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

August 5, 2025

Michelle Probert
Director, Office of MaineCare Services
Maine Department of Health and Human Services
109 Capitol Street
Augusta, Maine 04333-0011

Dear Director Probert:

The Centers for Medicare & Medicaid Services (CMS) completed its review of the Interim Evaluation Report, which is required by the Special Terms and Conditions (STCs), specifically STC #49 "Interim Evaluation Report" of Maine's section 1115 demonstration, "Maine Substance Use Disorder Care Initiative" (Project No: 11-W-00338/1), effective from January 1, 2021 through December 31, 2025. This Interim Evaluation Report covers the period from January 2021 through December 2023. CMS determined that the Evaluation Report, submitted on December 17, 2025 and revised on July 1, 2025, is in alignment with the CMS-approved Evaluation Design and the requirements set forth in the STCs, and therefore, approves the state's Interim Evaluation Report.

The findings from the report were mixed, showing some clear successes and other areas where there is still room for improvement. Interrupted Time Series (ITS) analysis was used to identify changes in trends following the demonstration's implementation. In terms of successes, there were statistically significant decreases in the rate of emergency department utilization for SUD, as well as in the rate of non-emergent emergency department utilization for SUD. There was also a statistically significant decrease in the rate of preventable inpatient stays for SUD. Other areas show more mixed results; for example, while there was a statistically significant increase in the rate of utilization of any SUD service, the evaluation found a statistically significant decrease in rate of outpatient service use. Despite a 3% overall decline in total SUD treatment providers, the demonstration achieved a 10% increase in MAT providers, an expansion which occurred during a challenging period marked by the COVID-19 pandemic. Overdose deaths significantly decreased between 2021 and 2023 but peaked in 2022. CMS looks forward to seeing how metric trends continue to progress in future evaluation reports and discussing opportunities for programmatic improvements in response to those findings.

In accordance with STC #53, the approved Interim Evaluation Report may now be posted to the state's Medicaid website within 30 days. CMS will also post the Interim Evaluation Report on Medicaid.gov.

We look forward to our continued partnership on the Maine Substance Use Disorder Care Initiative 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: 2025.08.05 11:20:17 -04'00'

Danielle Daly
Director
Division of Demonstration Monitoring and Evaluation

cc: Gilson DaSilva, State Monitoring Lead, CMS Medicaid and CHIP Operations Group

PHPG

THE PACIFIC HEALTH POLICY GROUP

MaineCare Substance Use Disorder Care Initiative Section 1115 Medicaid Demonstration

(Project # 11-W-00381)

Final Interim Evaluation Report

(January 1, 2021 - December 31, 2023)

Draft Submitted to OMS December 3, 2024;
Final Revised June 27, 2025

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ACROYNMS AND ABREVITATIONS

Acronym	Description
ABD	Aged, Blind, Disabled
ANOVA	Analysis of Variance
AOD	Alcohol and Other Drug
ASAM	American Society of Addiction Medicine
BN	Budget Neutrality
CEM	Coarsened Exact Matching
CMS	Centers for Medicare and Medicaid Services
CY	Calendar Year
DCG	Diagnostic Cost Group
DHHS	Maine Department of Health and Human Services
DY	Demonstration Year
ED	Emergency Department
FFS	Fee-for-Service
FPL	Federal Poverty Level
HCPCS	Healthcare Common Procedure Coding System
HRSN	Health Related Social Needs
HEDIS	Healthcare Effectiveness Data and Information Set
IET	Initiation and Engagement in Treatment
IMD	Institution for Mental Diseases
IP	Inpatient
ITS	Interrupted Time Series
LOCUS	Level of Care Utilization System
LTC	Long Term Care
MaineMOM	Maine Maternal Opioid Misuse Model
MAT	Medication Assisted Treatment
MMIS	Medicaid Management Information System
MOUD	Medication for Opioid Use Disorder
NCQA	National Committee for Quality Assurance
NPI	National Provider Identifier
OMS	Office of MaineCare Services
OUD	Opioid Use Disorder
PCP	Primary Care Provider
PDMP	Prescription Drug Monitoring Program
PHE	Public Health Emergency
PHPG	Pacific Health Policy Group
PMPM	Per Member Per Month
SAMHSA	Substance Abuse and Mental Health Services Administration
SDOH	Social Determinants of Health
SFY	State Fiscal Year
STC	Special Terms and Conditions
SUD	Substance Use Disorder

EXECUTIVE SUMMARY

The Maine Substance Use Disorder Care Initiative Section 1115(a) Demonstration was approved on December 22, 2020, effective January 1, 2021 through December 31, 2025. The Demonstration provides the State with authority to provide high-quality, clinically appropriate treatment for beneficiaries with a substance use disorder (SUD) while they are short-term residents in residential and inpatient treatment settings that qualify as Institutions for Mental Diseases (IMDs). The evaluation design was approved by the Centers for Medicare and Medicaid Service (CMS) on February 23, 2022.

Results for CY2017-CY2020 were used to establish the baseline trends for assessing change during the Demonstration period for Interrupted Time Series (ITS) analyses. Evaluation measures studied using the ITS design were examined quarterly. The ITS assumes stationarity in the data and includes the assumption that absent the Demonstration, results would have continued on the same trajectory as the pre-Demonstration quarters. The ITS examined whether there was: (1) no effect; (2) only an immediate effect; (3) only a sustained long-term effect; or (4) both an immediate and a sustained long-term effect. When data did not meet criteria for ITS analysis, a regression or test of proportionality was employed to assess the significance of change from the baseline.

To examine the impact of the Opioid and Behavioral Health Home (HH) and Accountable Community (AC) enhancements expected under the Demonstration, a comparison group strategy using Coarsened Exact Matching (CEM) was employed. Specifically, members receiving services under each initiative were matched to a comparison group of members who were eligible for but not receiving HH or AC services. The interim evaluation examines outcomes for these measures during CY2021 – CY2023.

Due to the quasi-experimental nature of the design and the limitations identified below, the evaluation results cannot be attributed to causal inference. The findings may suggest an association or correlation with various aspects of the Demonstration. However, suggesting causation or analyses of counterfactuals may not be appropriate when describing results. Data and design limitations include:

- Lack of True Experimental Control Groups: However, as described above, the evaluation employs a comparison strategy to study some delivery system enhancements. In addition, the use of an ITS design to examine trends over time helps to mitigate this limitation.

- Use of Administrative Data: The evaluation may be limited by its reliance on payment files, claims and diagnostic codes to identify members with SUD. This type of limitation is inherent in claims-based analysis, however the potential for missing data is random. There is no reason to believe that any given Demonstration group is more or less likely to have missing data.

- Medicaid Enrollment/Disenrollment: Medicaid enrollment changes on an annual basis related to eligibility. The use of an ITS design to examine trends over time helps mitigate this phenomenon.

