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


**State Demonstrations Group**

December 9, 2024

Todd Richardson
Director, MO HealthNet Division
Missouri Department of Social Services
P.O. Box 1527
Broadway State Office Building
Jefferson City, MO 65102-1527

Dear Director Richardson:

The Centers for Medicare & Medicaid Services (CMS) completed its review of the Evaluation Design, which is required by the Special Terms and Conditions (STCs), specifically, STC #11.3 "Evaluation Design" of Missouri's section 1115 demonstration, "Missouri Substance Use Disorder & Serious Mental Illness" (Project No: 11—W-00411/7), effective through December 31, 2028. CMS has determined that the Evaluation Design, which was submitted on May 24, 2024, and revised on September 16, 2024, and November 22, 2024, meets the requirements set forth in the STCs and our evaluation design guidance, and therefore approves the state's Evaluation Design.

CMS has added the approved Evaluation Design to the demonstration's STCs as Attachment G. A copy of the STCs, which includes the new attachment, is enclosed with this letter. In accordance with 42 CFR 431.424, the approved Evaluation Design may now be posted to the state's Medicaid website within 30 days. CMS will also post the approved Evaluation Design as a standalone document, separate from the STCs, on Medicaid.gov.

Please note that an Interim Evaluation Report, consistent with the approved Evaluation Design, is due to CMS one year prior to the expiration of the demonstration, or at the time of the extension application, if the state chooses to extend the demonstration. Likewise, a Summative Evaluation Report, consistent with this approved design, is due to CMS within 18 months of the end of the demonstration period. In accordance with 42 CFR 431.428 and the STCs, we look forward to receiving updates on evaluation activities in the demonstration monitoring reports.

We appreciate our continued partnership with Missouri on the Missouri Substance Use Disorder & Serious Mental Illness section 1115 demonstration. If you have any questions, please contact your CMS demonstration team.

Sincerely,

Danielle Daly -S

Digitally signed by Danielle Daly -S
Date: 2024.12.09 17:11:44 -05'00'

Danielle Daly
Director
Division of Demonstration Monitoring and Evaluation

cc: Rhonda Gray, State Monitoring Lead, CMS Medicaid and CHIP Operations Group

Mercer

Government Human Services Consulting

# Missouri Substance Use Disorder and Serious Mental Illness 1115 Demonstration

## Evaluation Design

**State of Missouri**

November 22, 2024

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# Contents

## Section A.

# General Background Information

On December 6, 2023, the State of Missouri (State) received approval from the Centers for Medicare and Medicaid Services (CMS) for a Section 1115 waiver demonstration. The *Missouri Substance Use Disorder & Serious Mental Illness Demonstration* (Demonstration) aims to expand benefits to cover a comprehensive array of services for substance use disorder (SUD) and serious mental illness (SMI)/serious emotional disturbance (SED) services, improve the capacity to provide these services and improve the quality of care that beneficiaries receive. The approval period for Missouri's SUD and SMI/SED Demonstration is December 6, 2023–December 31, 2028.

To meet CMS's special terms and conditions (STCs), the MO HealthNet Division (MHD) must contract with an independent third party to evaluate the Demonstration. MHD, in collaboration with the Department of Mental Health (DMH), contracted with Mercer Government Human Services Consulting (Mercer), as part of Mercer Health & Benefits LLC, to create an evaluation design for the Demonstration. MHD and DMH will also contract with Mercer to conduct the evaluation. The Mercer team includes Mercer and its subcontractor, TriWest Group.

This document provides an overview of the planned evaluation design for assessing the effects of the Demonstration and follows CMS's recommended structure for evaluation designs (see outline below).

A. **General Background Information**. This section provides background on the issues faced by the State that prompted the Demonstration. It also describes the overall structure of the Demonstration, the Demonstration's goals and time period, and the evaluation time period.

B. **Evaluation Questions and Hypotheses**. This section presents driver diagrams that link the goals of the Demonstration to primary and secondary activities that will drive expected outcomes. Hypotheses behind each Demonstration goal are included, as well as a list of research questions that will be used to test the hypotheses.

C. **Methodology**. This section describes the proposed research methodology and explains the target and comparison populations, the evaluation period, measures, data sources, and quantitative and qualitative analytic methods.

D. **Methodological Limitations.** This section discusses limitations and confounding factors that could affect the evaluation results. In addition, it comments on proposed mitigation strategies.

E. **Attachments.** The Evaluation Design Report includes attachments that address the selection of the independent evaluator, the evaluation budget, and the timeline and major milestones related to the evaluation.

It is important to note that this Demonstration's monitoring protocol has not yet been submitted to CMS based on CMS's request for the State to wait until the new CMS template

is released. As a result, specific data sources and features of this design could change if CMS makes substantive changes to the monitoring protocol template or requirements.

## Historical Overview

Over the past several years, Missouri has been working diligently to ensure Medicaid eligibles have access to a comprehensive continuum of behavioral health services and has also been launching initiatives to address the opioid public health crisis. Additionally, the State began offering Medicaid coverage to the low-income adult Medicaid expansion group in late 2021, which resulted in an influx of new Medicaid enrollees. To complement the State's existing behavioral health initiatives and obtain federal financial participation for providing otherwise covered services to short-term residents in an Institution for Mental Disease (IMD), the State submitted two separate behavioral health demonstration applications during the latter part of 2022 (an SUD demonstration application and an SMI/SED demonstration application). At the end of 2023, CMS approved these applications as a single demonstration.

The Demonstration aims to expand access to critical services and help address the opioid public health crisis. The State intends to leverage the 1115 SUD and SMI/SED Demonstration to make critical improvements to both the child and adult mental health and substance use continuums of care. The following paragraphs provide data and outline why these critical improvements are necessary.

In terms of the suicide rate across all ages, a Missouri Institute of Mental Health publication[1] from August 2018 indicated that Missouri has the thirteenth highest rate of suicide in the nation. Suicide is the tenth leading cause of death in the State. Missouri has seen a 30% increase in the suicide rate since 1999 and Missouri's suicide rate in 2016 was above the national age-adjusted suicide rate per 100,000 (Missouri's average of 18.27 versus the national average of 13.42).

A March 2019 Missouri Hospital Association Policy Brief titled "Rates of Suicidality Following Psychiatric Hospitalizations for Children in Missouri"[2] found that suicidal ideation had grown by nearly 900% among children and adolescents during the prior decade. Suicide was identified as the second-leading cause of death in Missouri for children between the ages of five and nineteen, and Missouri had the eleventh highest rate of child and adolescent suicide in the country in 2017. The same policy brief found that between 2003 and 2017, the rate of suicide for children and adolescents increased by 129%, outpacing the national increase trend of 71% for the same time period. The policy brief goes on to outline potential drivers behind this trend including a shortage or lack of mental health providers specializing in working with children, adolescents, and their families. The brief indicates that 96.5% of the counties in Missouri were deemed geographic Mental Health Professional Shortage Areas, with 22% fewer psychiatrists and 14% fewer psychologists practicing in Missouri than the average across the country.

[1] Missouri Institute of Mental Health publication; https://dmh.mo.gov/sites/dmh/files/media/pdf/2019/02/where-we-stand.pdf

[2] Rates of Suicidality Following Psychiatric Hospitalizations for Children in Missouri; https://www.mhanet.com/mhaimages/policy_briefs/PolicyBrief_SuicidalityChildren_0319.pdf

The Center for Health Care Strategies (CHCS) conducted an environment scan on Missouri's Children's Behavioral Health Continuum of Care and identified gaps and challenges within the behavioral health service array.[3] The scan found that of the twenty-two behavioral health crisis centers (BHCCs) in the State, only five BHCCs indicated they serve children, youth, and their families. The scan compared children's behavioral health service utilization in calendar year 2022 to national data for 2011 and found the following four services in Missouri were utilized above national levels: emergency room, psychological testing, inpatient psychiatric hospital, and peer services. In comparison, four Missouri services with utilization that fell materially below national levels included: outpatient counseling; family therapy/family education and training; screening, assessment, and evaluation; and initial service planning. Other services that fell below national utilization trends included: substance use outpatient, partial hospital/day treatment, residential treatment and therapeutic group homes, and substance use screening and assessment.

The CHCS scan also found that for Medicaid youth ages 0 years–17 years old, emergency room services are the second most utilized service for both fee-for-service (FFS) and managed care individuals. High emergency room utilization can be an indicator of insufficient capacity at low to moderate intensity behavioral health services. Based on interviews conducted by CHCS, there was indication that due to lack of options, families often escalated to seeking residential services, self-referring to child welfare agencies, or seeking to have their child committed to the juvenile justice system to access behavioral health services. There was also indication that few accessible services were available to youth and families who weren't yet in crisis.

Regarding drug overdose deaths, a Kaiser publication[4] indicated that Missouri's rate is slightly higher than the national rate of drug overdose deaths per 100,000 (Missouri's average of 36.5 versus national average of 32.4). Kaiser also indicated that Missouri was below the national average in its ability to meet mental health care needs (12.2% of need met versus 27.7% nationally). And while other types of health care services have rebounded since the lag in utilization due to Coronavirus Disease of 2019 (COVID-19), data shows that in Missouri utilization rates for mental health services have lagged among adult Medicaid beneficiaries with mental health diagnoses.

To conclude, the United States Department of Justice (DoJ) recently completed an investigation into Missouri's use of nursing facilities and guardianship for adults with mental health disabilities. The DoJ found that the State has unnecessarily institutionalized adults with mental health disabilities. This is a result of failing to provide services in the most integrated settings appropriate to their needs. The investigation found that of 333 adults with mental health diagnoses who had received community-based mental health services from 2019–2021 and were admitted to nursing facilities in 2022:

- Eight had received Assertive Community Treatment (ACT).
- Twenty-three had received Peer Support Services.

[3] CHCS's Missouri Children's Behavioral Health Environmental Scan: Executive Summary https://dss.mo.gov/re/pdf/mcbh-environmental-scan.pdf

[4] Mental Health and Substance Use State Fact Sheets: Missouri | KFF; https://www.kff.org/statedata/mental-health-and-substance-use-state-fact-sheets/missouri/

- Fifteen had received Intensive Community Psychiatric Rehabilitation (ICPR) Residential services (housing services).
- Zero had received supported employment.

Many Medicaid beneficiaries interviewed by DoJ indicated they had not received any community-based services prior to entering the nursing facility. The report indicated that while the State recognizes ACT is effective, there is limited availability across the State and the service is largely underused. There is a lack of ICPR Residential service options even though this was identified as a *major need* by the Missouri Institute of Mental Health a decade ago.

## SUD

Prior to the Demonstration, prevention and treatment services were offered through providers that contracted with the State. For individuals not enrolled in Medicaid or otherwise insured, the cost of services was based on the individual's ability to pay. For those enrolled in Medicaid, SUD services were carved out of managed care and reimbursed through the Comprehensive Substance Treatment and Rehabilitation (CSTAR) FFS program.

The CSTAR program was designed to provide an array of comprehensive, but individualized treatment services, with the aim of reducing the negative impacts of SUDs on individuals, family members, and society. CSTAR programs offered all levels of outpatient SUD services and could offer certified residential support services. CSTAR opioid treatment programs offered SUD services on an exclusively outpatient basis and offered referrals to residential support services as clinically indicated.

The CSTAR programs targeted specialized populations, including women and children, persons who inject drugs, pregnant women, and adolescents. The CSTAR programs were the only substance use treatment programs reimbursable by Medicaid in the State.

To address the opioid crisis, the State has launched various outpatient SUD and opioid use disorder (OUD) initiatives that included assessment, treatment planning, individual and group counseling, group rehabilitative support, community support, peer support, residential or housing support, and other services. These initiatives were intended to:

1. Curb the impact of SUD and OUD crises.
2. Serve the influx of new Medicaid enrollees to ensure beneficiaries have access to a comprehensive continuum of behavioral health services.

In addition, the State committed to investing $5 million in grants to support providers in transitioning business models and programs from residential-based care to community care settings.

Through the SUD Demonstration, the State will add Medicaid reimbursement for residential SUD services for individuals enrolled in Medicaid who meet medical necessity criteria, including the need for residential SUD services in facilities that qualify as an IMD. This will include transition to American Society of Addiction Medicine (ASAM) level of care criteria and reimbursement for ASAM-level residential services. With the addition of residential services, the State will expand access to a full continuum of services across ASAM levels of care for OUD and other SUDs.

### SMI/SED

The State is responsible for ensuring that prevention, evaluation, treatment, and rehabilitation services are available for individuals and families who need public mental health services. The State's Community Psychiatric Rehabilitation (CPR) program offers services to Medicaid beneficiaries and provides an array of services in a community-based and consumer-centered manner. Many of the adult and youth services offered through the CPR program are reimbursed through Medicaid.

CPR services include evaluation, crisis intervention, community support, medication management, and psychosocial rehabilitation (PSR). Outpatient community-based services provide the least-restrictive environment for treatment. Day treatment offers the least-restrictive care to individuals diagnosed as having a psychiatric disorder who required a level of care greater than that provided in outpatient services, but not at a level requiring full-time inpatient services. Intensive CPR services include, but are not limited to, enhanced PSR, ACT, ACT for transition age youth, and integrated treatment for co-occurring disorders. Individuals whose psychiatric needs cannot be met in the community and who require 24-hour observation and treatment are placed in inpatient treatment. While Missouri Medicaid enrollees receiving services via managed care could receive treatment in IMDs through the *in lieu of* authority, individuals in FFS did not have the same access to IMDs.

Not long ago, the State added BHCCs and increased the number of certified community behavioral health clinics (CCBHCs). In addition, the State recently strengthened requirements around inpatient and residential facilities screening for co-morbid physical health conditions, SUDs, and suicidal ideation. Further, the State added requirements for providers regarding follow-up after a hospital or residential stay and requirements to assess housing needs and coordinate with housing service providers.

