
OUD	Opioid Use Disorder
PDMP	Prescription Drug Monitoring Program
RT	Residential Treatment
SFY	State Fiscal Year
SUD	Substance Use Disorder
UM	Utilization Management

ATTACHMENT 3- FULL AND ABBREVIATED PUBLIC NOTICES

Copies of the full public notice and abbreviated public notice are on the following pages.

Updated 2/29/2024

SUD 1115 Demonstration Waiver Extension Application Public Notice

Public Notice and Request for Comment
Pursuant to the provision of title 42 Section 431.408 of the Code of Federal Regulations, a public notice is required for a 1115 waiver that includes one or more substantive changes.

Post Date February 29, 2024

End Date March 30, 2024

Purpose

The purpose of this posting is to receive public input on the 1115 Substance Use Disorder Demonstration Waiver Extension Application prior to submission to the Centers for Medicare and Medicaid Services (CMS). This notice is being updated to provide additional information related to enrollment and fiscal projections, add two additional public hearing opportunities, and to extend the public comment period.

Summary

In accordance with 42 CFR §431.408, the Ohio Department of Medicaid (ODM) is providing public notice of its intent to submit to the Centers for Medicare and Medicaid Services (CMS) an application to extend the Ohio Section 1115 Demonstration Waiver for Substance Use Disorder (SUD) Treatment. The current Demonstration is authorized through September 30, 2024. This renewal application requests authority for Ohio to continue to operate the Demonstration as approved without changes for another five-year period. The complete **SUD Demonstration Waiver Extension Application** is available here.

Demonstration Description and Goals

The Demonstration supports a comprehensive continuum of care for Medicaid-enrolled individuals with an opioid use disorder (OUD) or other SUD; it has allowed Ohio to enhance residential treatment services as a crucial component in the continuum of SUD benefits by permitting receipt of federal funding for treatment in institutions for mental diseases (IMD). The Demonstration also expands Ohio's efforts to increase support for individuals in the community and home — outside of institutions — and improve access to a continuum of high-quality, evidence-based SUD services based on clinical guidelines set by the American Society of Addiction Medicine (ASAM).

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medicaid.ohio.gov

Ohio seeks to achieve the following goals through the Demonstration:

1. Increased rates of identification, initiation, and engagement in treatment.
2. Increased adherence to and retention in treatment for OUD and other SUDs.
3. Reductions in overdose deaths, particularly those due to opioids.
4. Reduced utilization of emergency departments (ED) and inpatient (IP) hospital settings for OUD and other SUD treatment where the utilization is preventable or medically inappropriate through improved access to other continuum of care services.
5. Fewer readmissions to the same or higher level of care (LOC) where readmission is preventable or medically inappropriate for OUD and other SUD.
6. Improved access to care for physical health conditions among beneficiaries with OUD or other SUDs.

Eligibility

Under the Demonstration extension there is no change to Medicaid eligibility requirements, benefit coverage, or cost sharing.

Enrollment and Fiscal Projections

Medicaid enrollment under managed care or fee for service is not expected to change as a result of this Demonstration extension.

Budget neutrality is a comparison of without waiver-expenditures to with-waiver expenditures. The department does not expect any increase or decrease in annual aggregate expenditures as a result of this Demonstration extension. No material financial impact related to changes in this Waiver extension relative to the previous demonstration is expected. A financial document which outlines the methodology and proposed budget neutrality projections related to the next demonstration period of the 1115 Waiver is included in the extension application. The table below summarizes projected enrollment and expenditures.

DEMONSTRATION WITH WAIVER (WW) BUDGET PROJECTION: COVERAGE COSTS FOR POPULATIONS

			DEMONSTRATION YEARS (DY)					TOTAL WW
ELIGIBILITY GROUP	DY 06	TREND RATE	DY 06	DY 07	DY 08	DY 09	DY 10	
Managed Care								
Medicaid Eligibility Group (MEG)								
Eligible Member Months	61,027		62,858	64,744	66,686	68,686	70,747	
Per Member Per Month	$ 1,264.95	4.5%	$ 1,321.87	$ 1,381.35	$ 1,443.51	$ 1,508.47	$ 1,576.35	
Total Expenditure			$ 83,089,853	$ 89,433,495	$ 96,261,692	$ 103,611,413	$ 111,522,063	$ 483,918,517
FFS								
Medicaid Eligibility Group (MEG)								
Eligible Member Months	3,107		3,200	3,296	3,395	3,497	3,602	
Per Member Per Month	$ 6,013.01	4.5%	$ 6,283.60	$ 6,566.36	$ 6,861.85	$ 7,170.63	$ 7,493.31	
Total Expenditure			$ 20,108,840	$ 21,644,143	$ 23,296,686	$ 25,075,377	$ 26,989,888	$ 117,114,933

Benefits, Cost Sharing and Delivery System

ODM is requesting continuation of current OUD/SUD treatment services with no changes to coverage proposed. Ohio Medicaid enrollees will continue to have access to a comprehensive package of evidence-based OUD/SUD treatment and withdrawal management services ranging from medically supervised withdrawal management to on-going chronic care for these conditions in cost-effective community-based settings. Additionally, enrollees eligible for full Medicaid benefits, and requiring a residential level of care for SUD treatment services, will be eligible for short terms stays in an IMD.