- Pre-Existing IMD services: SUD IMD treatment facilities are statewide providers that had been delivering care to Medicaid enrollees prior to the implementation of the SUD Demonstration. The Demonstration allows the State to continue services that had been in place, albeit with a new funding partner and additional capacity. Independent variables expected to result in

change throughout the Demonstration are based on delivery system enhancements and quality improvement strategies and not new IMD expenditure authorities.

The interim evaluation findings should be interpreted with caution. The Demonstration start date coincided with the ongoing novel coronavirus Public Health Emergency (PHE) in CY 2021. CY 2023 results are considered preliminary, pending six-month claims run out for the final quarter. Results will be updated in the summative evaluation report.

A summary of findings for each evaluation question is presented below. For measures studied using the aggregate ITS approach, hypotheses were deemed supported when the sustained effect of the Demonstration showed no statistically significant change (performance was maintained) regardless of direction or showed a statistically significant improvement in trend. For measures studied using an alternative approach (e.g., logistic regression and two sample tests), hypotheses were deemed supported when preliminary 2023 results showed no change (performance was maintained across years) or showed a statistically significant improvement in performance.

Evaluation Question One - Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?

Four hypotheses were examined relating to utilization of treatment services and engagement in treatment.

1. The Demonstration will maintain or increase utilization of SUD treatment services.
2. The Demonstration will maintain or increase SUD provider availability.
3. The Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug dependence.
4. The Demonstration will maintain or increase initiation and engagement in treatment.

These hypotheses theorized that the Demonstration would maintain or improve performance. Of the twelve measures studied, six maintained performance, two improved and four declined, providing support for most of the hypotheses studied.

The percentage of Medicaid members engaging in any type of SUD treatment has been increasing over time. The Demonstration period was associated with a statistically significant decline in outpatient treatment, although not statistically significant there was an increase in medication assisted treatment (MAT). Utilization of intensive outpatient/partial hospitalization showed little change. While not statistically significant, utilization of inpatient/residential and withdrawal management/detox services showed an increase in trend.

The total number of SUD treatment providers billing Medicaid declined by approximately three percent. However, providers billing MAT increased by nearly 10 percent.

There were no statistically significant changes in the percentage of members initiating and engaging in SUD treatment. Follow-up after members visited the ED for SUD-related diagnosis declined during the Demonstration period. The evaluator is working with OMS to determine if the measure is impacted by a potential data gap resulting from the increased use of Opioid Health Home services.

Evaluation Questions Two - Does the Demonstration maintain or increase adherence to and retention in treatment for alcohol or other drug use?

This question examined whether members receiving Opioid Health Home (OHH) services showed stronger performance than a comparison group for continuity of pharmacotherapy (i.e., having 180 days of continuous medication assisted treatment for Opioid Use Disorder (OUD)). In each year studied members engaged with an OHH had higher scores than the comparison group.

Evaluation Question Three - Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?

Three hypotheses were examined relating to opioid prescribing patterns and overdose deaths.

1. The Demonstration will contain or reduce the use of opioids at a high dosage.
2. The Demonstration will contain or reduce the use of opioids concurrent with benzodiazepines for AC attributed members.
3. The Demonstration will contain or reduce the rate of overdose deaths due to opioids in the Medicaid population.

Three of the five measures studied under evaluation question three maintained or improved performance during the Demonstration.

The percentage of members receiving opioids at a high dosage remained stable throughout the baseline and Demonstration period. In CY2020-21 performance was 22 percent which fell slightly to 21 percent in CY2022-23 (low rates are preferred). Members receiving AC services had lower rates than a comparison group on a measure of concurrent use of opioids and benzodiazepines (low rates are preferred). The rate of opioid-related overdose deaths in the Medicaid population began to decline in CY2023.

The number of providers using the Prescription Monitoring Program (PMP) declined due the systemic removal of prescribers in 2023 who had been inactive since 2021. Despite the lower number of enrolled providers, the number of inquiries has increased year over year.

Evaluation Question Four - Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with a SUD?

Two hypotheses were examined relative to ED and inpatient use.

1. The Demonstration will contain or reduce the rate of ED visits for individuals with a SUD.
2. The Demonstration will contain or reduce inpatient admissions.

The total number of ED visits for SUD showed a statistically significant decline during the Demonstration as did inpatient stays. Non-emergent ED visits and inpatient discharges related to chronic conditions (e.g., asthma, chronic obstructive pulmonary disease, diabetes, heart failure and hypertension) also declined, although the change was not statistically significant. All four of the measures studied maintained or improved performance.

Evaluation Question Five - Does the Demonstration contain or reduce readmissions to the same or higher levels of care?

Two measures were examined for this question: unplanned readmissions for any cause and readmissions for SUD treatment to the same or higher level of care. Members receiving Health Home services (OHH and BHH) showed the same or fewer readmissions for SUD treatment than the comparison group. However, the differences were not statistically significant. The trend in readmissions for any cause did not change during the Demonstration period. Both measures studied maintained performance levels.

Evaluation Question Six - Does the Demonstration maintain or improve access to care for physical health conditions?

In each year studied members who received Health Home services (OHH and BHH) had more ambulatory and preventive care visits than the comparison group. The differences also were statistically significant in each year.

Findings Summary

The evaluation found that the Demonstration maintained or improved performance across each of the areas (evaluation questions) studied. As described above, twenty of the 25 analyzed measures (76 percent) supported their hypotheses. Twelve of the twenty maintained pre-Demonstration trends, while eight showed improvements. Maintaining pre-Demonstration levels of performance related to SUD treatment during the pandemic should be considered a success under the Demonstration.

Statistically significant declines in performance were documented for five measures, four of which were likely impacted by provider availability during the PHE and one of which was caused by issues related to data availability. The inclusion of final 2023 data, along with the remaining Demonstration years (and subsequent renewal period) will offer valuable information for understanding utilization and engagement, absent the effect of the PHE. A summary of findings by evaluation question and hypothesis is provided below.

Summary of Interim Findings			
Evaluation Question and Hypotheses	**Number of Measures**		
	Maintained	**Improved**	**Declined**
Evaluation Question 1. Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?			
Hypothesis 1. The Demonstration will maintain or increase utilization of SUD treatment services.	4	1	1
Hypothesis 2. The Demonstration will maintain or increase SUD provider availability.		1	1
Hypothesis 3. The Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug dependence.			2
Hypothesis 4. The Demonstration will maintain or increase initiation and engagement in treatment.	2		
Evaluation Question 2. Does the Demonstration maintain or increase adherence to and retention in treatment for alcohol or other drug use?			
Hypothesis 1. The Demonstration will maintain or increase continuity of pharmacotherapy for OUD for OHH enrollees.		1	
Evaluation Question 3. Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?			