The SMI Demonstration will support access to a full continuum of mental health treatment services by allowing Medicaid coverage and reimbursement for inpatient psychiatric services provided to eligible adults with SMI in an IMD. Through the Demonstration, the State seeks to achieve comparable access to IMDs for Medicaid enrollees regardless of delivery system (FFS or managed care). The State also hopes to regain some of the benefits attained through participation in the State's previous participation in the Medicaid Emergency Psychiatric Services Demonstration.

## SUD and SMI/SED Demonstration

### Demonstration and Evaluation Periods

The approval period for Missouri's SUD and SMI/SED Demonstration is December 6, 2023-December 31, 2028, and the evaluation period is January 1, 2024-December 31, 2028. CMS requires the State to submit an Interim Evaluation Report that comments on Demonstration activities from January 1, 2024 through June 30, 2026. In addition, CMS requires a final evaluation deliverable, the Summative Evaluation Report, that encompasses Demonstration activities from January 1, 2024-December 31, 2028. Per the STCs, the Summative Evaluation Report is due within 18 months of December 31, 2028 (i.e., by June 30, 2030).

## Goals of the Demonstration

The Demonstration's goals can be organized by three key aims:

- Expand Medicaid benefits to increase access to a full continuum of care for SUD and SMI/SED services,
- Increase the capacity of providers in the State to provide these services, and
- Improve the quality of SUD, SMI, and SED services by moving toward a more person-centered system of physical and behavioral health care for Medicaid beneficiaries that facilitates coordinated treatment.

Within the State's Demonstration, there are separate SUD and SMI/SED elements. In addition, there are elements that impact both populations and impact those with co-occurring mental health and SUDs. The main objectives of the SUD components are to maintain and enhance access to OUD and other SUD services and to continue delivery system improvements to provide more coordinated and comprehensive treatment for Medicaid beneficiaries with SUD. The main goals of the SMI/SED components are to maintain and enhance access to mental health services and continue delivery system improvements to provide more coordinated and comprehensive treatment for Medicaid beneficiaries with SMI and SED.

The following 11 goals[5] inform the research questions and the measures that will be used to evaluate the Demonstration:

- Goal 1: Increased rates of identification, initiation, and engagement in treatment for SUD. (SUD-1 in STCs)
- Goal 2: Improved access to community-based services to address the chronic mental health care needs of beneficiaries with SMI or SED including through increased integration of primary and behavioral health care. (SMI/SED-4 in STCs)
- Goal 3: Improved availability of crisis stabilization services, including services made available through call centers and mobile crisis units, intensive outpatient services, as well as services provided during acute short-term stays in residential crisis stabilization programs and psychiatric hospitals and residential treatment settings throughout the State. (SMI/SED-3 in STCs)
- Goal 4: Increased adherence to and retention in treatment. (SUD-2 in STCs)
- Goal 5: Improved care coordination, especially continuity of care in the community following episodes of acute care in hospitals and residential treatment facilities. (SMI/SED-5 in STCs)
- Goal 6: Improved access to care for physical health conditions among beneficiaries with SUD. (SUD-6 in STCs)

[5] These 11 goals are outlined in the State Medicaid Director Letter (SMDL) #17-003, entitled "Strategies to Address the Opioid Epidemic", published on November 1, 2017. They also align with the demonstration goals outlined in the SMDL #18-911, entitled "Opportunities to Design Innovative Service Delivery Systems for Adults with Serious Mental Illness or Children with a Serious Emotional Disturbance", published on November 13, 2018.

- Goal 7: Reduced utilization and lengths of stay in hospital emergency departments (ED) among Medicaid beneficiaries with SMI or SED while awaiting mental health treatment in specialized settings. (SMI/SED-1 in STCs)
- Goal 8: Reduced utilization of hospital EDs and inpatient hospital settings for treatment where the utilization is preventable or medically inappropriate, through improved access to other continuum of care services. (SUD-4 in STCs)
- Goal 9: Reduced preventable readmissions to acute care and specialty hospitals and residential settings. (SMI/SED-2 in STCs)
- Goal 10: Fewer readmissions to the same or higher level of care where the readmission is preventable or medically inappropriate. (SUD-5 in STCs)
- Goal 11: Reductions in overdose death, particularly those due to opioids. (SUD-3 in STCs)

## Demonstration Activities

Missouri's Demonstration will help support State efforts to enhance the SUD and SMI/SED service arrays. SUD initiatives aim to improve access to medication-assisted treatment (MAT) and support services at all levels in the continuum of care recommended by ASAM. SMI/SED initiatives aim to improve critical care access, as well as screening, standards of care, and care coordination. Demonstration initiatives are outlined in Missouri's SUD and SMI/SED implementation plans and include the initiatives listed below:

- Provide reimbursement for all ambulatory and residential SUD treatment services, including MAT, at varying levels of intensity across a continuum of care.
- Provide reimbursement for residential SUD treatment and inpatient SMI and SUD treatment in IMDs including guidance and coverage for all residential services.
- Improve availability of BHCCs including centers serving youth.
- Submit an updated Provider Network Adequacy review annually and conduct outreach/improvement activities where gaps in services are noted across the SUD/SMI/SED continuum of care.
- Continue telehealth initiatives and continue to improve access in rural communities.
- Implement planning and quality improvement projects in collaboration with Health Information Networks (HINs), members of the Missouri Medicaid Enterprise, and other stakeholders (to facilitate care coordination and continuity of care).
- Continue the Primary Care Health Home (PCHH) program, Hospital Care Transition program (HCT), and requirements of CCBHC and Community Mental Health Center Healthcare Homes (CMHC HCHs).
- Add requirements to assess housing and coordinate with housing services providers.
- Offer technical assistance and training on evidence-based practice (EBP) in clinical care coordination, new residential provider standards, opioid prescribing practices, and first episode of psychosis.

- Utilization review process to ensure beneficiaries have access to the appropriate levels and types of care and to provide oversight on lengths of stay for the full continuum of SMI/SED and SUD.
- Implement the prescription drug monitoring program fully and continue development of Missouri Care Coordination Insights Project technology.

## Impacted Population Groups

The Demonstration is open to Missouri individuals who are eligible for full Medicaid benefits and targets those with SUD and/or SMI/SED who are in need of critical levels of care and short-term residential or inpatient stabilization. This includes both Medicaid expansion and non-expansion individuals, as well as Medicaid enrollees in both the FFS and managed care delivery systems. The subset of these individuals who require a residential level of care for SUD treatment services or need an acute inpatient stay for SMI will be eligible for short-term stays in an IMD.

## Section B.

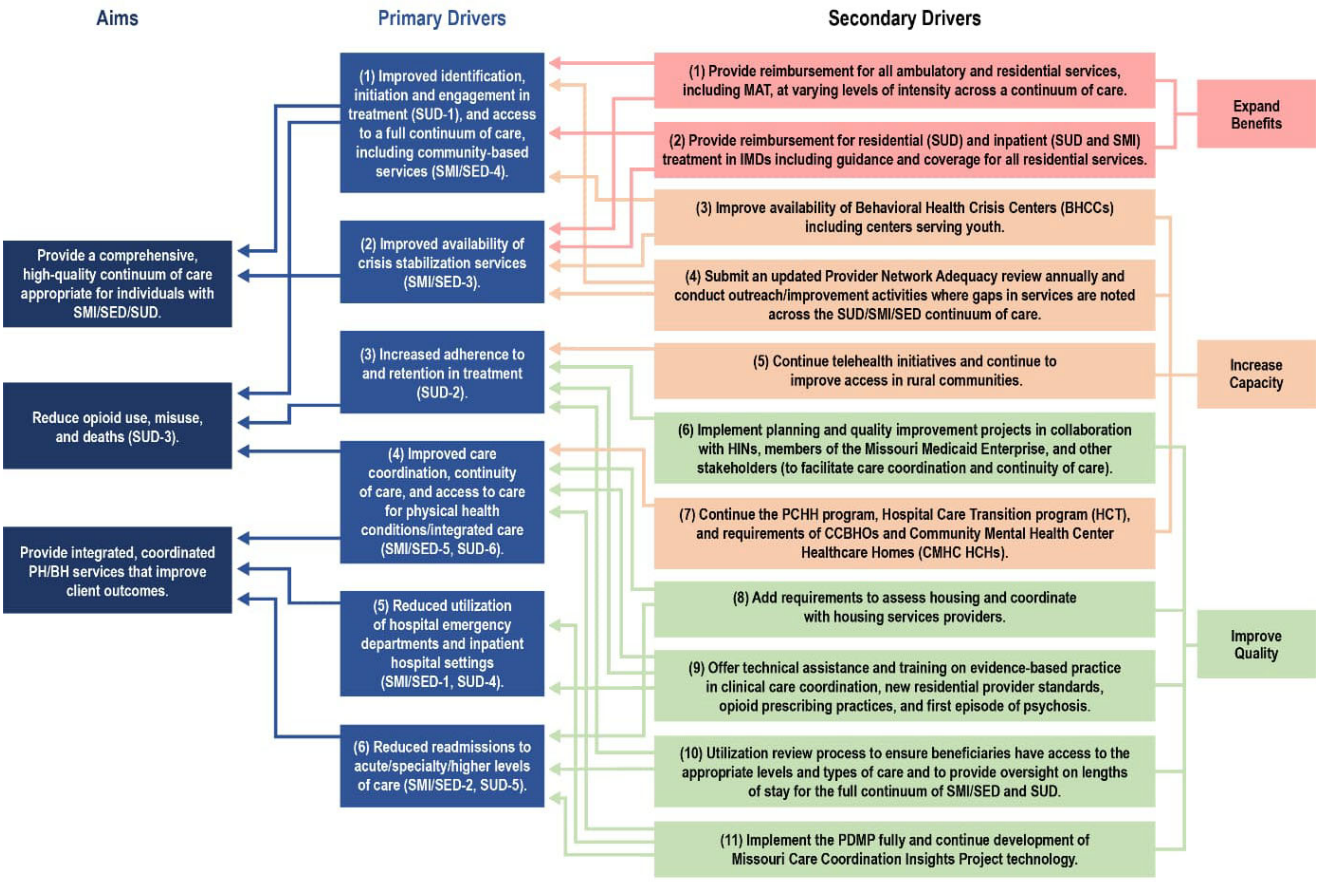
# Evaluation Research Questions and Hypotheses

## Driver Diagram

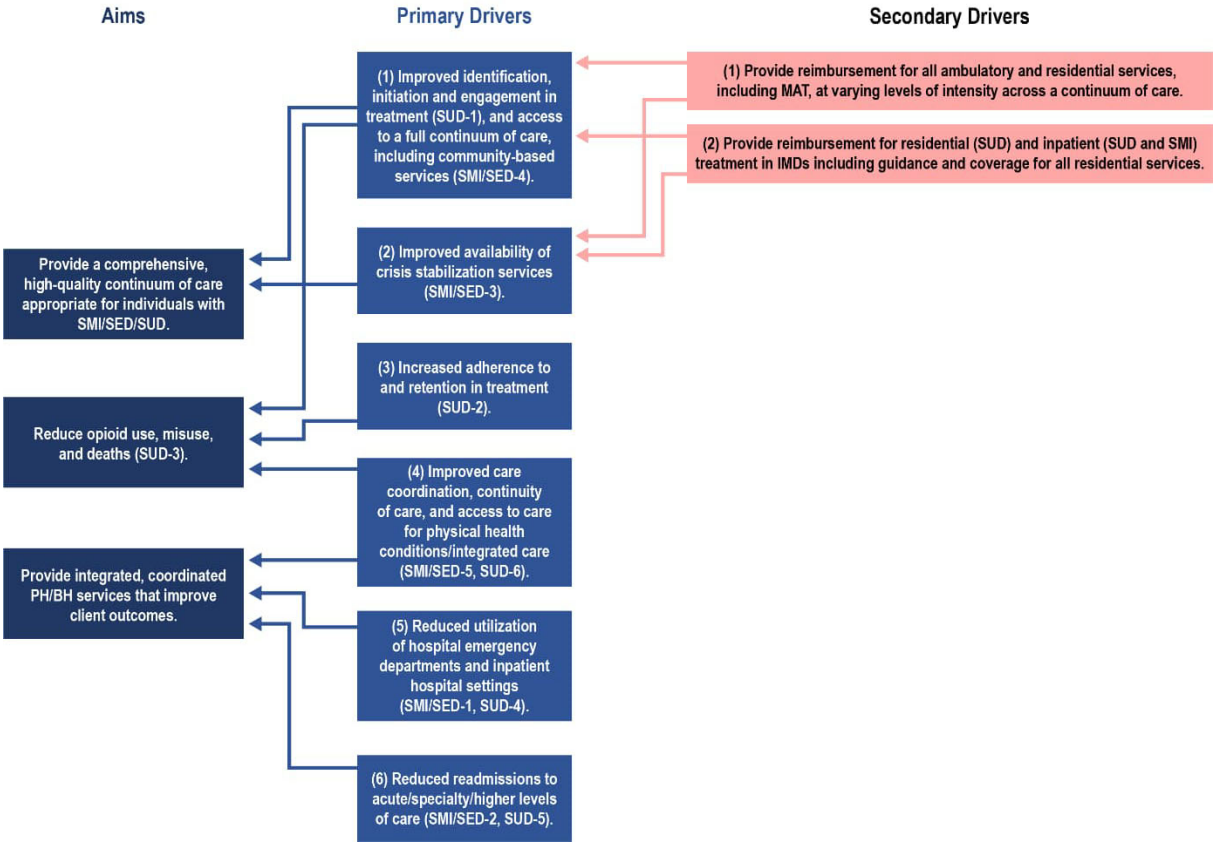
Section A summarized the State's vision for the Demonstration. The driver diagrams in this section show how the goals and activities from the State's SUD and SMI/SED Implementation Plans will advance the three key aims of the Demonstration. Missouri's intervention activities under the Demonstration are presented as secondary drivers. These secondary drivers are grouped into three domains: Expand Benefits, Increase Capacity, and Improve Quality; these domains align with the overarching aims of the Demonstration.