No modifications to the current Ohio Medicaid fee-for-service or managed care arrangements are proposed through this extension. All enrollees will continue to receive services through their current delivery system. Additionally, this amendment does not propose any changes to the cost sharing requirements for any enrollees.

Hypotheses and Evaluation

ODM does not propose any changes to the currently approved Evaluation Design as significant changes to the Demonstration are not being proposed. Additionally, continuation of the current plan will permit additional study of Demonstration outcomes over a longer period. The following research questions and hypotheses will continue to be studied under the Demonstration extension.

Research Questions	Hypotheses
Q1. Does the Demonstration increase access to SUD treatment services?	H1.a. The Demonstration will increase the ratio of SUD providers to beneficiaries enrolled in Medicaid and qualified to deliver SUD services.
	H1.b. The Demonstration will increase the ratio of providers to beneficiaries at each of the levels of care.
	H1.c. The Demonstration will increase the ratio of providers to beneficiaries in geographic areas that are underserved at baseline.
Q2. Does the Demonstration increase utilization of SUD treatment by enrollees with SUD?	H2.a. The Demonstration will reduce the time between initial diagnosis and treatment.
	H2.b The Demonstration will increase the rate of medication-assisted treatment (MAT) usage.

Research Questions	Hypotheses
Q3. Does the Demonstration improve coordination and management of care?	H3.a. The Demonstration will increase the proportion of IP stays which have a timely follow- up visit with a corresponding primary diagnosis of SUD.
	H3.b. The Demonstration will increase the proportion of residential treatment (RT) visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.
	H3.c. The Demonstration will increase the proportion of ED visits which have a timely follow-up visit with a corresponding primary diagnosis of SUD.
	H3.d. The Demonstration will decrease high-risk prescribing practices (i.e., high dose, multiple prescribers and pharmacies, concurrent use of benzodiazepines).
Q4. Does the Demonstration reduce the utilization of ED and IP hospital settings for OUD and other SUD treatment?	H4.a. The Demonstration will decrease the rate of ED and IP visits within the beneficiary population for SUD.
	H4.b. The Demonstration will decrease the rate of readmissions to ED and IP settings.
Q5. Does the Demonstration improve adherence to SUD treatment?	H5.a. The Demonstration will increase continuity of pharmaceutical care.
Q6. Do beneficiaries receiving SUD services experience an improved quality of care?	H6.a. The Demonstration will increase the percentage of beneficiaries with SUD who receive screening and care for co-morbid conditions.
	H6.b The Demonstration will increase early engagement in SUD treatment.
Q7. Does the Demonstration reduce rates of opioid-related overdose deaths?	H7.a. The Demonstration will decrease the rate of overdose deaths, including those due to opioids.
Q8. How do costs related to the Demonstration waiver change throughout the	H8.a. The Demonstration will decrease or have no effect on total costs. The Demonstration will increase SUD IMD, SUD-

Research Questions	Hypotheses
pre- and post-Demonstration periods?	other, and non-SUD costs, but decrease IP non-ED outpatient, ED outpatient, pharmacy, and long-term care costs.

Waiver and Expenditure Authority

ODM is requesting extension of the following expenditure authority granted under the original Demonstration: Expenditures for otherwise covered services furnished to otherwise eligible individuals who are primarily receiving treatment and withdrawal management services for SUD who are short-term residents in facilities that meet the definition of an IMD.

The **SUD Waiver Extension application** may be viewed at the Ohio Department of Medicaid and here. A paper copy of the application may be requested using the email address or postal address stated below.

Comments must be submitted by 5 p.m. ET on March 30, using one of the following options:

Public Hearings
Previous public hearings were held on February 20, 2024 and February 29, 2024. ODM will host two additional hearings in March on the proposed SUD 1115 Demonstration Waiver Extension. Written testimony, in addition to oral testimony, is encouraged.

March 6, 2024 — 9:30 – 10:30 a.m.
- **In person** — Ohio Department of Medicaid, 50 W. Town Street, Suite 400, Columbus, Ohio 43215
- **Virtual** — Virtual access information
  Online: Click here to join the meeting
  Phone: 614-721-2972, phone conference ID: 150705390#

March 7, 2024 — 1:00 – 2:00 p.m.
- **In person** — Ohio Department of Medicaid, 50 W. Town Street, Suite 400, Columbus, Ohio 43215
- **Virtual** — Virtual access information
  Online: Click here to join the meeting
  Phone: 614-721-2972, phone conference ID: 826516015#

Public Comment

- By email: MCD_SUD1115@medicaid.ohio.gov
- By mail: Diane Shinn, Office of Behavioral Health Policy, Ohio Department of Medicaid, PO Box 182709, Columbus, Ohio 43218-2709

  By courier or in person submission to: Attn. Office of Behavioral Health Policy, Ohio Department of Medicaid, Lazarus Building, 50 W. Town Street, Suite 400, Columbus, Ohio 43215

All comments must be received by 5:00 p.m. on March 30, 2024.