Summary of Interim Findings			
Evaluation Question and Hypotheses	Number of Measures		
	Maintained	Improved	Declined
Hypothesis 1. The Demonstration will contain or reduce the use of opioids at a high dosage.	1		
Hypothesis 2. The Demonstration will contain or reduce the use of opioids concurrent with benzodiazepines for AC attributed members.	1		
Hypothesis 3. The Demonstration will contain or reduce the rate of overdose deaths due to opioids in the Medicaid population.		2	1*
Evaluation Question 4. Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with a SUD?			
Hypothesis 1. The Demonstration will contain or reduce the rate of ED visits for individuals with a SUD.	1	1	
Hypothesis 2. The Demonstration will contain or reduce inpatient admissions.	1	1	
Evaluation Question 5. Does the Demonstration contain or reduce readmissions to the same or higher levels of care?			
Hypothesis 1. The Demonstration will contain or reduce readmissions to the same or higher levels of care	2		
Evaluation Question 6. Does the Demonstration maintain or improve access to care for physical health conditions?			
Hypothesis 1. The Demonstration will maintain or increase access to care for physical health conditions for Health Home enrollees (OHH and BHH).		1	

*the decline in PMP users was due to a purge of inactive users from the system

Exploratory Expenditure Analysis

Total expenditures were examined for physical and SUD-related categories of services with breakouts for SUD-IMD and other residential treatment services. Cost drivers including ED and inpatient use, pharmacy, outpatient and LTC also were assessed.

Immediately following the start of the Demonstration there was a decline in the total cost of care and SUD-related expenditures. The sustained effect of the Demonstration period showed a statistically significant increase in all categories, apart from physical health care. A generalized linear model was used to examine the impact of member characteristics on the data (i.e., age, gender, aid category, and geography). The generalized linear model showed that older members and members residing in rural counties were associated with fewer expenditures, while women and expansion group members were associated with more SUD-related expenditures.

There were no statistically significant sustained changes in expenditures for inpatient, emergency department or pharmacy services. Expenditures for outpatient care (non-ED) and long term care did show increases in expenditures during the Demonstration period.

GENERAL BACKGROUND INFORMATION

The Maine Substance Use Disorder Care Initiative Section 1115(a) Demonstration was approved on December 22, 2020, effective January 1, 2021 through December 31, 2025. The Demonstration provides the State with authority to provide high-quality, clinically appropriate treatment for beneficiaries with a substance use disorder (SUD) while they are short-term residents in residential and inpatient treatment settings that qualify as Institutions for Mental Diseases (IMDs). The evaluation design was approved by the Centers for Medicare and Medicaid Services (CMS) on February 23, 2022.

The Maine Department of Health and Human Services (DHHS) is the umbrella agency responsible for oversight of Maine's public health, behavioral health, Medicaid, and other human service programs. The Office of MaineCare Services (OMS) within the DHHS is the Single State Agency that administers Maine's Medicaid program, known as MaineCare. Medicaid programs supporting treatment and recovery services for persons with a SUD are jointly operated by the Office of Behavioral Health (OBH), Office of Child and Family Services [both within DHHS] and OMS.

MaineCare utilizes American Society of Addiction Medicine (ASAM) criteria and other mental health/SUD screening and assessment tools to support treatment and level of care decisions. MaineCare covers all ASAM levels of care, including Medication Assisted Treatment (MAT) and recovery supports. In addition, Emergency Departments (EDs) offer rapid induction of MAT. The State also has worked aggressively to control overprescribing of opioids through its Prescription Monitoring Program (PMP) by revising prescribing guidelines, promoting alternative treatments to pain management, and offering provider education.

Maine offers a comprehensive SUD benefits package through the Medicaid State Plan. In April 2018, DHHS received CMS approval to extend comprehensive SUD benefits to the expansion group members in the Alternative Benefit Plan.

Over the last ten years, DHHS has focused on delivery system reforms to support primary care, population health, and chronic disease management. This work is designed to move MaineCare away from a payment system that rewards volume to one focused on high-quality care, accountability, and appropriate use of health care. The MaineCare Value-Based Purchasing (VBP) strategy includes the Accountable Communities and Health Home Programs. Three Health Home models have been developed: Primary Care, Opioid Use Treatment and Behavioral Health.

DHHS engages in continuous quality improvement to assess provider availability, quality of care, and potential gaps in the SUD system. DHHS promotes integrated and holistic approaches to care by supporting the Health Home programs and Accountable Communities that address comorbid physical and behavioral health conditions, as well as psychosocial needs of the individual.

At the time of its request to CMS for Demonstration approval, Maine, like many other states across the nation, was experiencing growing challenges with SUD. Under the Demonstration, the State has the authority to receive federal financial participation (FFP) for services as described in the Maine Medicaid State Plan when provided to beneficiaries residing in IMDs for short-term stays primarily to receive SUD treatment, including but not limited to:

- Inpatient Treatment;

- Residential Treatment;
- Medically Monitored Withdrawal Management; and
- Medication-Assisted Treatment.

The provision of SUD treatment in IMD settings allows the State to fill gaps in the current system and supports access to evidence-based services at various levels of intensity across a continuum of care, based on individual needs and goals. DHHS expects additional SUD residential treatment facilities to offer services and existing providers to expand their current service capacity.

During the first year of the Demonstration, the State and CMS finalized the SUD Implementation Plan; CMS approval was obtained on July 26, 2021. The State began receiving FFP for IMD services provided in DY2.

A. DEMONSTRATION GOALS

DHHS is committed to maintaining support for community-based SUD treatment options and sought the authority approved under this Demonstration to better ensure that appropriate treatment options are accessible across the continuum. Maine's goals align with the CMS goals for SUD Demonstrations nationally and include:

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

B. POPULATIONS IMPACTED BY THE DEMONSTRATION

Under the Demonstration, there is no change to Medicaid eligibility; standards and methodologies for eligibility remain as set forth under the State Plan. All Medicaid members who have an SUD are eligible for participation in the Demonstration, based on clinical need.

EVALUATION QUESTIONS AND HYPOTHESES

MaineCare offers access to a broad range of SUD and Opioid Use Disorder (OUD) services across the continuum of care. While the Demonstration authorized Medicaid coverage of SUD residential treatment provided in IMD settings, no new service categories were proposed. However, DHHS has engaged in a variety of activities that are designed to improve access, increase engagement and retention in treatment, promote the integration of physical and behavioral health care, and improve opioid prescribing patterns across the delivery system.

A. LOGIC MODEL AND QUANTIFIABLE TARGETS

DHHS supports increased rates of identification, initiation, and engagement in treatment (Goal 1) and adherence to and retention to treatment (Goal 2) through: improving access to short-term residential treatment in an IMD; improving the alignment of assessment tools, utilization management (UM), and treatment plans with ASAM guidelines; creating training resources, tools and performance incentives for SUD screening in community-based settings; expanding access to MAT in EDs, residential, and community-based settings; and implementing a Service Locator Tool for providers, members, and other stakeholders.