Figure 1 presents the overall driver diagram, whereas Figure 2 through Figure 4 break apart the overall driver diagram to show how the interventions in each domain map to the goals of the Demonstration.

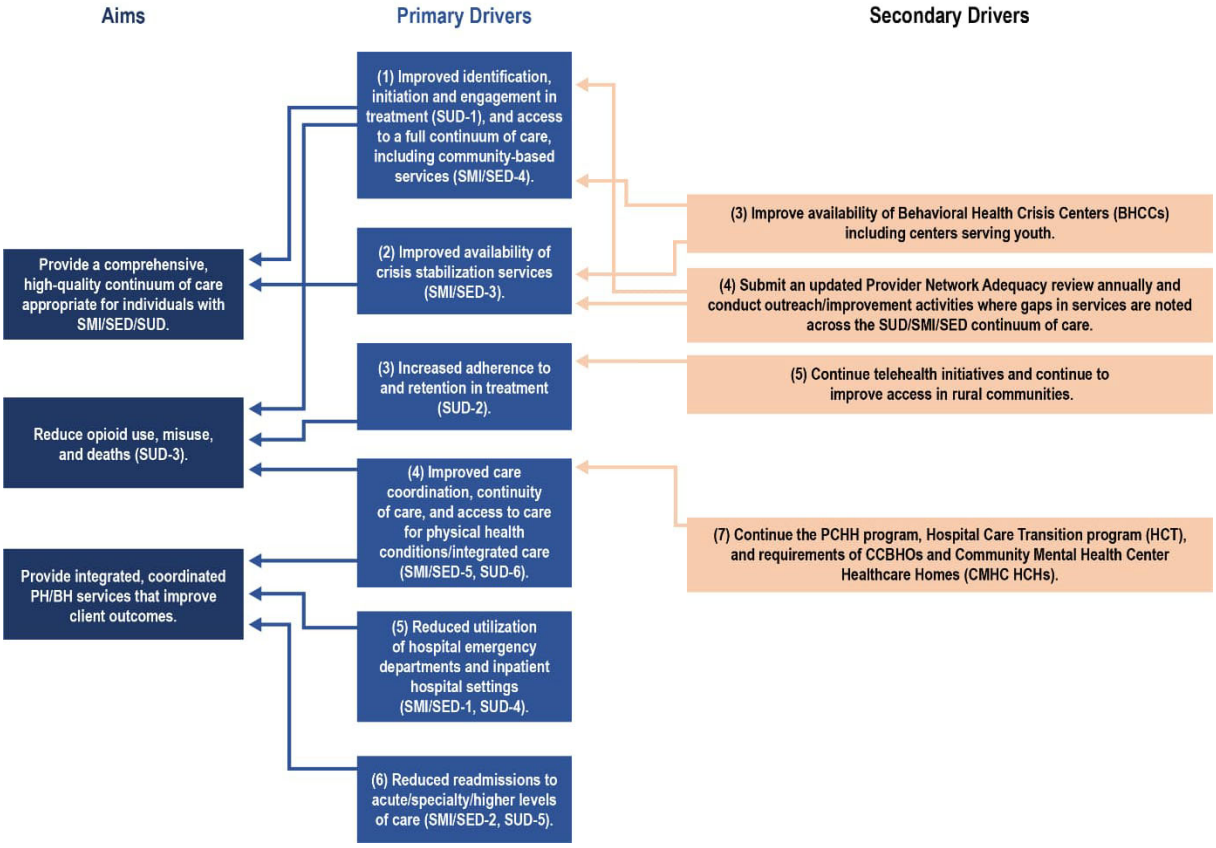
## Figure 1: Overall Driver Diagram



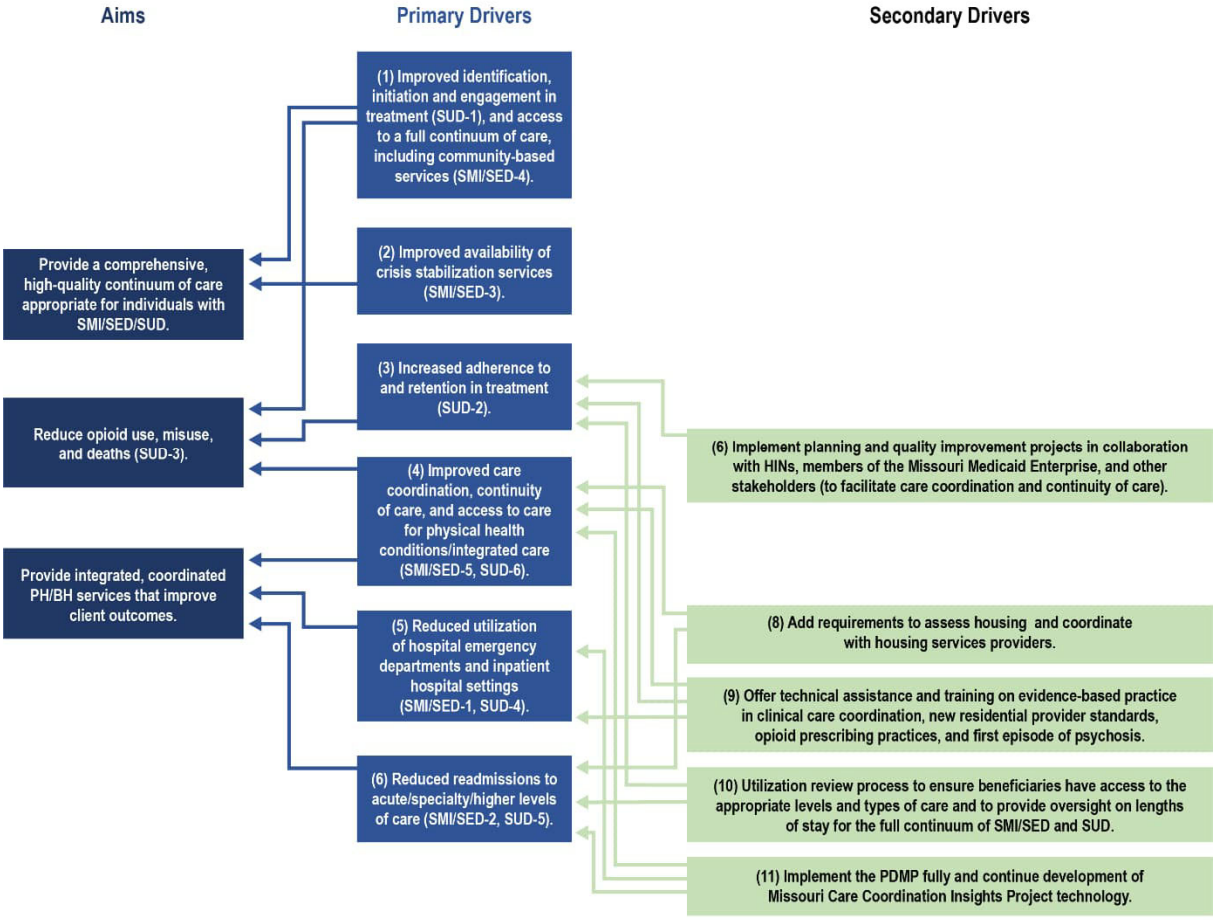
## Figure 2: Expand Benefits Driver Diagram



## Figure 3: Increase Capacity Driver Diagram



## Figure 4: Improve Quality Driver Diagram



# Hypotheses and Research Questions

The hypotheses below align with the aims and goals of the Demonstration. Research questions will be used to test each hypothesis, and quantitative and/or qualitative measures will be used to answer each research question. Refer to the Evaluation Design Tables in Section C for more detail.

## Demonstration Goal-Based Hypotheses and Research Questions

**Goal 1: Increased rates of identification, initiation, and engagement in treatment for SUD. (SUD-1 in STCs)**

Hypothesis 1.1 The Demonstration will increase the rates of identification, initiation, and engagement in treatment for SUD. The Demonstration will have similar impacts across all subpopulations reported.

- Research Question 1.1: Was there an increase in the identification and initiation of treatment for beneficiaries with SUD?
- Research Question 1.2: Did the number of providers who were enrolled in Medicaid and qualified to deliver SUD services increase during the Demonstration period?
- Research Question 1.3: How does the implementation of reimbursement for services provided in IMD settings influence access to specific SUD treatment services?
- Research Question 1.4: Was there an increase in community knowledge of available SUD treatment and services?
- Research question 1.5: Was there an increase in the utilization of SUD-specific treatment services?

**Goal 2: Improved access to community-based services to address the chronic mental health care needs of beneficiaries with SMI or SED including through increased integration of primary and behavioral health care. (SMI/SED-4 in STCs)**

Hypothesis 2.1 The Demonstration will improve access to community-based services. The Demonstration will improve access equally across subpopulations.

- Research Question 2.1: Was there an increase in access to community-based SMI/SED treatment services?
- Research Question 2.2: Was there an increase in community knowledge of available community-based SMI/SED treatment and services?
- Research Question 2.3: Was there an increase in utilization of SMI/SED-specific treatment services?
- Research Question 2.4: How does the implementation of reimbursement for all ambulatory and residential services across the continuum of care influence access to services?
- Research Question 2.5: How does the implementation of reimbursement for residential and inpatient treatment in IMDs for SUD and SMI including guidance and coverage for all residential services influence access to services?

**Goal 3: Improved availability of crisis stabilization services, including services made available through call centers and mobile crisis units, intensive outpatient services, as well as services provided during acute short-term stays in residential crisis stabilization programs and psychiatric hospitals and residential treatment settings throughout the State. (SMI/SED-3)**

Hypothesis 3.1 The Demonstration will improve the availability of crisis stabilization services. The Demonstration will improve the availability of crisis stabilization similarly across all subpopulations reported.

- Research question 3.1: Was there an increase in the availability of crisis stabilization services?

**Goal 4: Increased adherence to and retention in treatment. (SUD-2)**

Hypothesis 4.1 The Demonstration will increase beneficiaries' adherence to treatment.

- Research Question 4.1: Did the demonstration increase adherence to SUD treatment?

Hypothesis 4.2 The Demonstration will increase beneficiaries' engagement in treatment.

- Research Question 4.2: Has the continued support of telehealth facilitated treatment engagement?
- Research Question 4.3: How have quality improvement efforts impacted engagement in SUD treatment?
- Research Questions 4.4: Has technical assistance and training led to increased use of and fidelity to EBPs? Has this led to increased engagement in SUD treatment?

**Goal 5: Improved care coordination, especially continuity of care in the community following episodes of acute care in hospitals and residential treatment facilities. (SMI/SED-5)**

Hypothesis 5.1 The Demonstration will increase utilization of follow-up services after episodes of acute care.

- Research Question 5.1: Was there an increase in utilization of follow-up services for beneficiaries with SMI/SED after episodes of acute care in hospitals?

Hypothesis 5.2 The Demonstration will improve care coordination.

- Research Question 5.2: Did the PCHH, HCT, CCBHC, and CMHC HCH programs improve care coordination?
- Research Question 5.3: Did housing assessments and coordination with housing providers improve care coordination?
- Research Question 5.4: Did care coordination improve for beneficiaries with SMI/SED?

Hypothesis 5.3 The Demonstration will improve integrated care for beneficiaries with SMI or SED.

- Research Question 5.5: Did the Demonstration increase integration of primary and behavioral health care for beneficiaries with SMI or SED?

**Goal 6: Improved access to care for physical health conditions among beneficiaries with SUD. (SUD-6/integrated care)**

Hypothesis 6.1 The Demonstration will increase access to care for physical health conditions among beneficiaries with SUD.

- Research Question 6.1: Was there an increase in access to care for physical health conditions among beneficiaries with SUD?

Hypothesis 6.2: The Demonstration will improve care coordination for beneficiaries with SUD.

- Research Question 6.2: Did care coordination improve for beneficiaries with SUD?

**Goal 7: Reduced utilization and length of stay in hospital ED among Medicaid beneficiaries with SMI or SED while awaiting mental health treatment in specialized settings. (SMI/SED-1)**

Hypothesis 7.1 The Demonstration will result in a decrease in utilization of ED services by beneficiaries with SMI or SED. The Demonstration will decrease utilization of ED services by beneficiaries with SMI or SED similarly across all subpopulations reported.

- Research Question 7.1: Was there a decrease in ED services by beneficiaries with SMI/SED?
- Research Question 7.2: Did technical assistance and training on EBPs reduce the use of ED services?
- Research Question 7.3: Did the utilization review process reduce the use of ED services?

**Goal 8: Reduced utilization of hospital EDs and inpatient hospital settings for treatment where the utilization is preventable or medically inappropriate, through improved access to other continuum of care services. (SUD-4)**

Hypothesis 8.1 The Demonstration will result in a decrease in utilization of ED and inpatient services by beneficiaries. The Demonstration will decrease utilization of ED and inpatient services by beneficiaries similarly across all subpopulations reported.

- Research Question 8.1: Was there a reduction in ED or inpatient utilization for beneficiaries with SUD?
- Research Question 8.2: How does the Demonstration influence preventable utilization of ED or inpatient care through improved access to other continuum of care services?

**Goal 9: Reduced preventable readmissions to acute care and specialty hospitals and residential settings. (SMI/SED-2)**

Hypothesis 9.1 The Demonstration will decrease preventable readmissions to acute care, specialty hospitals, and residential settings for beneficiaries with SMI/SED.

- Research Question 9.1: Was there a decrease in preventable readmissions to acute care, specialty hospitals, and residential settings for beneficiaries with SMI/SED?

**Goal 10: Fewer readmissions to the same or higher level of care where the readmission is preventable or medically inappropriate. (SUD-5)**

Hypothesis 10.1 The Demonstration will decrease preventable or medically inappropriate readmissions to the same or higher level of care for beneficiaries with SUD.

- Research Question 10.1: Was there a decrease in preventable or medically inappropriate readmissions to the same or higher level of care for beneficiaries with SUD?

**Goal 11: Reductions in overdose deaths, particularly those due to opioids. (SUD-3)**

Hypothesis 11.1 The Demonstration will decrease the rate of overdose deaths. Reductions in overdose deaths will be similar across each age group (e.g., children, adults, seniors).