ODM is committed to providing access and inclusion and reasonable accommodation in its services, activities, programs, and employment opportunities in accordance with the Americans with Disabilities Act (ADA), Title VI of the Civil Rights Act, and other applicable laws. To request an interpreter, written information in a language other than English or in other formats (large print, audio, accessible electronic formats, other formats), or a reasonable accommodation due to a disability, please contact ODM's Civil Rights/ADA Coordinator at 614-995-9981/TTY 711, Fax 1-614-644-1434, or Email: ODM_EEO_EmployeeRelations@medicaid.ohio.gov.

If you believe ODM has failed to provide these services or discriminated in another way, you can file a grievance with ODM's Civil Rights Coordinator and/or file a civil rights complaint with the U.S. Department of Health and Human Services, Office for Civil Rights. Further information on these processes and ODM's compliance with civil rights and other applicable laws can be found here: Notice of Nondiscrimination.

DATE: 02/29/2024 11:19 AM

Department of Medicaid

Medicaid.Ohio.gov

Mike DeWine, *Governor* Jon Husted, *Lt. Governor* Maureen M. Corcoran, *Director*

Updated 2/29/2024

Substance Use Disorder 1115 Demonstration Waiver Extension Application Abbreviated Public Notice

In accordance with 42 CFR §431.408, the Ohio Department of Medicaid (ODM) is providing public notice of its intent to submit to the Centers for Medicare and Medicaid Services (CMS) an application to extend the Ohio Section 1115 Demonstration Waiver for Substance Use Disorder (SUD) Treatment. The current Demonstration is authorized through September 30, 2024. This renewal application requests authority for Ohio to continue to operate the Demonstration as approved without changes for another five-year period. This notice is being updated to add two additional public hearings and extend the public comment period.

Summary Description of the Demonstration

The Demonstration supports a comprehensive continuum of care for Medicaid-enrolled individuals with an opioid use disorder (OUD) or other SUD; it has allowed Ohio to enhance residential treatment services as a crucial component in the continuum of SUD benefits by permitting receipt of federal funding for treatment in institutions for mental diseases (IMD). The Demonstration also expands Ohio's efforts to increase support for individuals in the community and home — outside of institutions — and improve access to a continuum of high-quality, evidence-based SUD services based on clinical guidelines set by the American Society of Addiction Medicine (ASAM).

Public Hearing Information

Previous public hearings were held on February 20, 2024 and February 29, 2024. ODM will host two additional hearings in March on the proposed Demonstration Waiver extension at which the public may provide comments.

March 6, 2024 9:30-10:30 a.m.

- **In person** Ohio Department of Medicaid
  50 W. Town Street, Suite 400
  Columbus, Ohio 43215
- **Virtual** Virtual access information
  Online: Click here to join the meeting
  Phone: 614-721-2972, phone conference ID: 150705390#

March 7, 2024 1:00-2:00 p.m.

- **In person** Ohio Department of Medicaid
  50 W. Town Street, Suite 400
  Columbus, Ohio 43215

- **Virtual** Virtual access information
  Online: Click here to join the meeting
  Phone: 614-721-2972, phone conference ID: 826516015#

Full Public Notice

As part of the 1115 Demonstration Waiver extension application, ODM is required to provide a 30-day public comment period including full public notice. The full public notice includes information from the 1115 Demonstration waiver application, information regarding how to obtain a copy of the 1115 Demonstration waiver application, and other relevant information related to submitting comments. The full public notice can be found here.

Public Comment

With this updated notice, the 30-day public comment period has been extended to March 30, 2024. Comments and questions about the proposed Demonstration Waiver extension application can be submitted:

- By email to MCD_SUD1115@medicaid.ohio.gov.
- By mail to Diane Shinn, Office of Behavioral Health Policy, Ohio Department of Medicaid, P.O. Box 182709, Columbus, Ohio 43218-2709.
- By courier or in-person submission to Office of Behavioral Health Policy, Ohio Department of Medicaid, Lazarus Building, 50 W. Town Street, Suite 400, Columbus, Ohio 43215.

All comments must be received by 5 p.m. on March 30, 2024.

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the U.S. Department of Health and Human Services, Office for Civil Rights. Further information on these processes and ODM's compliance with civil rights and other applicable laws can be found here: Notice of Nondiscrimination.