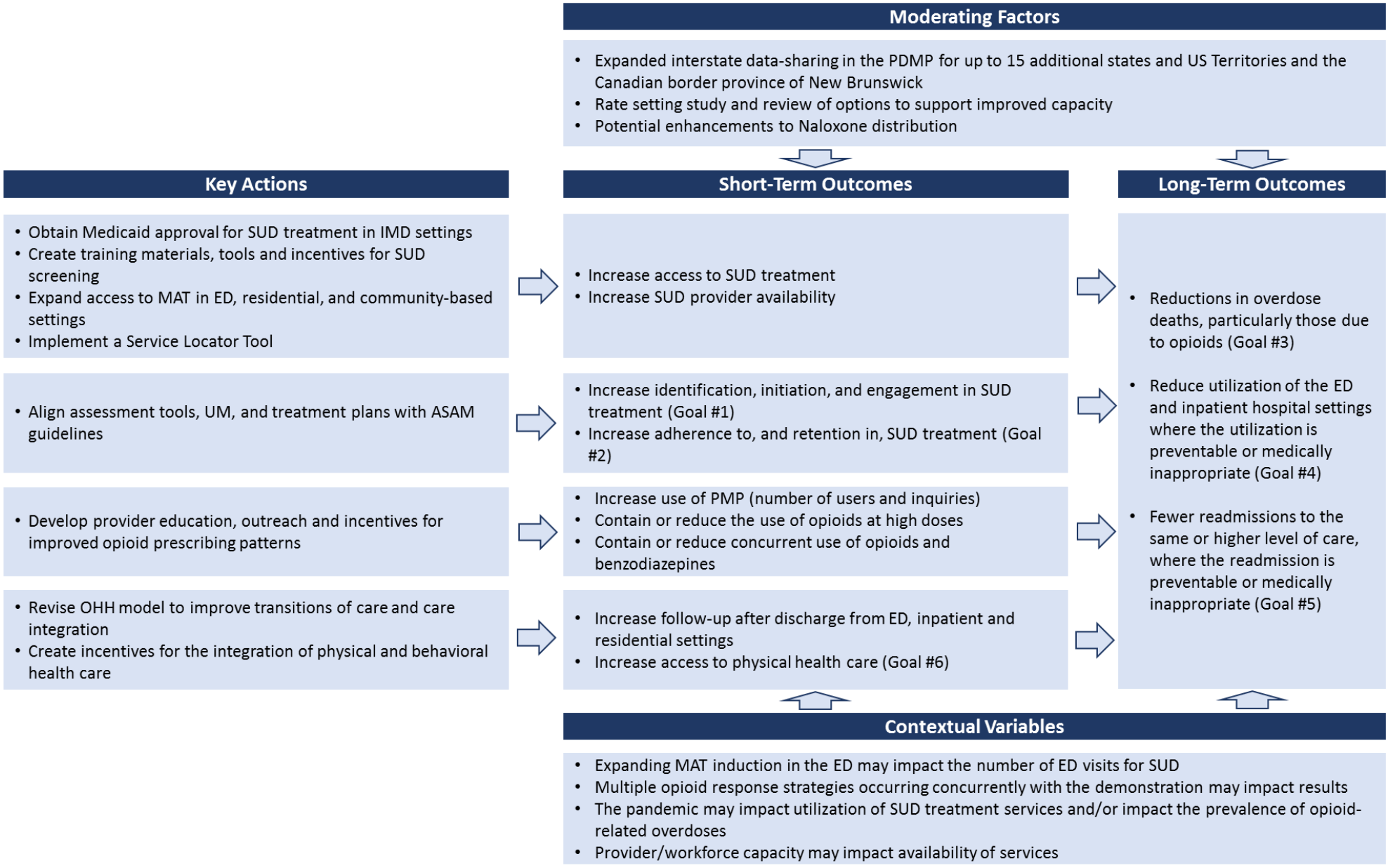
DHHS supports improved opioid prescribing patterns through a continued focus on provider education and training. DHHS initiated a provider outreach campaign in 2021 to share advances in the PMP, including Electronic Health Record (EHR) integration and PMP alerting analytics.

DHHS promoted access to care for physical health conditions among beneficiaries with SUD (Goal 6) by revising Opioid Health Home expectations and offering additional provider training to improve transitions of care and care integration. This included the creation of performance incentives for the integration of physical and behavioral health care.

In total, these activities are expected to result in reduced overdose deaths, particularly those due to opioids (Goal 3); reduced utilization of emergency departments and inpatient hospital settings for treatment, where the utilization is preventable (Goal 4); and fewer readmissions to the same or higher level of care (Goal 5).

The SUD Demonstration's logic model is provided on the following page, offering a visual depiction of the Demonstration activities and the expected impact on CMS Demonstration goals.

SUD Demonstration Logic Model



B. EVALUATION QUESTIONS AND HYPOTHESES

The evaluation design considered six primary evaluation questions, with five subsidiary questions and twelve hypotheses. In addition, two exploratory questions are examined. In some cases, the hypothesis considers the impact of Demonstration activities on specific SUD programs, such as enrollees served by Accountable Communities, Behavioral Health Homes, or Opioid Health Homes. The table below provides an overview of the evaluation questions and hypotheses.

SUD Evaluation Question	Hypothesis
1. Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD? a. How does utilization vary by member characteristics (e.g., age, aid category code)? b. How does utilization vary by service type?	1. The Demonstration will maintain or increase utilization of SUD treatment services.
	2. The Demonstration will maintain or increase SUD provider availability.
	3. The Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug dependence.
	4. The Demonstration will maintain or increase initiation and engagement in treatment.
2. Does the Demonstration maintain or increase adherence to and retention in treatment for alcohol or other drug use?	1. The Demonstration will maintain or increase continuity of pharmacotherapy for OUD for OHH enrollees.
3. Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?	1. The Demonstration will contain or reduce the use of opioids at a high dosage.
	2. The Demonstration will contain or reduce the use of opioids concurrent with benzodiazepines for AC attributed members.
	3. The Demonstration will contain or reduce the rate of overdose deaths due to opioids in the Medicaid population.
4. Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with a SUD? a. How does utilization vary by member characteristics (e.g., age, aid category code)? b. How does utilization vary by geographic characteristics (e.g., rural v. urban)? c. How does utilization vary when MAT induction in the ED is offered?	1. The Demonstration will contain or reduce the rate of ED visits for individuals with a SUD.
	2. The Demonstration will contain or reduce inpatient admissions.
5. Does the Demonstration contain or reduce readmissions to the same or higher levels of care?	1. The Demonstration will contain or reduce readmissions to the same or higher levels of care
6. Does the Demonstration maintain or improve access to care for physical health conditions?	1. The Demonstration will maintain or increase access to care for physical health conditions for Health Home enrollees (OHH and BHH).
7. How does the cost of SUD services change over time?	N/A Exploratory
8. What are the cost drivers?	N/A Exploratory

C. ALIGNMENT WITH TITLE XIX MEDICAID PROGRAM OBJECTIVES

CMS has determined that the Maine Substance Use Disorder Care Initiative Demonstration is likely to promote the objectives of the Medicaid program, and that the expenditure authority sought is necessary and appropriate to carry out the Demonstration. The evaluation aligns with the objectives of Title XIX through evaluation questions one, two, four, and five, as outlined in the table below.