- Research Question 11.1: Was there a decrease in the rate of overdose deaths?

### Research Questions for Cost Analysis

The evaluation will also include a cost analysis that covers the following questions.

**Goal 12: Improvements in outcomes for members using SUD or SMI/SED services result in similar or lower costs.**

Hypothesis 12.1 The Demonstration will result in improvements in outcomes for members using SUD or SMI/SED services and maintain or reduce Medicaid costs, where possible.

- Research Question 12.1: Have increasing trends in total cost of care been slowed for individuals with SUD diagnoses?
- Research Question 12.2: Have increasing trends in total cost of care been slowed for individuals with SMI/SED diagnoses?

# Section C.
# Methodology

This section explains the methodology for the evaluation. Mercer will work closely with the State to refine the methodology, as needed, based on CMS's feedback. Note that refinements may be subject to data availability and feasibility of analysis.

Per CMS guidance, this section includes the following components:

- Evaluation design.
- Target and comparison populations.
- Evaluation period.
- Evaluation measures.
- Data sources.
- Analytic methods.

## Evaluation Design

The evaluation of the Demonstration will utilize a mixed-methods evaluation design with three main goals:

1. Describe the progress made on specific waiver-supported activities (process/implementation evaluation).
2. Demonstrate change/accomplishments in each of the waiver milestones (short-term outcomes).
3. Demonstrate progress in meeting the overall project goals/aims.

A combination of qualitative and quantitative approaches will be used throughout the evaluation.

- **Qualitative methods** will include informant interviews with key State implementation staff, provider staff, and other stakeholders identified in the qualitative data collection process. Topics covered will include Demonstration activities, as well as document reviews of contracts, policy guides, and manuals. These methods will also include consumer voice to describe changes in access to and perceptions of care over the Demonstration period. In addition, the State is exploring opportunities to deploy modifications to the Consumer Assessment of Healthcare Providers & Systems (CAHPS) survey or other routine survey methods to obtain consumer views. To the extent possible, existing consumer advisory/advocacy groups will also be leveraged to conduct focus group data collection efforts. Thematic and content analysis will be used to draw conclusions from data collected for qualitative review. Thematic analysis (TA) is a method

for identifying, analyzing, and interpreting patterns of meaning within qualitative data.[6] Since key informant interview and focus group data includes individual opinions and subjective perspectives, thematic analysis allows for comparisons across different stakeholders and stakeholder groups and uses systematic procedures for generating text coding and themes.

- **Quantitative methods** will include descriptive statistics showing changes over time in both counts and rates for specific metrics and interrupted time series (ITS) analysis to assess the degree to which the timing of Demonstration interventions affected changes across specific outcome measures. The data sources for the quantitative analyses include Medicaid claims and other administrative data.

## Target and Comparison Populations

The Demonstration is open to Missouri individuals who are eligible for full Medicaid benefits and targets those with SUD and/or SMI/SED who are in need of critical levels of care and short-term residential or inpatient stabilization. This includes both Medicaid expansion and non-expansion individuals, as well as Medicaid enrollees in both the FFS and managed care delivery systems. The subset of these individuals who require a residential level of care for SUD treatment services or need an acute inpatient stay for SMI will be eligible for short-term stays in an IMD.

The comparison population group in this design will be comprised of the target population, which will serve as its own comparison group longitudinally, in which the research question will compare service utilization differences across the Demonstration period.

## Evaluation Period

The evaluation period encompasses a look back period (pre-demonstration period), January 1, 2022 to December 31, 2023, the first half of the demonstration period for the interim evaluation report (January 1, 2024, to June 30, 2026), and the full demonstration period (January 1, 2024, to December 31, 2028).

Table 1 shows evaluation periods for monthly versus annual measures.

**Table 1: Demonstration Evaluation Periods**

| Measurement Frequency | Pre-Demonstration Period | Interim Evaluation Period | Summative Evaluation Period |
|---|---|---|---|
| **Monthly** | 1/1/2022–12/31/2023 | 1/1/2024–6/30/2026 | 1/1/2024–12/31/2028 |
| **Yearly** | 2022–2023 | 2024–2025 | 2024–2028 |

## Evaluation Measures

A mix of quantitative and qualitative measures will be used to evaluate the effects of the Demonstration. The Evaluation Measures table below describes each measure and outlines the data sources and analytic methods that will be used. The table links the goals and hypotheses with the research questions and proposed measures/research domains. The

[6]Clarke, V., & Braun, V. (2017). Thematic analysis. The Journal of Positive Psychology, 12(3), 297–298.

measure names, descriptions, numerators, and denominators/populations of interest are drawn directly from CMS's specifications for monitoring metrics, where available.

Mercer plans to leverage the SUD and SMI/SED monitoring metrics that the State will regularly report to CMS. Other quantitative measures will be drawn from the Healthcare Effectiveness Data and Information Set, Medicaid Core Set, or other standardized measure sets. Mercer will also use descriptive quantitative and qualitative measures to evaluate the implementation of the Demonstration, including barriers, challenges, and innovations. When quantitative measures are unavailable or impractical, Demonstration effects will be described in a qualitative manner.

In certain cases, Mercer will create measures for beneficiary subpopulations (when applicable and dependent on whether the subpopulation sizes are sufficiently large to allow for the measures to be defined). Some of the potential beneficiary subpopulations include:

- Dually eligible for Medicare.
- Age group.
- Pregnant.
- Legal-involved.
- OUD.
- SMI/SED.

Table 2, on the following page, outlines each evaluation measure and summarizes the data sources and analytic methods that will be used for each.

### Table 2: Evaluation Design Summary

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| **Goal 1: Increased rates of identification, initiation, and engagement in treatment for substance use disorder (SUD). (SUD-1 in Special Terms and Conditions [STCs])** | | | | | | | |
| **Primary Driver 1:** Improved identification, initiation, and engagement in treatment (SUD-1), and access to a full continuum of care, including community-based services (SMI/SED) (SMI/SED-4) | **Research Question 1.1:** Was there an increase in the identification and initiation of treatment for beneficiaries with SUD? | | | | | | |
| | Number and rate of Medicaid Beneficiaries with SUD Diagnosis (monthly) | Number of beneficiaries with a SUD diagnosis and a SUD-related service during the measurement period and/or in the 11 months before the measurement period | CMS SUD Monitoring Metric #3 | Number of beneficiaries with a SUD diagnosis and a SUD-related service during the measurement period and/or in the 11 months before the measurement period | (For rate calculation) Total number of Medicaid enrollees during the measurement period | Claims; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |
| | Initiation and Engagement of Alcohol and Other Drug Dependence Treatment (IET-AD) | Percentage of beneficiaries with a new episode of alcohol or other drug (AOD) abuse or dependence who received Initiation AOD Treatment | National Committee for Quality Assurance (NCQA), National Quality Forum (NQF) #0004 SUD Monitoring Metric #15(a) | Initiation of AOD treatment within 14 days of the index episode | Number of unique members with a new episode of AOD abuse or dependence | Claims; Yearly | Descriptive time series; pre-post chi-square test of significance comparing baseline proportion to post-demonstration period proportion |
| | Consumer perceptions of access to care | Consumer perceptions regarding current state of access to care | Consumer survey - CAHPS | NA | Consumers | CAHPS or other consumer survey; Yearly | Frequency distributions and thematic summary |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| **Secondary Driver 1:** Provide reimbursement for all ambulatory and residential services, including MAT, at varying levels of intensity across a continuum of care | **Research Question 1.2:** Did the number of providers who were enrolled in Medicaid and qualified to deliver SUD services increase during the Demonstration period? | | | | | | |
| | SUD Provider Availability across the continuum of care (Annual) | Number of providers who were enrolled in Medicaid and qualified to deliver SUD services during the measurement period | CMS SUD Monitoring Metric #13 | Number of providers who were enrolled in Medicaid and qualified to deliver SUD services during the measurement period | NA | Provider enrollment database; Yearly | Descriptive time series<br><br>Percent change (no significance testing) |
| **Secondary Driver 4:** Submit an updated Provider Network Adequacy review annually and conduct outreach/improvement activities where gaps in services are noted across the SUD/SMI/SED continuum of care | Provider capacity (Qualitative) | Capacity of newly enrolled Medicaid providers qualified to deliver SUD services | NA | NA | Provider Network Adequacy review document<br><br>Key informant interviews or focus groups with State staff, providers, and managed care organizations (MCOs) | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | TA |
| | New providers and provider quality (Qualitative) | Increase in newly enrolled Medicaid providers qualified to deliver SUD services | NA | NA | Provider guidance documents, monitoring reports<br><br>Key informant interviews or focus groups with State staff, providers, and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and | TA |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | | | | | | summative reports) | |
| **Secondary Driver 2:** Provide reimbursement for residential and inpatient treatment in IMDs for SUD and SMI including guidance and coverage for all residential services | **Research Question 1.3:** How does the implementation of reimbursement for services provided in IMD settings influence access to specific SUD treatment services? | | | | | | |
| | Reimbursement in IMD settings, including withdrawal management (Qualitative) | Availability of reimbursement for services in IMD settings | NA | NA | State policies<br><br>Key informant interviews or focus groups with State staff, providers, and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | TA |
| | Reimbursement policy (Qualitative) | Content of reimbursement policy for services in IMD settings (which services are covered and at what rate) | NA | NA | State policies<br><br>Key informant interviews or focus groups with State staff, providers, and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | TA |
| | Provider reimbursement awareness (Qualitative) | Awareness of reimbursement for services in IMD settings | NA | NA | State policies, provider guidance documents<br><br>Key information interviews or focus groups with State | Document Reviews, Interviews<br><br>Key program intervals (preceding | TA |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | | | | | staff, providers, and MCOs | midpoint, interim, and summative reports) | |
| **Primary Driver 1:** Improved identification, initiation, and engagement in treatment (SUD-1), and access to a full continuum of care, including community-based services (SMI/SED-4) | **Research Question 1.4:** Was there an increase in community knowledge of available SUD treatment and services? | | | | | | |
| | Community awareness of services | Changes in community awareness of available SUD services due to the Demonstration | NA | NA | NA | Consumer surveys, if possible or focus groups with consumers and advocacy groups<br><br>Yearly or key program intervals (preceding midpoint, interim, and summative reports) | Narrative, thematic analysis |
| | **Research question 1.5:** Was there an increase in the utilization of SUD-specific treatment services? | | | | | | |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | Any SUD Treatment | Number of beneficiaries enrolled in the measurement period receiving any SUD treatment service, facility claim, or pharmacy claim during the measurement period | CMS SUD Monitoring Metric #6 | Number of unique beneficiaries (de-duplicated) enrolled in the measurement period receiving at least one SUD treatment service or pharmacy claim during the measurement period | All Medicaid beneficiaries enrolled for any amount of time during the measurement period (population parameter) | Claims; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |
| **Primary Driver 1 (continued)** | Early Intervention | Number/percent of beneficiaries who receive prevention or early intervention services | CMS SUD Monitoring Metric #7 | Number of unique members in the denominator with a claim for early intervention services | Members with a SUD diagnosis (CMS #3 SUD) for percentage | Claims; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | Outpatient Services | Number/percent of beneficiaries who receive outpatient services | CMS SUD Monitoring Metric #8 | Number of unique members in the denominator with a claim for outpatient services for SUD | Members with a SUD diagnosis (CMS #3 SUD) for percentage | Claims; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |
| | Intensive Outpatient and Partial Hospitalization Services | Number/percent of beneficiaries who receive intensive outpatient and partial hospitalization services | CMS SUD Monitoring Metric #9 | Number of unique members in the denominator with a claim for intensive outpatient or partial hospitalization services for SUD | Members with a SUD diagnosis (CMS #3 SUD) for percentage | Claims; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| **Primary Driver 1 (continued)** | Residential and Inpatient Services | Number/percent of beneficiaries who receive residential and inpatient services | CMS SUD Monitoring Metric #10 | Number of unique members in the denominator with a claim for residential or inpatient services for SUD | Members with a SUD diagnosis (CMS #3 SUD) for percentage | Claims; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |
| | Withdrawal Management | Number/percent of beneficiaries who receive withdrawal management services | CMS SUD Monitoring Metric #11 | Number of unique members in the denominator with a claim for withdrawal management services for SUD | Members with a SUD diagnosis (CMS #3 SUD) for percentage | Claims; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |
| | MAT | Number/percent of beneficiaries who receive MAT services | CMS SUD Monitoring Metric #12 | Number of unique members in the denominator with a claim for MAT services for SUD | Members with a SUD diagnosis (CMS #3 SUD) for percentage | Claims; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| **Goal 2: Improved access to community-based services to address the chronic mental health care needs of beneficiaries with SMI or SED including through increased integration of primary and behavioral health care. (SMI/SED-4 in STCs)** | | | | | | | |
| **Secondary Driver 4:** Submit an updated Provider Network Adequacy review annually and conduct outreach/improvement activities where gaps in services are noted across the SUD/SMI/SED continuum of care | **Research Question 2.1:** Was there an increase in access to community-based SMI/SED treatment services? | | | | | | |
| | Mental health providers | Number of mental health providers who enrolled in Medicaid and qualified to deliver services to beneficiaries with SMI/SED under the demonstration, in total and stratified by type (e.g., Mental Health Rehabilitation Services providers, physicians, other licensed practitioners) | NA | Total number of eligible mental health practitioners qualified to deliver services to SMI/SED beneficiaries (includes stratifications for provider type) | NA | Provider enrollment database; Yearly | Descriptive time series |
| **Primary Driver 1:** Improved identification, initiation, and engagement in treatment (SUD-1), and access to a full continuum of care, including | **Research Question 2.2:** Was there an increase in community knowledge of available community-based SMI/SED treatment and services? | | | | | | |
| | Community awareness of services | Changes in community awareness of available SMI/SED treatment services due to | NA | NA | Consumers | Consumer surveys or focus groups<br><br>Key program intervals (preceding | Narrative, thematic analysis |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| community-based services (SMI/SED-4) | | the Demonstration | | | | midpoint, interim, and summative reports) | |
| | **Research Question 2.3:** Was there an increase in utilization of SMI/SED-specific treatment services? | | | | | | |
| | Mental Health Services Utilization — Any Services | Number/percent of beneficiaries in the demonstration with SMI/SED who used any services related to mental health during the measurement period | CMS SMI Monitoring Metric #18 | Number of unique beneficiaries (de-duplicated total) with a service claim for any services related to mental health during the measurement period | Medicaid beneficiaries in the demonstration or with SMI/SED enrolled for any amount of time during the measurement period *(Population of interest)* | Claims data; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |
| **Primary Driver 1 (continued)** | Use of First-Line Psychosocial Care for Children and Adolescents on Antipsychotics | Percentage of children and adolescents ages 1 year–17 years old who had a new prescription for an antipsychotic medication and had documentation of psychosocial care as first-line treatment | NCQA NQF #2801 SMI Monitoring Metric #2 | Number of Medicaid beneficiaries in the denominator who received psychosocial care | Number of Medicaid beneficiaries ages 1 year-17 years old who had a new prescription for an antipsychotic medication | Claims; Yearly | Descriptive time series; pre-post chi-square test of significance comparing baseline proportion to post-demonstration period proportion |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| **Secondary Driver 1:** Provide reimbursement for all ambulatory and residential services, including MAT, at varying levels of intensity across a continuum of care. | **Research Question 2.4:** How does the implementation of reimbursement for all ambulatory and residential services across the continuum of care influence access to services? | | | | | | |
| | Availability of reimbursement across continuum of care (Qualitative) | Availability of reimbursement for all ambulatory and residential services (SUD) across a continuum of care | NA | NA | State policies, guidance documents, monitoring reports<br><br>Key informant interviews or focus groups with State staff, providers, and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| | Awareness of reimbursement across continuum of care (Qualitative) | Awareness of reimbursement for all ambulatory and residential (SUD) services across a continuum of care | NA | NA | State policies, guidance documents, monitoring reports<br><br>Key informant interviews or focus groups with State staff, providers, and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| | Perceptions of reimbursement efficacy across continuum of care (Qualitative) | Perceptions of the extent to which reimbursement for all ambulatory and residential (SUD) services incentivized or | NA | NA | State policies, guidance documents, monitoring reports<br><br>Key informant interviews or focus groups with State | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and | Thematic Analysis |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | | facilitated expanded access to treatment services | | | staff, providers and MCOs. | summative reports) | |
| **Secondary Driver 2:** Provide reimbursement for residential (SUD) and inpatient treatment (SMI) in IMDs including guidance and coverage for all residential services | **Research Question 2.5:** How does the implementation of reimbursement for residential (SUD) and inpatient treatment (SMI) in IMDs including guidance and coverage for all residential services influence access to services? | | | | | | |
| | Availability of reimbursement in IMDs (Qualitative) | Availability of reimbursement for residential (SUD) and inpatient treatment (SMI) in IMDs including guidance and coverage for all residential (SUD) services | NA | NA | State policies, guidance documents, monitoring reports<br><br>Key informant interviews or focus groups with State staff, providers and MCOs. | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| | Awareness of reimbursement in IMDs (Qualitative) | Awareness of reimbursement for residential (SUD) and inpatient treatment (SMI) in IMDs including guidance and coverage for all residential (SUD) services | NA | NA | State policies, guidance documents, monitoring reports<br><br>Key informant interviews or focus groups with State staff, providers and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | Perceptions of reimbursement efficacy (in IMDs) | Perceptions of whether reimbursement for residential (SUD) and inpatient treatment (SMI) in IMDs including guidance and coverage for all residential services (SUD) incentivized or facilitated expanded access to services | NA | NA | State policies, guidance documents, monitoring reports<br><br>Key informant interviews or focus groups with State staff, providers and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| **Goal 3: Improved availability of crisis stabilization services, including services made available through call centers and mobile crisis units, intensive outpatient services, as well as services provided during acute short-term stays in residential crisis stabilization programs and psychiatric hospitals and residential treatment settings throughout the State. (SMI/SED-3)** | | | | | | | |
| **Secondary Driver 3:** Improve availability of BHCCs including centers serving youth | **Research question 3.1:** Was there an increase in the availability of crisis stabilization services? | | | | | | |
| | Mental Health Services Utilization — Inpatient | Number/percent of beneficiaries in the demonstration with SMI/SED who used Inpatient services related to mental health during | CMS SMI Monitoring Metric #13 | Number of unique beneficiaries with SMI/SED (de-duplicated total) with an inpatient service claim for any services related to mental health | Number of unique beneficiaries with SMI/SED (CMS #21 SMI/SED) | Claims; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | | the measurement period | | during the measurement period | | | |
| **Secondary Driver 3 (continued)** | Mental Health Services Utilization — Intensive Outpatient and Partial Hospitalization | Number/percent of beneficiaries in the demonstration with SMI/SED who used Intensive Outpatient and Partial Hospitalization services related to mental health during the measurement period | CMS SMI Monitoring Metric #14 | Number of unique beneficiaries with SMI/SED (de-duplicated total) with an intensive outpatient or partial hospitalization service claim for any services related to mental health during the measurement period | Number of unique beneficiaries with SMI/SED (CMS #21 SMI/SED) | Claims; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |
| | Mental Health Services Utilization — Outpatient | Number of beneficiaries in the demonstration with SMI/SED who used Outpatient services related to mental health during the measurement period | CMS SMI Monitoring Metric #15 | Number of unique beneficiaries with SMI/SED (de-duplicated total) with an outpatient service claim for any services related to mental health during the measurement period | Number of unique beneficiaries with SMI/SED (CMS #21 SMI/SED) | Claims; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | Mental Health Services Utilization — Telehealth | Number of beneficiaries in the demonstration with SMI/SED who used Telehealth services related to mental health during the measurement period | CMS SMI Monitoring Metric #17 | Number of unique beneficiaries with SMI/SED (de-duplicated total) with a telehealth service claim for any services related to mental health during the measurement period | Number of unique beneficiaries with SMI/SED (CMS #21 SMI/SED) | Claims; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |
| | Awareness of available crisis stabilization services (Qualitative) | Awareness of available crisis stabilization services | NA | NA | Consumers | Consumer surveys or focus groups<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| **Goal 4: Increased adherence to and retention in treatment. (SUD-2)** | | | | | | | |
| **Primary Driver 3:** Increased adherence to and retention in treatment (SUD-2) | **Research Question 4.1:** Did the demonstration increase adherence to SUD treatment? | | | | | | |
| | IET-AD | Percentage of beneficiaries with a new episode of AOD abuse or dependence | NCQA, NQF #0004 SUD Monitoring Metric #15(b) | Engagement of AOD treatment within 14 days of the index episode | Medicaid beneficiaries aged 18 years and older during the measurement | Claims data; Yearly | Descriptive time series; pre-post chi-square test of significance comparing baseline proportion to |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | | who received Engagement of AOD Treatment | | | period *(Denominator)* | | post-demonstration period proportion |
| | Continuity of Pharmacotherapy for Opioid Use Disorder | Number and percentage of beneficiaries who have at least 180 days of continuous pharmacotherapy with a medication prescribed for OUD without a gap of more than seven days | USC, NQF#3175 SUD Monitoring Metric #22 | Number of beneficiaries 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 *(Denominator)* | Claims data; Yearly | Descriptive time series; pre-post chi-square test of significance comparing baseline proportion of members initiating treatment to post-demonstration period |
| | Consumer adherence to treatment plans | Beneficiary self-report of how well they have adhered to their providers' treatment advice | NA | NA | Consumers | Consumer surveys or focus groups<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Frequency Distribution; Thematic analysis |
| | Consumer perceptions of treatment plans | Perceptions of facilitators and barriers to adherence to SUD treatment | NA | NA | Consumers | Consumer surveys or focus groups | Frequency Distribution; Thematic analysis |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | | | | | | Key program intervals (preceding midpoint, interim, and summative reports) | |
| **Secondary Driver 5:** Continue telehealth initiatives and continue to improve access in rural counties | **Research Question 4.2**: Has the continued support of telehealth facilitated treatment engagement? | | | | | | |
| | Telehealth utilization | Stakeholder reports of telehealth utilization | NA | NA | Consumers | Consumer surveys or focus groups<br><br>Key program intervals (preceding midpoint, interim and summative reports). | Thematic Analysis |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | Telehealth efficacy (Qualitative) | Perception of the role of telehealth in promoting retention and engagement | NA | NA | State policies, guidance documents, monitoring reports<br><br>Key informant interviews or focus groups with State staff, providers and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| **Secondary Driver 6:** Implement planning and quality improvement projects in collaboration with HINs, members of the Missouri Medicaid Enterprise, and other stakeholders (to facilitate care coordination and continuity of care | **Research Question 4.3:** How have quality improvement (QI) efforts impacted engagement in SUD treatment? | | | | | | |
| | QI Efforts in Care Coordination (Qualitative) | Perceptions of how QI efforts have affected quality of care coordination and continuity of care | NA | NA | Stakeholder engagement and workgroup meeting materials, monitoring reports<br><br>Key informant interviews or focus groups with State staff, providers and MCOs. | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| **Secondary Driver 9:** Offer technical | **Research Questions 4.4:** Has technical assistance and training led to increased use of and fidelity to EBPs? Has this led to increased engagement in SUD treatment? | | | | | | |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| assistance (TA) and training on EBP in clinical care coordination, new residential provider standards, opioid prescribing practices, and first episode of psychosis | TA and training for EBPs (Qualitative) | Perceptions of the effects of TA and training in the use of EBPs | NA | NA | Stakeholder engagement and workgroup meeting materials, monitoring reports<br><br>Key informant interviews or Focus groups with State staff, providers and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| **Goal 5: Improved care coordination, especially continuity of care in the community following episodes of acute care in hospitals and residential treatment facilities. (SMI/SED-5)** | | | | | | | |
| **Primary Driver 4:** Improved care | **Research Question 5.1**: Was there an increase in utilization of follow-up services for beneficiaries with SMI/SED after episodes of acute care in hospitals? | | | | | | |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| coordination, continuity of care, and access to care for physical health conditions/integrated care (SMI/SED-5, SUD-6) | Follow-up After Hospitalization for Mental Illness: Age 18 Years and Older (FUH-AD) | Percentage of discharges for beneficiaries aged 18 years and older who were hospitalized for treatment of selected mental illness diagnoses or intentional self-harm and who had a follow-up visit with a mental health practitioner within seven days or within 30 days | NCQA, NQF #0576 SMI Monitoring Metric #8 | A follow-up visit with a mental health practitioner within seven days or 30 days after discharge | Number of discharges for beneficiaries age 18 years and older who were hospitalized for treatment of selected mental illness diagnoses or intentional self-harm *(Denominator)* | Claims data; Yearly | Descriptive time series; pre-post chi-square test of significance comparing baseline proportion of members initiating treatment to post-demonstration period |
| | Follow-Up After Emergency Department Visit for Mental Illness (FUM-AD) | Percentage of ED visits for beneficiaries age 18 years and older with a principal diagnosis of mental illness or intentional self-harm and who had a follow-up visit for mental illness within | NCQA, NQF #2605 SMI Monitoring Metric #10 | A follow-up visit with any practitioner, with a principal diagnosis of a mental health disorder or with a principal diagnosis of intentional self-harm and any diagnosis of mental health disorder | Number of ED visits for beneficiaries age 18 years and older with a principal diagnosis of mental illness or intentional self-harm *(Denominator)* | Claims data; Yearly | Descriptive time series; pre-post chi-square test of significance comparing baseline proportion of members initiating treatment to post-demonstration period |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | | seven days of the ED visit or within 30 days of the ED visit | | within seven days or 30 days after the ED visit | | | |
| **Secondary Driver 7:** Continue the PCHH program, HCT, and requirements of CCBHCs and CMHC HCHs. | **Research Question 5.2** Did the PCHH, HCT, CCBHO and HCH programs improve care coordination? | | | | | | |