Title XIX Objective	MaineCare Evaluation Question
The Demonstration will assist Maine in increasing the identification, initiation, and engagement of Medicaid beneficiaries diagnosed with SUD.	1. Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD? a. How does utilization vary by member characteristics (e.g., age, aid category code)? b. How does utilization vary by service type?
The Demonstration will assist Maine in increasing beneficiary adherence to, and retention in, SUD treatment programs.	2. Does the Demonstration maintain or increase adherence to and retention in treatment for alcohol or other drug use?
The Demonstration will assist Maine in reducing medically inappropriate or preventable utilization of emergency departments and inpatient hospital settings through improved access to a continuum of care services.	4. Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with a SUD? a. How does utilization vary by member characteristics (e.g., age, aid category code)? b. How does utilization vary by geographic characteristics (e.g., rural v. urban)? c. How does utilization vary when MAT induction in the ED is offered?
	5. Does the Demonstration contain or reduce readmissions to the same or higher levels of care?

METHODOLOGY

The Demonstration evaluation used quasi-experimental techniques to measure change over time and differential statistics to describe the population and findings. A detailed description of the methodology and analytic approach is provided below.

A. EVALUATION DESIGN

Interrupted Time Series (ITS) was used for most of the evaluation questions studied. Four evaluation questions (2,3,5, and 6) related to MaineCare's Accountable Communities (AC) and Health Home models were examined using Coarsened Exact Matching (CEM) with a t-test to support the comparison strategy.

- Accountable Communities: The performance framework for AC includes incentives for decreasing the number of members, without a cancer diagnosis, who receive concurrent prescriptions for opioids and benzodiazepines. Evaluation question three examined whether performance for AC-enrolled members is significantly different than a comparison group of members who are eligible but not engaged with an AC.

- Opioid Health Homes: MaineCare created enhanced incentives for Opioid Health Homes related to improvements in the continuity of pharmacotherapy. Evaluation question two examined whether performance for OHH-enrolled members is significantly different than a comparison group of members who are eligible but not engaged with an OHH.

- Opioid and Behavioral Health Homes: MaineCare enhanced requirements and incentives related to transitions of care and integration with physical health. Evaluation questions five and six examined whether performance is significantly different than a comparison group of members who are eligible but not engaged in those programs.

Matching was used to control for potential variances in demographic and delivery system characteristics between the treatment and comparison groups. (See subsection B below for a description of groups and subsection F for a description of statistical models.) Most remaining evaluation questions and hypotheses were studied using an ITS methodology, t-tests, and/or logistic regression. Results were calculated quarterly in the four years before the Demonstration effective date to identify trends. Following Demonstration implementation, quarterly results were studied against the baseline.

The evaluators tested the use of Propensity Score Matching, as contemplated in the original evaluation Design. Propensity Score Matching (PSM) was unable to converge in some measures to produce a matched comparison versus treatment set. Therefore, the evaluators used Coarsened Exact Matching (CEM). CEM is a more robust method compared to PSM because it produces results closer to the Exact Matching method[1]. Specifically, CEM allows us to improve match quality by both combining levels of categorical variables and coarsening on the continuous variables, (i.e., creating groupings of values vs treating them as continuous). It also capitalizes on the strength of exact matching on these groupings.

[1] Causal Inference Without Balance Checking: Coarsened Exact Matching Iacus, S. M, King, G., Porro, G., Political Analysis Advance Access published August 23, 2011. Oxford University Press. doi:10.1093/pan/mpr013

B. TARGET AND COMPARISON POPULATIONS

The study group consisted of all full benefit Medicaid enrollees with an SUD diagnosis listed in one of the following HEDIS® value sets:

- Alcohol Abuse and Dependence
- Opioid Abuse and Dependence
- Other Drug Abuse and Dependence

The evaluation included Demonstration enrollees with 12 months of continuous enrollment during the measurement period who met the criteria for the hypothesis and measure under study. The evaluation did not employ random, representative, or other sampling methods.

Several hypotheses were studied using a within-subjects comparison strategy using CEM as previously described. Enrollment reports for each initiative studied were provided to the evaluator by OMS using the eligibility guidelines summarized below:

Accountable Community Eligibility: Accountable Community (AC) members are full benefit Medicaid beneficiaries. Members may be eligible for AC services if the Member has six months of continuous MaineCare eligibility or nine months of non-continuous MaineCare eligibility during the relevant 12-month period of data, and if the Members meet one of the following requirements:

a. Member has received Primary Care Health Home or Primary Care Plus Services during the appropriate look-back period; OR
b. Member has at least one visit with a Primary Care Provider during the appropriate look-back period; OR
c. Member has three (3) or more Emergency Department (ED) visits during the appropriate look-back period.

Opioid Health Home Eligibility: Individuals with an OUD are eligible for Opioid Health Home services. Members must meet both of the following criteria:

1. Have a SUD-OUD (as outlined in the Diagnostic and Statistical Manual of Mental Disorders [5th ed. DSM–5]) diagnosis within the last twelve months; AND
2. Have or be at risk of having a second chronic condition:
   a. A mental health condition
   b. An additional substance use disorder (other than opioid use disorder)
   c. Tobacco use
   d. Diabetes
   e. Heart disease
   f. Overweight or obese as evidenced by a body mass index over 25
   g. Chronic Obstructive Pulmonary Disease (COPD)
   h. Hypertension
   i. Hyperlipidemia
   j. Developmental and intellectual disorders
   k. Circulatory congenital abnormalities

l. Asthma
m. Acquired brain injury
n. Seizure disorder

3. Members shall be assessed by the OHH providers for high-risk behaviors and other risk factors that may contribute to chronic conditions such as, but not limited to: smoking; obesity; poor nutrition; childhood trauma; risky sex practices; intravenous drug use; history of or current substance use other than opioids; and family health issues.