| | Care coordination improvement efforts (Qualitative) | Perceptions of effects of PCHH, HCT, CCBHOs, and HCHs on improved care coordination | NA | NA | Stakeholder engagement and workgroup meeting materials, monitoring reports<br><br>Key informant interviews or focus groups with State staff, providers and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| **Secondary Driver 8:** Add requirements to assess housing and coordinate with housing service providers | **Research Question 5.3** Did housing assessments and coordination with housing providers improve care coordination? | | | | | | |
| | Housing coordination efforts (Qualitative) | Perceptions of effects of housing assessments and collaboration with service providers on care coordination | NA | NA | Stakeholder engagement and workgroup meeting materials, monitoring reports<br><br>Key informant interviews or focus groups with State staff, providers and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| **Secondary Driver 9:** Offer TA and training on EBP in | **Research Question 5.4:** Did care coordination improve for beneficiaries with SMI/SED? | | | | | | |
| | Diabetes Care for People with | Percentage of beneficiaries | NCQA NQF #2607 | Number of beneficiaries in | Number of Medicaid | Claims; Yearly | Descriptive time series; pre-post |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| clinical care coordination, new residential provider standards, opioid prescribing practices, and first episode of psychosis | SMI: Hemoglobin A1c (HbA1c) Poor Control (> 9.0%) (HPCMI-AD) | ages 18 to 75 with a serious mental illness and diabetes (type 1 or type 2) who had HbA1c in poor control (> 9.0%) | SMI Monitoring Metric #23 | the denominator who had HbA1c > 9.0% | beneficiaries with a SMI and diabetes (type 1 or type 2) | | Chi-square test of significance comparing baseline proportion of members initiating treatment to post-demonstration period |
| | Care coordination for beneficiaries with SMI/SED | Beneficiary perceptions of how their health care providers work together | NA | Number of beneficiaries who rate their providers' collaboration highly | Total number of survey participants *(Denominator)* | CAHPS, or other member survey<br><br>Yearly | Frequency distributions |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
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| **Primary Driver 4:** Improved care coordination, continuity of care, and access to care for physical health conditions/integrated care (SMI/SED-5, SUD-6) | **Research Question 5.5:** Did the Demonstration increase integration of primary and behavioral health care for beneficiaries with SMI or SED? | | | | | | |
| | Effects of integrated care improvements (Qualitative) | Perceptions of whether the Demonstration increased integration of primary and behavioral health care for beneficiaries with SMI or SED | NA | NA | Stakeholder engagement and workgroup meeting materials, monitoring reports<br><br>Key informant interviews or focus groups with State staff, providers and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| | Integrated care improvements (Qualitative) | Descriptions of ways primary and behavioral health care are integrated for beneficiaries with SMI or SED | NA | NA | Stakeholder engagement and workgroup meeting materials, monitoring reports<br><br>Key informant interviews or focus groups with State staff, providers and MCOs | Document Reviews, Interviews<br><br>Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
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| **Goal 6: Improved access to care for physical health conditions among beneficiaries with SUD. (SUD-6/integrated care)** | | | | | | | |
| **Primary Driver 4:** Improved care coordination, continuity of care, and access to care for physical health conditions/integrated care (SMI/SED-5, SUD-6) | **Research Question 6.1:** Was there an increase in access to care for physical health conditions among beneficiaries with SUD? | | | | | | |
| | Access to Preventive/ Ambulatory Health Services for Adult Medicaid Beneficiaries with SUD | Percentage of Medicaid beneficiaries with SUD who had an ambulatory or preventive care visit during the measurement period | NCQA, Adjusted HEDIS Measure — SUD Monitoring Metric #32 | Number of Medicaid beneficiaries who had an ambulatory or preventive care visit during the measurement period | Number of Medicaid beneficiaries with a diagnosis of SUD during the measurement period *(Denominator)* | Claims data; Yearly | Descriptive time series; pre-post chi-square test of significance comparing baseline proportion to post-demonstration period proportion |
| **Secondary Driver 9:** Offer TA and training on EBP in clinical care coordination, new residential provider standards, opioid prescribing practices, and first episode of psychosis | **Research Question 6.2:** Did care coordination improve for beneficiaries with SUD? | | | | | | |
| | Care coordination for beneficiaries with SUD | SUD Beneficiary perceptions of how their health care providers work together | NA | Number of SUD beneficiaries who rate their providers' collaboration highly | Total number of survey participants *(Denominator)* | Survey or focus group<br><br>Key reporting periods | Descriptive Statistics<br><br>Frequency Distribution with chi-square test of significance comparing reporting periods |
| **Goal 7: Reduced utilization and length of stay in hospital ED among Medicaid beneficiaries with SMI or SED while awaiting mental health treatment in specialized settings. (SMI/SED-1)** | | | | | | | |
| **Primary Driver 5:** Reduced utilization of hospital EDs and inpatient hospital | **Research Question 7.1:** Was there a decrease in ED services by beneficiaries with SMI/SED? | | | | | | |
| | Mental Health Services | Number and percentage of beneficiaries in | CMS — SMI Monitoring Metric #16 | The total number of unique | Number of unique beneficiaries with | Claims data; Monthly | ITS, with analysis for each subgroup, |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
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| settings (SMI/SED-1, SUD-4) | Utilization — ED | the demonstration or with SMI/SED who use ED services for mental health during the measurement period | | beneficiaries (de-duplicated total) who have a claim for emergency services for mental health during the measurement period | SMI/SED (CMS #21 SMI/SED) | | as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |
| **Secondary Driver 9:** Offer TA and training on EBP in clinical care coordination, new residential provider standards, opioid prescribing practices, and first episode of psychosis | **Research Question 7.2:** Did TA and training on EBPs reduce the use of ED services? | | | | | | |
| | Effect of EBPs on ED use (Qualitative) | Perceptions of the how TA and training in the use of EBPs affected ED use | NA | NA | Key informant interviews or focus groups with State staff, providers and MCOs | Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| **Secondary Driver 10:** Utilization review process to ensure beneficiaries have access to the appropriate levels and types of care and to provide oversight on lengths of stay for the full continuum | **Research Question 7.3:** Did the utilization review process reduce the use of ED services? | | | | | | |
| | Efficacy of the utilization review process (Qualitative) | Perceptions of the how the utilization process affected rates of ED use | NA | NA | Key informant interviews or focus groups with State staff, providers and MCOs | Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| of SMI/SED and SUD | | | | | | | |
| **Goal 8: Reduced utilization of hospital EDs and inpatient hospital settings for treatment where the utilization is preventable or medically inappropriate, through improved access to other continuum of care services. (SUD-4)** | | | | | | | |
| **Primary Driver 5:** Reduced utilization of hospital EDs and inpatient hospital settings (SMI/SED-1, SUD-4) | **Research Question 8.1:** Was there a reduction in ED or inpatient utilization for beneficiaries with SUD? | | | | | | |
| | Inpatient stays for SUD per 1,000 Medicaid Beneficiaries | Total number of SUD-related inpatient stays per 1,000 beneficiaries in the measurement period | CMS-constructed<br><br>SUD Monitoring Metric #24 | The number of inpatient discharges related to a SUD stay during the measurement period | Beneficiaries with diagnosed SUD enrolled in Medicaid for at least one month (30 consecutive days) during the measurement period *(Denominator)* | Claims data; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |
| | ED Utilization for SUD per 1,000 Medicaid Beneficiaries | Total number of ED visits for SUD per 1,000 beneficiaries in the measurement period | CMS SUD Monitoring Metric #23 | The number of ED visits for SUD during the measurement period | Beneficiaries with diagnosed SUD enrolled in Medicaid for at least one month (30 consecutive days) during the measurement period *(Denominator)* | Claims data; Monthly | ITS, with analysis for each subgroup, as listed on page 21<br><br>F-statistic (regression model) for tests of statistical significance |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| **Secondary Driver 9:** Offer TA and training on EBP in clinical care coordination, new residential provider standards, opioid prescribing practices, and first episode of psychosis | **Research Question 8.2:** How does the Demonstration influence preventable utilization of ED or inpatient care through improved access to other continuum of care services? | | | | | | |
| | Beneficiary knowledge of crisis response services | Perceptions of whether Demonstration activities can reduce preventable utilization of ED or inpatient care | NA | Number of beneficiaries who report that they know they can get help when in crisis outside of the ED | Total number of survey participants *(Denominator)* | Survey or Focus Group<br><br>Key reporting intervals (preceding midpoint, interim; and summative reports) | Descriptive Statistics Frequency Distribution with chi-square test of significance comparing reporting periods<br><br>Thematic Analysis |
| **Secondary Driver 11:** Implement the Prescription Drug Monitoring Program (PDMP) fully and continue development of Missouri Care Coordination Insights Project technology | Effect of the PDMP on preventable ED use (Qualitative) | Perceptions of how the Demonstration has reduced preventable utilization of ED or inpatient care | NA | NA | Key informant interviews or focus groups with State staff, providers and MCOs | Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| **Goal 9: Reduced preventable readmissions to acute care and specialty hospitals and residential settings. (SMI/SED-2)** | | | | | | | |
| **Primary Driver 6: Reduced readmissions to acute/specialty/higher levels of care (SMI/SED-2, SUD-5)** | **Research Question 9.1:** Was there a decrease in preventable readmissions to acute care, specialty hospitals, and residential settings for beneficiaries with SMI/SED? | | | | | | |
| | 30-Day All-Cause Unplanned Readmission Following Psychiatric Hospitalization in an Inpatient Psychiatric Facility (IPF) | The rate of unplanned, 30-day, readmission rate for demonstration beneficiaries with a primary discharge diagnosis of a psychiatric disorder or dementia/Alzheimer ’s disease | Inpatient Psychiatric Facility Quality Reporting (IPFQR), NQF #2860 SMI Monitoring Metric #4 | The count of 30-day readmissions. A readmission is defined as any admission, for any reason, to an IPF or a short-stay acute care hospital (including critical access hospitals) that occurs within 30 days after the discharge date from an eligible index admission to an IPF, except those considered planned. The measure uses the CMS 30-day Hospital-Wide Readmission Measure | The count of index hospital admissions to IPFs *(Denominator)* | Claims data; Yearly | Descriptive statistics<br><br>Percent change (no tests for significance) |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | | | | Planned Readmission Algorithm, Version 4.0 | | | |
| **Primary Driver 6 (continued)** | Effect of demonstration on readmissions acute care, specialty hospitals, and residential settings (Qualitative) | Perceptions of whether there was a decrease in preventable readmissions to acute care and specialty hospitals and residential settings | NA | NA | Key informant interviews or Focus groups with State staff, providers, and MCOs | Key program intervals (preceding midpoint, interim, and summative reports) | Thematic Analysis |
| **Goal 10: Fewer readmissions to the same or higher level of care where the readmission is preventable or medically inappropriate. (SUD-5)** | | | | | | | |
| **Primary Driver 6:** Reduced readmissions to acute/specialty/higher levels of care (SMI/SED-2, SUD-5) | **Research Question 10.1:** Was there a decrease in preventable or medically inappropriate readmissions to the same or higher level of care for beneficiaries with SUD? | | | | | | |
| | Readmissions among beneficiaries with SUD | The rate of all-cause readmissions during the measurement period among beneficiaries with SUD | CMS SUD Monitoring Metric #25 | The count of 30-day readmissions: at least one acute readmission for any diagnosis within 30 days of the Index Discharge Date | The count of Index Hospital Stays for beneficiaries with SUD *(Denominator)* | Claims data; Yearly | Descriptive statistics<br><br>Percent change |
| | Demonstration implementation and effects | Perceptions of whether there was a decrease | NA | NA | Key informant interviews or focus groups with State | Key program intervals (preceding | Thematic Analysis |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | | in preventable or medically inappropriate readmissions to the same or higher level of care for beneficiaries with SUD | | | staff, providers, and MCOs | midpoint, interim, and summative reports) | |
| **Goal 11: Reductions in overdose deaths, particularly those due to opioids. (SUD-3)** | | | | | | | |
| **Primary Driver:** All primary drivers | **Research Question 11.1:** Was there a decrease in the rate of overdose deaths? | | | | | | |
| | Overdose deaths | Number and percentage of overdose deaths during the measurement period among Medicaid beneficiaries living in a geographic area covered by the demonstration | CMS SUD Monitoring Metric #26 | Number of SUD overdose deaths during the measurement period among Medicaid beneficiaries | Beneficiaries enrolled in Medicaid for at least one month (30 consecutive days) during the measurement period or the 30 days prior to the beginning of the measurement period *(Denominator)* | Vital records data; Yearly | Descriptive statistics (also looking at the subpopulation for Opioid related deaths, if possible)<br><br>Percent change (no tests for significance) |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| **Goal 12: Improvements in outcomes for members using SUD or SMI/SED services with similar or lower service costs.** | | | | | | | |
| **Research Question 1:** Have increasing trends in total cost of care been slowed for individuals with SUD diagnoses? | | | | | | | |
| | SUD Spending | Total SUD spending | CMS SUD Monitoring Metric #28 | The sum of all Medicaid spending on SUD treatment services | None | Claims/encounters; Yearly | Descriptive time series<br><br>Percent change (no tests for significance) |
| | SUD Spending within IMDs | Total SUD spending within IMDs | CMS SUD Monitoring Metric #29 | The sum of all Medicaid spending on inpatient/ residential treatment for SUD provided within IMDs | None | Claims/encounters; Yearly | Descriptive time series<br><br>Percent change (no tests for significance) |
| | Per Capita SUD Spending | Total SUD spending per Medicaid beneficiary | CMS SUD Monitoring Metric #30 | The sum of all Medicaid spending on SUD treatment services (CMS #28 SUD) | Members with a SUD diagnosis (CMS #4 SUD) | Claims/encounters; Yearly | Descriptive time series<br><br>Percent change (no tests for significance) |
| | Per Capital SUD Spending within IMDs | Total SUD spending in IMDs per Medicaid beneficiary | CMS SUD Monitoring Metric #31 | The sum of all Medicaid spending on inpatient/ residential treatment for SUD provided within IMDs (CMS #29) | Number of members with a claim for inpatient/ residential treatment for SUD in an IMD | Claims/encounters; Yearly | Descriptive time series<br><br>Percent change (no tests for significance) |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | Total Cost per member per month (PMPM) for members with an SUD diagnosis | Total Cost per member per month (PMPM) for members with an SUD diagnosis | CMS SUD and SMI/SED Evaluation Design Guidance, Appendix C https://www.hhs.gov/guidance/sites/default/files/hhs-guidance-documents/smi-sed-sud-cost-appendix-c_196.pdf | The sum of all Medicaid spending (Inpatient, Outpatient, Pharmacy, Long-Term Care, Capitation payments, Administrative Costs, Federal Costs) for members with a SUD diagnosis | Member months per quarter for members with a SUD diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | SUD Cost Drivers — Total SUD Spending PMPM | Total SUD spending per member per month | CMS SUD Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on SUD treatment services (CMS #28) | Member months per quarter for members with a SUD diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | SUD Cost Drivers —IMD SUD Spending PMPM | Total SUD IMD spending per member per month | CMS SUD Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on SUD treatment services within an IMD | Member months per quarter for members with a SUD diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | SUD Cost Drivers —Non-IMD SUD Spending PMPM | Non-IMD spending per | CMS SUD Evaluation Design | The sum of all Medicaid spending on SUD | Member months per quarter for | Claims/encounters | ITS |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | | member per month | Guidance, Appendix C | treatment services not within an IMD | members with a SUD diagnosis | Quarterly | F-statistic (regression model) for tests of statistical significance |
| | SUD Cost Drivers—Non-SUD Spending PMPM | Non-SUD Medicaid spending per member per month | CMS SUD Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on non-SUD treatment for members with a SUD diagnosis | Member months per quarter for members with a SUD diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | Source of treatment cost drivers for members with SUD — Inpatient services PMPM | Inpatient treatment spending per member per month | CMS SUD Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on inpatient treatment for members with a SUD diagnosis | Member months per quarter for members with a SUD diagnosis (CMS #4) | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | Source of treatment cost drivers for members with SUD — ED services PMPM | ED services spending per member per month | CMS SUD Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on emergency department services for members with a SUD diagnosis | Member months per quarter for members with a SUD diagnosis (CMS #4) | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | Source of treatment cost drivers for members with | Non-ED outpatient services spending per | CMS SUD Evaluation Design | The sum of all Medicaid spending on non-ED | Member months per quarter for members with | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | SUD — non-ED Outpatient services PMPM | member per month | Guidance, Appendix C | Outpatient services for members with a SUD diagnosis | a SUD diagnosis (CMS #4) | | model) for tests of statistical significance |
| | Source of treatment cost drivers for members with SUD — Pharmacy PMPM | Pharmacy spending per member per month | CMS SUD Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on Pharmacy for members with a SUD diagnosis | Member months per quarter for members with a SUD diagnosis (CMS #4 SUD) | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | Source of treatment cost drivers for members with SUD — Long-Term Care PMPM | Long-term care spending per member per month | CMS SUD Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on Long-Term Care for members with a SUD diagnosis | Member months per quarter for members with a SUD diagnosis (CMS #4 SUD) | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| **Research Question 2:** Have increasing trends in total cost of care been slowed for individuals with SMI/SED diagnoses? | | | | | | | |
| | SMI/SED Spending within IMDs | Total Medicaid spending for mental health treatment in and IMD | CMS SMI Monitoring Metric #39 | The sum of all Medicaid spending for mental health treatment services in an IMD | None | Claims/encounters; Yearly | Descriptive time series<br><br>Percent change (no tests for significance) |
| | Per capita costs associated with treatment for mental health in and IMD among | Total per capita Medicaid spending for mental health | CMS SMI Monitoring Metric #40 | The sum of all Medicaid spending for mental health treatment | Number of members with a claim for mental health | Claims/encounters; Yearly | Descriptive time series |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | beneficiaries with SMI/SED | for beneficiaries with SMI/SED | | services in an IMD | treatment for SMI/SED | | Percent change (no tests for significance) |
| | SMI/SED Spending — not Inpatient or Residential | Total spending for SMI/SED Medicaid treatment services not inpatient or residential | CMS SMI Monitoring Metric #32 | The sum of all Medicaid spending on SMI/SED treatment services not inpatient or residential | None | Claims/encounters; Yearly | Descriptive time series<br><br>Percent change (no tests for significance) |
| | Per Capita SUD Spending not within Inpatient/ Residential | Per capita Medicaid spending for treatment of SMI/SED within inpatient or residential | CMS SMI Monitoring Metric #34 | Medicaid spending not on inpatient/ residential treatment for SMI/SED | Number of members with a claim for mental health non-inpatient/ residential treatment for SMI/SED | Claims/encounters; Yearly | Descriptive time series<br><br>Percent change (no tests for significance) |
| | SMI/SED Spending within Inpatient/ Residential | Total Medicaid SMI/SED Spending within Inpatient/ Residential | CMS SMI Monitoring Metric #33 | The sum of all Medicaid spending on inpatient/ residential treatment for SMI/SED | None | Claims/encounters; Yearly | Descriptive time series<br><br>Percent change (no tests for significance) |
| | Per Capita SUD Spending within Inpatient/ Residential | Per capita Medicaid SUD spending for inpatient/ | CMS SMI Monitoring Metric #35 | Medicaid spending on inpatient/ residential | Number of members with a claim for mental health inpatient/ residential | Claims/encounters | Descriptive time series |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | | residential treatment | | treatment for SMI/SED | treatment for SMI/SED | | Percent change (no tests for significance) |
| | Total Cost PMPM | Total Medicaid spending per member per month | CMS SUD and SMI/SED Evaluation Design Guidance, Appendix C<br><br>https://www.hhs.gov/guidance/sites/default/files/hhs-guidance-documents/smi-sed-sud-cost-appendix-c_196.pdf | The sum of all Medicaid spending (Inpatient, Outpatient, Pharmacy, Long-Term Care, Capitation payments, Administrative Costs, Federal Costs) for members with a SMI/SED diagnosis | Member months per quarter for members with a SMI/SED diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | SMI/SED Cost Drivers — Total SMI/SED Spending PMPM | Total Medicaid spending PMPM on SMI/SED treatment services | CMS Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on SMI/SED treatment services | Member months per quarter for members with a SMI/SED diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | SMI/SED Cost Drivers —IMD SMI/SED Spending PMPM | Medicaid IMD spending on SMI/SED treatment services | CMS Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on SMI/SED treatment | Member months per quarter for members with a SMI/SED diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | | | | services within an IMD | | | of statistical significance |
| | SMI/SED Cost Drivers — Non-IMD Mental Health Spending PMPM | Total Medicaid spending PMPM on non IMD mental health services | CMS Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on mental health treatment services not within an IMD | Member months per quarter for members with a SMI/SED diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | SMI/SED Cost Drivers — Non-Mental Health Spending PMPM | Total Medicaid spending PMPM on non-mental health services | CMS Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on non-mental health treatment for members with a SMI/SED diagnosis | Member months per quarter for members with a SMI/SED diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | Source of treatment cost drivers for members with SMI/SED — Inpatient services PMPM | Total Medicaid spending PMPM on mental health services for SMI/SED | CMS Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on inpatient treatment for members with a SMI/SED diagnosis | Member months per quarter for members with a SMI/SED diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | Source of treatment cost drivers for members with SMI/SED — ED services PMPM | Total Medicaid spending PMPM on ED mental health services | CMS Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on ED services for members with a SMI/SED diagnosis | Member months per quarter for members with a SMI/SED diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |

| Goal/Driver | Measure Name | Measure Description | Measure Steward | Numerator | Denominator(s), Population, or Source Documents | Data Source & Measure Frequency | Analytic Approach |
|---|---|---|---|---|---|---|---|
| | Source of treatment cost drivers for members with SMI/SED — non-ED Outpatient services PMPM | Total Medicaid spending PMPM on non-ED outpatient services | CMS Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on non-ED Outpatient services for members with a SMI/SED diagnosis | Member months per quarter for members with a SMI/SED diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | Source of treatment cost drivers for members with SMI/SED — Pharmacy PMPM | Total Medicaid pharmacy spending PMPM | CMS Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on Pharmacy for members with a SMI/SED diagnosis | Member months per quarter for members with a SMI/SED diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |
| | Source of treatment cost drivers for members with SMI/SED — Long-Term Care PMPM | Total Medicaid spending PMPM on long-term care | CMS Evaluation Design Guidance, Appendix C | The sum of all Medicaid spending on Long-Term Care for members with a SMI/SED diagnosis | Member months per quarter for members with a SMI/SED diagnosis | Claims/encounters; Quarterly | ITS<br><br>F-statistic (regression model) for tests of statistical significance |

# Data Sources

Mercer will use various data sources to answer the evaluation questions. Qualitative data collection will include document reviews, as well as key informant interviews and focus groups with State implementation staff, providers, and other key stakeholders. Work is also underway to identify an existing beneficiary survey that questions can be added to in order to elicit further data related to consumer experiences. For purposes of the quantitative analysis, Medicaid claims and other administrative data will be collected in coordination with the State. This design assumes that Mercer will work with the State to summarize claims and administrative data and report on certain metrics required in the monitoring protocol.

## Qualitative Data

Qualitative data collection will help to:

- Describe the systems changes made as part of the Demonstration, including the challenges, successes, and the strategies to overcome barriers.
- Assess the extent to which these changes help the State achieve the Demonstration goals.
- Understand provider and beneficiary awareness of and experiences with the changes.

Mercer will review relevant State documents to understand system changes that occur under the Demonstration and overlapping initiatives that may complicate or support Demonstration activities. Examples of key documents to review include:

- Demonstration Implementation and Health Information Technology Plans.
- Demonstration Monitoring Reports.
- State policies (e.g., rules, legislation, contract language).
- Provider guidance documents (e.g., bulletins).
- Assessment and placement tools.
- Stakeholder engagement and workgroup meeting materials.
- Materials about co-occurring initiatives (e.g., grant narratives, reports).

At key program intervals (e.g., prior to interim evaluation report, summative report, etc.), Mercer will conduct individual and focus group interviews with representatives from State implementation staff, providers, MCOs, as well as community stakeholders recruited from existing consumer advisory/advocacy groups. The primary goals of the key informant/focus group interviews are to clarify information available via the document reviews as needed, to identify the challenges and facilitators to implementing Demonstration drivers, and to identify further potential outcomes that cannot be measured with existing metrics. Using focus groups can help to efficiently increase the number of perspectives included in the qualitative data. This also allows the State and Mercer to take advantage of existing group forums and meetings which, in Mercer's experience, increases participation and allows observation of the level of consensus or discord on specific qualitative measures.

Additionally, Mercer is working with the State to identify existing consumer surveys to which 1115 evaluation-specific questions could be added to capture consumer perspectives. If this is not possible, Mercer will conduct focus groups with groups of consumers and existing consumer advocacy groups to add these perspectives.

### Quantitative Data

In terms of quantitative data, Mercer will work with the State to summarize claims data related to the Medicaid FFS and managed care programs. The data will come from the State's Medicaid Management Information System. Administrative data needed for the evaluation will be extracted from other State data sources. To determine if data to be used for the evaluation are complete and accurate, Mercer will review the quality and completeness of data sources (including, but not limited to claims data for pharmacy, professional, and facility services, as well as eligibility data). Examples of analyses that will be performed to determine reliability and accuracy of claims data include, but are not limited to: frequency and volume reports, valid value assessment, missing value review, date and numerical distribution review, checks for duplicates, and reasonability and benchmarking checks against other relevant data sources. As often as possible, measures in the evaluation have been selected from nationally recognized measure stewards for which there are strict data collection processes and audited results.

Information from additional data sources, such as Vital Records data on overdose deaths, will be assessed for completeness and accuracy based on State's knowledge and to the best of Mercer's ability. Regarding overdose death data, the State is currently exploring options for obtaining this data from the State Department of Health and Senior Services. Assuming the State can obtain the level of detail needed to link Medicaid data to overdose deaths, the evaluation will make this link using Medicaid identification numbers (or, if needed, via other potential data fields such as name and date of birth). If Medicaid member deaths cannot be linked to Vital Records data, then the State will utilize statewide overdose death data for reporting and will note this in the evaluation and monitoring protocol.

It is important to note that this Demonstration's monitoring protocol has not yet been submitted to CMS based on CMS's request for the State to wait until the new CMS template is released. As a result, specific data sources and features of this design could change if CMS makes substantive changes to the monitoring protocol template and requirements.

## Analytic Methods

Depending on the type of data for the measure and the use of the measure in the evaluation design (e.g., process measure versus outcome measures), multiple analytic techniques will be used.

Narrative thematic analsyis will be used to present data related to qualitative evaluation measures gathered from document reviews and key informant interviews, as discussed previously. Qualitative analysis software (R Qualitative or ATLAS) will be used to organize documentation, including key informant interview transcripts. Analysis will identify common themes across interviews and documents. In some cases, checklists may be used to analyze documentation for compliance with standards. These data will be summarized to describe the activities undertaken for each project goal, including highlighting specific successes and challenges.

Descriptive statistics, including frequency distributions and time series (presentation of rates over time), will be used for quantitative process measures to describe the output of specific Demonstration activities. These analysis techniques will also be used for some short-term outcome measures in cases in which the role of the measure is to describe changes in the population, but not to show specific effects of the Demonstration.

An ITS design will be used to describe the effects of waiver implementation. ITS models are commonly used in situations in which a contemporary comparison group is not available. An ITS design is the most rigorous design possible due to the lack of an available comparison group. Because the implementation effects all Medicaid members, the only possible in-State comparison group would be privately insured individuals, which would not be comparable to the Medicaid population. Additionally, the State has no mechanism for gathering claims data for those individuals in order to make those comparisons.

Out of state comparisons cannot be made with states who are not Demonstration states, as they are unlikely to be calculating/reporting the same metrics to provide them for comparison. The amount of data processing needed to calculate those metrics (assuming states would be willing to share raw claims data) would be cost prohibitive.

Specific outcome measure(s) will be collected for multiple time periods both before and after the start of the intervention. Segmented regression analysis will be used to statistically measure the changes in level and slope in the post-intervention period (after the Demonstration was initiated) compared to the pre-intervention period (before the Demonstration). The ITS design will be dependent on the availability of historical data for specific outcome measures (see Section D: Methodology Limitation section for more information). The ITS design uses historical data to forecast the *counterfactual* of the evaluation (i.e., what would happen if the Demonstration did not occur). Mercer proposes using basic time series linear modeling to forecast these *counterfactual* rates for three years following the Demonstration implementation. The more historical data available, the better these predictions will be.

In cases in which both ITS and descriptive time series analyses are used, the t-test statistic will be reviewed to understand the significance of changes across evaluation time periods: pre-Demonstration and the Demonstration period.

For this Demonstration, establishing the counterfactual is somewhat nuanced. The Driver Diagram and evaluation hypotheses assume that Demonstration activities will have overall positive impacts on outcome measures. The figure below illustrates an ITS design that uses basic regression forecasting to establish the counterfactual — this is represented by the grey line in the graphic. The counterfactual is based on historical data (the blue line). It uses time series averaging (trend smoothing) and linear regression to create a predicted trend line (shown below as the grey line). The orange line in the graph is the (sample) actual observed data. Segmented regression analysis will be used to statistically measure the changes in level and slope in the post-intervention period compared to the predicted trend (see *effect* in the graph below).