Behavioral Health Home Eligibility: Adults with a Serious and Persistent Mental Illness (SPMI) are eligible for Behavioral Health Home services. Both of the following criteria must be met:

1. Members must have a primary mental health diagnosis under the most current edition of the Diagnostic and Statistical Manual of Mental Disorders, except that the following diagnoses may not be primary diagnoses for purposes of this eligibility requirement:
    a. Delirium, dementia, amnestic, and other cognitive disorders;
    b. Mental disorders due to a general medical condition, including neurological conditions and brain injuries;
    c. Substance abuse or dependence;
    d. Intellectual disability;
    e. Adjustment disorders;
    f. Z-codes; or
    g. Antisocial personality disorder; AND

2. Members must have a LOCUS score, as determined by staff certified for LOCUS assessment by DHHS, of seventeen (17) (Level III) or greater. The LOCUS assessment must be administered annually and documented in the members' records.

C. EVALUATION PERIOD

The SUD Demonstration was approved on December 22, 2020, effective January 1, 2021 through December 31, 2025. The State began drawing Medicaid FFP for IMD services in DY2, following CMS approval of its SUD Implementation Plan. Results for CY2017-CY2020 were used to establish the baseline trends for assessing change during the Demonstration period for the ITS analysis. The comparison strategy using CEM for AC and Health Home participants presented in this Interim Evaluation Report examines outcomes for CY2021 – CY2023. Results should be considered preliminary, pending a full six-month runout of claims for the final quarter of 2023.

D. EVALUATION MEASURES

An overview of each evaluation question, hypothesis, and measure is outlined in Section VI Results. Attachment A provides a listing of measures from the approved evaluation design by goal area and hypothesis, including any changes made to the design during the implementation of the evaluation due to data availability or integrity. In two instances data availability resulted in a suspension of subsidiary evaluation question or hypothesis as identified in the table on the following page.

Evaluation Question/Measure	Change/Rationale
Evaluation Question Four, Hypothesis 1, Subsidiary Question (c) ED Utilization before and after MAT in programs in the ED began	Start dates for MAT in the ED are not reported to OMS or tracked by vendors providing technical assistance and training to ED personal. In addition, some EDs may temporarily suspend programs when qualified prescribers are not available, program suspensions due to staffing are not tracked.
Evaluation Question Six, Hypothesis 2 Percentage of members receiving TCM with a SUD who had an ambulatory or preventive health care visit	The design contemplated comparisons of members receiving TCM with members who would qualify for TCM but did not receive TCM. However, data was not available to identify members who would qualify for TCM but did not receive the service. In addition, fewer members receive TCM as Opioid Health Home enrollment increases.

Where measures are referenced from the SUD Monitoring Protocol (MP), the CMS Technical Specifications Manual v 4 was used as guidance for diagnostic and CPT code value sets, index events and other specifications. The metric number is included as reference. One measure, the rate of non-emergent ED visits per 1,000 member months, was developed by OMS. The list of qualifying diagnosis codes and other criteria is included in Attachment B.

E. DATA SOURCES, CLEANING AND VALIDATION

The evaluation used administrative data collected by DHHS. The primary source of data was the Medicaid Management Information System (MMIS). MMIS data was augmented by information from the State of Maine Center for Disease Control's Data, Research and Vital Statistics database and the Prescription Monitoring program (PMP) reporting system. Data sources are described in the table below.

Data Source	Description
Medicaid Management Information System (MMIS)	Medicaid payment information and claims data submitted to the State by providers used to support HEDIS and HEDIS-like performance, Medication Assisted Treatment, service utilization, and cost metrics for all enrollees
State Medicaid Eligibility and Enrollment files	Eligibility and enrollment detail for Medicaid beneficiaries used to determine enrollee aid category and stratify data into sub-groups, when applicable
State Medicaid Provider Enrollment Files	Provider enrollment type and specialty designation
Prescription Monitoring Program (PMP)	Collects, monitors, and analyzes electronically transmitted data on all dispensed Schedule II, III, and IV controlled substances. Data on each prescription includes the prescribed drug, the recipient, the health care provider who wrote the prescription, and the pharmacy that dispensed the prescription
Data, Research and Vital Statistics (DVRS)	Public health birth, death, and other vital records used to track overdose deaths attributed to Maine residents

The SUD evaluator held ad hoc meetings with State subject matter experts to discuss data, and any anomalies found in the data. In addition, the evaluator inventoried changes in program operations or policy, if any, that may have occurred to explain changes in the data.

The evaluator received a standardized Medicaid claims extract monthly. Claims extracts were validated and prepared by the State's fiscal agent, Gainwell, based on date of payment. The evaluator performed a data audit process to identify any problems or inconsistencies with the data received. This included comparisons to previous raw claims extracts and sample trends. No anomalies were found during the production of the interim evaluation findings. Recipient eligibility segments may change over time. In examining utilization of service and results by aid category, the evaluator assigned aid categories as of January 1 of each year.

The Data, Research and Vital Statistics (DVRS) database is maintained by the public health department of the Maine Center for Disease Control. This system serves as the authority for birth, death, and other vital records in Maine. Death records are recorded with the cause of death and are used to track overdose deaths attributed to Maine residents. The MMIS links with the Vital Statistics database as part of its program integrity process to ensure Medicaid members who have died are removed from the eligibility system. OMS staff matched deaths attributed to opioid and other drug overdose to Medicaid eligibility data to calculate the number and rate of overdose deaths among Medicaid beneficiaries. (Note that cause of death data may lag up to one year or more.)

The Prescription Monitoring Program (PMP) is supported through a contract with Appriss Health. The vendor's software platform is used to host the PMP. Data is monitored for accuracy within the proprietary vendor system. The evaluator extracted evaluation data from annual reports prepared for the legislature.

F. ANALYTIC METHODS

Data analysis consisted of both exploratory and descriptive strategies and incorporated univariate, bi-variate, and multi-variate techniques. Analyses were performed to systematically apply statistical and/or logical techniques to describe, summarize, and compare data within the State and across time.

Descriptive statistics were used to describe the basic features of the data and what they depict, and to provide simple summaries about the sample and the measures. They also were used to provide summaries about the participants and their outcomes. An exploratory data analysis is used to compare many variables in the search for organized patterns. Data were analyzed as rates, proportions, frequencies, and measures of central tendency (e.g., mean, median, mode).

As appropriate, analysis methods included Logistic and Linear Regressions, Analysis of Variance (ANOVA), T-test, and Coarsened Exact Matching with t-test. These tests were used for comparing sample and population means against each other; this can be the same population across time or within the same time but for populations receiving different treatments, or for one group that does not receive treatment while others do.

T-tests and ANOVA are appropriate when granular (patient-level) data is not available, but population-level means and standard deviations are, the outcome variable is continuous, and the objective is to determine whether the mean of a certain outcome variable of interest is significantly different between two or more groups. T-tests allow for comparison of means between two groups where the outcome variable is continuous whereas ANOVA allows this to be done for more than two groups. Where the outcome variable was binary, logistic regression was used.