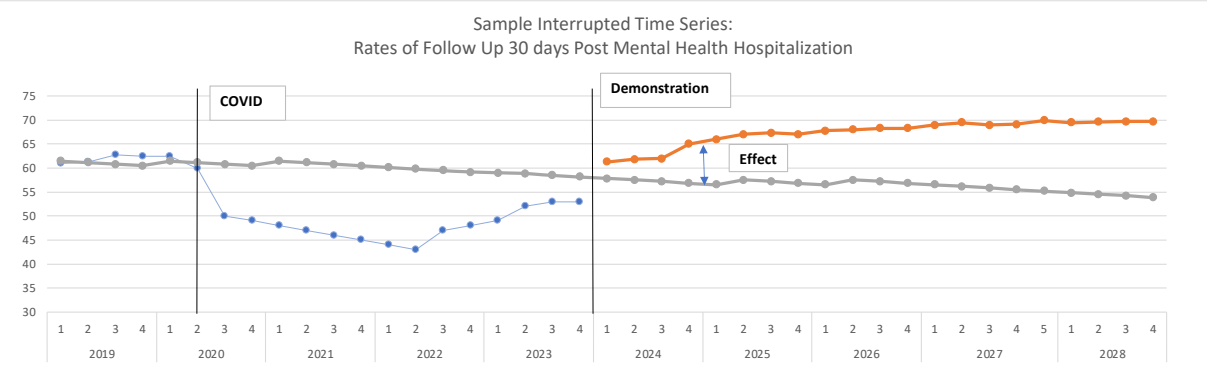
The ITS regression equation is:

$$Y_t = \beta_0 + \beta_1 T + \beta_2 X_t + \beta_3 T X_t$$

Where $\beta_0$ represents the baseline observation, $\beta_1$ is the change in the measure associated with a time unit (quarter or year) increase (representing the underlying pre-intervention trend), $\beta_2$ is the level change following the intervention, and $\beta_3$ is the slope change following the intervention (using the interaction between time and intervention: $TX_t$ ).[7]

This can be represented graphically as follows:

**Figure 5: (Sample Data Only) Rates of Follow-Up Post Mental Health Hospitalization**




The evaluation will include a sensitivity analysis that considers the effects of the COVID-19 public health emergency, particularly on the pre-Demonstration period data. A more general sensitivity analysis will also be conducted to test robustness of the model. Sensitivity tests will be included for the ITS to assess the model's robustness when time periods are varied. The length of the pre-Demonstration period will be varied to determine whether shorter or longer periods change the estimated impacts of the Demonstration. Additionally, the definition of the beginning of the first Demonstration period will be varied to account for the possibility that Demonstration effects may have lagged behind the implementation start date.

[7] Bernal JL, Cummins S, Gasparrini A. Interrupted time series regression for the evaluation of public health interventions: a tutorial (2017 Feb.). International Journal of Epidemiology 46(1): 348-355.

## Section D.

# Methodological Limitations

There are two primary limitations to the evaluation methodology presented here. The first involves issues of data quality and data sources that either are not sufficient to conduct the analysis proposed here (e.g., not enough historical data for needed prior time periods) and/or data containing errors. The second limitation is related to the design itself. Because this evaluation plan relies heavily on descriptive time series analysis and qualitative data, it can easily demonstrate what happened after the Demonstration was implemented, but it will be difficult to isolate why the changes occurred. In other words, it will be difficult to directly attribute changes after waiver implementation to the activities undertaken as part of the waiver. These limitations are discussed in greater detail within this section.

## Potential Data Issues

There could be issues with data completeness, consistency, and accuracy if the pre-Demonstration period for the ITS analysis is extended prior to 2022. One of the main reasons for this is that Missouri had a large-scale transition beginning in 2018 with the initiation of CCBHC services, as well as a large influx of Medicaid expansion members in late 2021. Therefore, Mercer will instead begin the look back period in 2022 and rely on the ITS sensitivity analysis to help mitigate any issues remaining in the data during 2022–2023; qualitative data will be used to inform interpretations.

The COVID-19 pandemic may impact the historical data being used in the ITS analyses. This could present a challenge in the evaluation's ability to create an accurate prediction of the counterfactual, or what would have happened if the Demonstration had not been implemented. The 2022–2023 historical data will likely reflect some impact of the pandemic as emergency orders were lifted. The mitigation strategies that will be used to address this challenge include following an ITS design, inclusion of covariates that capture COVID-19 severity in regression models, and a sensitivity analysis that varies the historical time parameters to determine how the regression model changes when different time periods are used.

According to the literature on ITS analysis, estimating the level and slope parameters requires a minimum of eight observations before and after implementation in order to have sufficient power to estimate the regression coefficients. Mercer will work closely with the State and its data teams to gather as many data points as possible and discuss limitations within the evaluation findings if enough points cannot be collected.

Also, vital records data on opioid overdose deaths may not be available at a member level with enough detail to match with Medicaid data; the reporting lag for this data is usually also longer than other secondary data sources. These limitations may require reporting this measure at a statewide level and may impact the reporting timing of the measure.

Qualitative data, while useful in confirming quantitative data and providing rich detail, can be compromised by individual biases or perceptions. Key informant interviews, for example, represent a needed perspective around context for Demonstration activities and outcomes. However, individuals may be limited in their insight or understanding of specific programmatic components, meaning the data reflects perceptions rather than objective program realities. The

evaluation will work to address these limitations by collecting data from a variety of different perspectives to help validate individuals' reports. In addition, standardized data collection protocols will be used in interviews, and interviewers will be trained to avoid *leading* the interviewee or inappropriately biasing the interview. It will also utilize multiple *coders* to analyze data and will create a structured analysis framework based on research questions that analysts will use to organize the data and to check interpretations across analysts. Finally, results will be reviewed with stakeholders to confirm findings.

Another potential threat to validity in this design is the potential incompleteness of data both before and after Demonstration implementation for a specific measure. Evaluators will work closely with the State and its data teams to ensure that complete data is available for each measure and discuss any specific data concerns or considerations on a measure-by-measure basis.

## Potential Design Issues

A threat to the validity of this evaluation is external (history such as the pandemic). Because a comparison group cannot not be identified (e.g., a group of Medicaid consumers eligible for the Demonstration interventions, but who will not receive them and/or for whom data will not be collected), it will be difficult to attribute causality. It will be unclear whether the changes observed in outcomes are due entirely to the waiver interventions, rather than some external, outside cause (including other program and policy changes described earlier). However, the ITS design controls for this threat, to some degree, by linking what would have likely happened (e.g., forecasting the trajectory of counts and rates over time) without any program changes and comparing this forecast to actual changes over time. To strengthen this design as much as possible, as many data points will be collected as possible across multiple years preceding waiver changes. This will allow for adjustment of seasonal or other, cyclical variations in the data. Additionally, the design will examine multiple change points, identifying key areas of major program and policy adjustments, so that with each major milestone accomplishment, corresponding changes to metrics can be observed.

The ITS analysis will also include a sensitivity analysis to determine the degree to which specific ITS assumptions impact the analysis. Specifically, the degree to which the assumption that trends in time are linear versus non-linear will be addressed. Additionally, this model assumes that changes will occur directly after the intervention. However, it is possible that for some outcomes, there will be a lag between the start of the waiver and observed outcomes.

Mercer will also attempt to limit this threat to validity by triangulating the data. Data trends across multiple time periods will be compared to trends happening at other points in time (other large policy or program shifts that might influence the slope of the trend in addition to the Demonstration). Also, key informant interviews will be used to inform the quantitative findings and explain the degree to which individuals are seeing Demonstration impacts. Where available, comparisons will be made to national and other state data to determine whether Missouri is performing in a similar fashion to other Demonstration states, non-Demonstration states, or national benchmarks overall.

It should also be noted that the ITS cannot be used to make inferences about any one individual's outcomes as a result of the waiver. Conclusions can be drawn about changes to population rates, in aggregate, but cannot speak to the likelihood of any individual Medicaid member having positive outcomes as a result of the Demonstration.

# Section E.
# Attachments

## Independent Evaluator

As part of the STCs set forth by CMS, the State is required to arrange with an independent party to conduct an evaluation of the Demonstration to ensure that the necessary data is collected at the level of detail needed to research the approved hypotheses. Through a request for proposal process, the State initiated a contract with Mercer for Medicaid consulting services and technical assistance. Under this contract, the State requested Mercer's assistance in developing the evaluation design; the State has also requested that Mercer conduct the waiver evaluation. Mercer will develop the Evaluation Design, conduct the analyses specified within this Evaluation Design, evaluate the results for conclusions, and draft the Interim and Summative Evaluation Reports.

Mercer has over 25 years of experience assisting state governments with the design, implementation, and evaluation of publicly sponsored health care programs. Across those years, Mercer has worked with over 35 different states. In addition, Mercer is currently assisting multiple states in performing independent evaluations of their 1115 Demonstration waivers. Beyond our 1115 expertise, Mercer also has unique knowledge of the State of Missouri based on our 25+ years working with State staff on a variety of Medicaid initiatives. Several projects have included the collection and analysis of eligibility, enrollment, encounter and financial data and production of year-over-year comparisons. Given Mercer's previous work with the State, our extensive experience with publicly sponsored health care, and our specialized knowledge in independent evaluation work performed for other state 1115 waivers, the Mercer team is well-equipped to work effectively as the State's external evaluator for the SUD and SMI/SED Demonstration.

## Conflict of Interest Statement

The State has taken steps to ensure that Mercer is free of any conflict of interest and will remain free from any such conflicts during the contract term. The State considers it a conflict if Mercer currently 1) provides services to MCOs or health care providers doing business in Missouri under the MO HealthNet program; or 2) provides direct services to individuals in State-administered programs included within the scope of the technical assistance contract. If the State discovers a conflict during the contract term, the State may terminate the contract pursuant to the provisions in the contract.

One of the byproducts of being a nationally operated group dedicated to the public sector is the ability to identify and avoid potential conflicts of interest with our firm's multitude of clients. To accomplish this, market space lines have been established by Mercer (US), Inc. Mercer Government Human Services Consulting (GHSC) was established within Mercer's Health & Benefits LLC practice to consult with singular, full-time focus on government entities and specifically avoid any conflicts of interest across our various consulting practices. Mercer GHSC exercises great caution to protect our reputation as an independent, trusted advisor to our clients, avoiding any conflicts of interest by working almost exclusively on the state side in publicly financed health care programs. Mercer GHSC does not have any conflicts of interest,

such as providing services to any MCOs or health care providers doing business in Missouri under the MO HealthNet program or providing direct services to individual recipients enrolled in State-administered programs.

Before signing a contract to work in the Medicaid market, either at the state-level or otherwise, Mercer businesses are required to discuss the potential work with Mercer's GHSC group. If there is a potential conflict (i.e., work for a Medicaid health plan or provider), the engagement is not accepted. If there is potential for a perceived conflict of interest, Mercer's GHSC group will ask the state client if they approve of this engagement. If the client approves, Mercer will develop appropriate safeguards such as staffing projects with separate teams, restricting access to files, and establishing process firewalls to avoid the perception of any conflict of interest. If the client does not approve, the engagement will not be accepted.

Given that Mercer is acting as both a technical assistance provider and independent evaluator for this project, the State and Mercer have implemented measures to ensure there are no perceived conflicts of interest. The Mercer evaluation team (subcontractor TriWest Group) will be functionally and physically separate from the technical assistance team, and the contract will not include any performance incentives that would contribute to a perception of conflicted interests between technical assistance services and the independence of the evaluation process. As an additional firewall, the evaluation analyses will be conducted by a Mercer subcontractor using data that has been reviewed and accepted by CMS (through monitoring protocol submissions) — the subcontractor will be focused on the evaluation analyses and will not be part of the technical assistance team.

Mercer's subcontractor has assured Mercer they have no conflicts and that they will take steps required by Mercer or the State to mitigate any perceived conflict of interest. To the extent that a conflict mitigation plan needs to be implemented with our subcontractor, Mercer will do so consistent with policies and processes outlined here.

Mercer, through our contract with the State, has assured that it presently has no interest and will not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of its services. Mercer has further assured that in the performance of this contract, it will not knowingly employ any person having such interest. Mercer additionally certifies that no member of Mercer's Board or any of its officers or directors has such an adverse interest.

**Table 3: Evaluation Budget Estimate**

| Key Tasks | DY 1 (2024) | DY2 (2025) | DY3 (2026) | DY4 (2027) | DY5 (2028) | Final Evaluation (2029–2030) | Total Evaluation Cost |
|---|---|---|---|---|---|---|---|
| Evaluation Design | $110,000 | | | | | | |
| Data Collection and Analysis | $90,000 | $200,000 | $150,000 | $150,000 | $150,000 | $150,000 | |
| Mid-Point Assessment | $40,000 | $60,000 | | | | | |
| Interim Evaluation Report | | | | $20,000 | $130,000 | | |
| Summative Evaluation Report | | | | | $30,000 | $120,000 | |
| Project Management | $40,000 | $50,000 | $30,000 | $30,000 | $50,000 | $50,000 | |
| **Total Estimated Budget** | **$280,000** | **$310,000** | **$170,000** | **$190,000** | **$360,000** | **$330,000** | **$1,650,000** |

# Timeline and Major Milestones

The table below highlights key evaluation milestones and activities for the waiver and the dates for completion.

**Table 4: Evaluation Timeline**

| Deliverable | STC Reference | Date |
|---|---|---|
| Submit draft evaluation design plan to CMS | 11.3 | June 3, 2024 |
| Update evaluation design to incorporate feedback from CMS and send final evaluation design plan to CMS | 11.5 | 60 days after State receives comments from CMS |
| Submit mid-point assessment report to CMS | 8.7 | December 31, 2026 |
| Update mid-point assessment report to incorporate feedback from CMS and send final mid-point assessment report to CMS | 8.7 | 60 days after State receives comments from CMS |
| Submit draft interim evaluation report to CMS | 11.7.3 | December 31, 2027 (or with renewal application) |
| Update interim evaluation report to incorporate feedback from CMS and send final interim evaluation report to CMS | 11.7.5 | 60 days after State receives comments from CMS |
| Submit draft summative evaluation report to CMS | 11.8 | June 30, 2030 |
| Update summative evaluation report to incorporate feedback from CMS and send final summative evaluation report to CMS | 11.8 | 60 days after State receives comments from CMS |

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