The traditionally accepted significance level ($p \leq 0.05$) was used for all comparisons. The design did not employ multiple t-tests involving the same set of data; thus, the Bonferroni correction was not applied.

INTERRUPTED TIME SERIES

Evaluation measures studied using an interrupted time series (ITS) design were examined quarterly. The ITS assumes stationarity in the data and includes the assumption that absent the Demonstration, results would have continued on the same trajectory as the pre-Demonstration quarters.

The evaluator determined that the data included enough observations (pre and post) and reflected a stationary time series (i.e., the statistical properties of the time series did not change over time – in this case in the pre-Demonstration data subset and the post Demonstration data subset). In addition, the data preserved enough non-zero values and variation to allow for time series analysis. The ITS examined whether there was: (1) no effect; (2) only an immediate effect; (3) only a sustained long-term effect; or (4) both an immediate and a sustained long-term effect. To model the time series, the evaluator used the following equation:

$$Y = \beta_0 + \beta_1 Time + \beta_2 D + \beta_3 P + \varepsilon$$

where Y is the outcome variable or metric of interest, *Time* indicates the quarter since the beginning of the observational period (i.e., 1, 2, …), D is an indicator variable (takes on either value 0 or 1) that indicates whether this period is before or after the Demonstration, and P denotes the period or quarter since the Demonstration started (i.e., 0's until the Demonstration effective date then 1, 2, …).

A description of the ITS variables and how results may be interpreted is provided below.

<table>
<tr><th>ITS Model Variable</th><th>Description</th><th>Interpretation</th></tr>
<tr><td>General Trend (Time)</td><td>The impact of time overall (pre and post Demonstration) on the outcome variable</td><td rowspan="3">If the general trend is improving and significant and:
The immediate or sustained effects are not significant and:
Moving in the desired direction, then the trend is not interrupted by the Demonstration period or start date (e.g., it was already moving in the desired direction)
Not moving in the desired direction, then the general trend overcame any negative effects associated with the Demonstration period or start date
The immediate or sustained effects are significant and:
Moving in the desired direction, then the Demonstration period or start date are associated with improvement
Not moving in the desired direction, then the Demonstration period or start date are associated with a decline in performance</td></tr>
<tr><td>Immediate Effect of Demonstration Start</td><td>The immediate impact of the Demonstration start date (difference in the quarters immediately before and after the start date)</td></tr>
<tr><td>Sustained Effect (Time since demo start)</td><td>The trend seen after the start of the Demonstration through the last observation point</td></tr>
<tr><td></td><td></td><td>If the immediate and sustained effects are moving in opposite directions and:
The immediate effect is in the desired direction and the sustained effect is not, then there was an immediate desirable effect, however, over time the improvement was diminished
The immediate effect is not in desired direction and the sustained effect is, then start date is associated with a decline in performance which then improved during the Demonstration period</td></tr>
<tr><td>Counterfactual</td><td colspan="2">This is the projected trend assuming pre-demonstration performance continued absent the Demonstration</td></tr>
</table>

The design relies on measures that by nature include participants with attributes that are highly correlated. For example, many measures focus on specific diagnosis, medications, age bands or treatment conditions. The inclusion and exclusion criteria for each measure limits the variability of beneficiary characteristics that are observed in the data. In addition, as measure specificity increases (e.g., members with opioid prescriptions over 90 morphine milligram equivalents (MME)), sample size decreases, limiting the conclusions that may be drawn from an analysis of member characteristics.

However, Evaluation Questions #1 *(Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?)* and #4 *(Does the Demonstration contain or reduce preventable ED visits and inpatient hospitalizations for individuals with a SUD?)* focus on broader population trends.

As part of the interrupted time series analysis, and based on the viability of the sample size, the evaluator controlled for demographic characteristics (age, gender, geography, and aid category code) using the following equation:

$$Y_t = \beta_0 + \beta_1 T_t + \beta_2 D_t + \beta_3 P_t + \beta_4 D_{AGE} + \beta_5 D_{GENDER} + \beta_6 D_{AidExpansion} + \beta_7 D_{AidNonABD} + \beta_8 D_{URBANRURAL} + \varepsilon$$

These variables are defined as:

- T_t (time since beginning of data collection)
- D_t (a dummy variable indicating if the current period is pre-intervention (D_t =0) or post-intervention (D_t =1))
- P_t (time since Demonstration start date, takes on 0 for periods before Demonstration start date)
- D_{AGE}, D_{GENDER}, $D_{URBANRURAL}$, (demographic and geography variables)
- $D_{AidExpansion}$, $D_{AidNonABD}$ (dummy variables for the member's aid category code where Aged Blind Disabled (ABD) is represented by 0 on both Expansion and non-ABD)

Generalized linear models with both demographic and time series variables (time, time since Demonstration, dummy variable for pre/post Demonstration) were used to help isolate the impact of the Demonstration. The covariates explain some of the variation in the metrics of interest and thus reflect a more accurate importance of the temporal variables relating to the Demonstration date. As with all regressions, there is always the risk of confounding factors that cannot be measured or entered into the regression model having explanatory power over the variation in the outcome variable.

Race was excluded in the generalized linear model as a covariate due to lack of heterogeneity in responses. For example, data examined for 2023 quarter one showed over 96 percent of the target group was Caucasian (87.3 percent) or had an unknown/blank value for race (8.8 percent). All other races combined comprised the remaining 3.8 percent of members in SUD-related data set. Given the targeted nature of many measures (members who received a specific service or have a specific diagnosis) the denominators represented a very small number of members whose race was not Caucasian or unknown. This prohibited meaningful analysis.

The evaluators will revisit the analyses in the summative report to determine if sub setting the population by white vs not white is viable as a covariate.

IMPACT OF THE NOVEL CORONAVIRUS PUBLIC HEALTH EMERGENCY

Given the unique circumstances of the PHE in 2020, the evaluator assessed whether CY2020 data should be included in the interrupted time series analysis. The analysis was performed using data collected during CY2020 as part of the baseline period 2017-2020. No noticeable anomalies in the trend lines were observed.

For measures relying on logistic regression for assessment of annual results against a baseline, the evaluator tested whether 2020 was significantly different from 2019. When this was the case, 2019 was used as the baseline year; otherwise, 2020 was used. The detailed findings for each measure identify when 2019 was used as the base year.

COARSENED EXACT MATCHING

Coarsened Exact Matching (CEM) was used for evaluating AC and non-AC comparison groups, as well as Health Home enrollees and non-enrollees. CEM is intended to reduce confounding variables associated with the observational data by "coarsening" data (e.g., using age ranges rather than specific ages) to find exact matches more quickly between comparison and treatment groups. This allows the evaluator to create balanced subsets of comparison and treatment data in order to attribute more of the differences in the metrics of interest across these two groups to their treatment (or lack thereof in the case of the comparison group) and not to one of the demographic factors which could also explain some or all of the differences between the groups' outcomes.

The covariates included gender, age, geography, health status, and aid category code (enumerated below). Health status was defined as the IBM Watson risk level identified through a member's assignment to a Diagnostic Cost Group (DCG) in the OMS decision support system. The evaluator performed a separate analysis for each year of the Demonstration; thus, the year was also entered as a covariate. Geography was characterized as "Urban" and "Rural" using Maine county classifications of Metropolitan Statistical Areas as illustrated below.

Geographic Category	Maine County (Recipient Place of Residence)
Urban	Cumberland, York, Sagadahoc, Androscoggin, Penobscot, Kennebec
Rural	Aroostook, Oxford, Hancock, Somerset, Knox, Waldo, Lincoln, Washington, Franklin, Piscataquis

The aid category which determines how a member qualified for Medicaid was one-hot encoded to become the following binary variables: expansion; ABD; Non-ABD. After matching, the evaluator compared the two groups on the demographic factors to determine if there were statistically significant differences in any of those factors.

Balance tables are provided in Attachment D. The tables provide CEM data, both pre- and post-matching. The post-matching data presents characteristics of the beneficiaries included in the related t-test analysis. Age is shown in years (e.g., 39.5 years of age). Other variables are binary, with the results expressed as a value between 0 and 1. For example, the urban/rural variable classifies members residing in rural areas as "1" and urban areas as "0". The reported value signifies the percent of members with the characteristic designated with a "1" (e.g., an urban/rural value of 0.255 indicates that 25.5 percent of the members reside in a rural area).

LOGISTIC REGRESSION

In some instances, measures could not be studied using the ITS approach. When the outcome of interest was binary, a logistic regression was performed against the baseline year. The evaluator denoted 0 as 'no' and 1 as 'yes' and estimated the log odds (or logit) which is 'l=ln(p/1-p)' where 'ln' denotes natural log or log base e. The logistic regression was:

$$l = ln\frac{p}{1-p} = \beta_0 + \beta_1(year) + \varepsilon$$

which was solved algebraically for p to yield:

$$p = \frac{1}{1 + e^{-(\beta_0 + \beta_1(year) + \varepsilon)}}$$

SUD EXPENDITURE ANALYSIS

In addition to hypotheses testing, the evaluation explored changes in total Medicaid expenditures for members served in an SUD IMD. Cost of care measures not associated with a hypothesis were examined using an ITS design to estimate different linear effects in the pre-Demonstration (CY2017-CY2020) and post-Demonstration periods (CY2021-2025). The evaluator examined each cost measure separately.

$$Cost_t = \beta_0 + \beta_1 Time + \beta_2 D + \beta_3 P + \varepsilon$$

where Y is the outcome variable or metric of interest, *Time* indicates the quarter since the beginning of the observational period (i.e., 1, 2, …), D is an indicator variable (takes on either value 0 or 1) that indicates whether this period is before or after the Demonstration, and P denotes the period or quarter since the Demonstration started (i.e., 0's until the Demonstration effective date then 1, 2, …). Additionally, the evaluator used a generalized linear model to control demographic variables that may contribute to cost.

$$Cost_t = \beta_0 + \beta_1 T_t + \beta_2 D_t + \beta_3 P_t + \beta_4 D_{AGE} + \beta_5 D_{GENDER} + \beta_6 D_{AidExpansion} + \beta_7 D_{AidNonABD} + \beta_8 D_{URBANRURAL} + \varepsilon$$

These variables are defined as:

- T_t (time since beginning of data collection)
- D_t (a dummy variable indicating if the current time period is pre-intervention (D_t =0) or post-intervention (D_t =1))
- P_t (time since Demonstration start date, takes on 0 for periods before Demonstration start date)
- D_{AGE}, D_{GENDER}, $D_{URBANRURAL}$, (demographic and geography variables)
- $D_{AidExpansion}$, $D_{AidNonABD}$ (dummy variables for the member's aid category code where ABD is represented by 0 on both Expansion and non-ABD)

ISOLATION FROM OTHER SUD-RELATED INITIATIVES

The evaluation design contemplated isolating the effect of an initiative funded by CMS outside of the Demonstration. MaineMOM involves providing integrated care management, social service supports, and MAT for Medicaid members who are pregnant and postpartum. However, MaineMOM enrollments represented only 30 of the 106,733 members included in DY1, 113 of the 124,040 members in DY2 and 98 of the 143,154 members in DY3. Individuals enrolled in MaineMOM services therefore were not removed from the results. No other SUD initiatives involving Medicaid members outside of the Demonstration were identified.

METHODOLOGICAL LIMITATIONS

Due to the quasi-experimental nature of the design and the limitations identified below, the evaluation results cannot be attributed to causal inference. The findings may suggest an association or correlation with various aspects of the Demonstration. However, suggesting causation may not be appropriate when describing results. Data and design limitations are outlined below.

A. DESIGN LIMITATIONS

Lack of True Experimental Control Groups: IMD facilities serve residents from across the State. Thus, regional control or comparison groups are not available. In addition, residential placement decisions are based on nationally recognized ASAM level of care guidelines; thus, individuals admitted to a residential SUD program have a clinically different profile and level of care need than those who are not admitted. These clinical differences eliminate the possibility of a matched sample of IMD enrollees who receive services versus those who did not. Lastly, all Medicaid enrollees who meet SUD criteria are eligible for the Demonstration. However, the evaluation does employ a comparison strategy to study delivery system enhancements relative to their impact on AC and Health Home enrollees.

B. DATA LIMITATIONS

Use of Administrative Data: The evaluation may be limited by its reliance on payment files, claims and diagnostic codes to identify the beneficiary population with SUD. These codes may not capture all participants, especially if the impact or severity of the SUD is not evident on the initial assessment. For example, an ED visit for a broken arm due to inebriation may not be coded as SUD-related if the member does not present as inebriated, the ED provider has not ascertained causation, or the member fails to disclose the cause. This type of limitation is inherent in claims-based analysis. However, the potential for missing data is random and there is no reason to believe that any given Demonstration group is more or less likely to have missing data.

Medicaid Enrollment/Disenrollment: Medicaid enrollment changes on an annual basis related to eligibility. For example, someone may be attributed to a study cohort in year one, disenroll in year two and re-enroll in year three. In response to the novel coronavirus public health emergency, the State suspended Medicaid terminations resulting in increased enrollment for CY2020 and CY2021. In addition, as innovations such as Medicaid ACOs or Health Homes expand their membership or focus, membership in any potential comparison group decreases over time.

C. SPECIAL METHODOLOGICAL CONSIDERATIONS

SUD IMD treatment facilities are existing statewide providers that had been delivering care to Medicaid enrollees prior to the implementation of the SUD Demonstration. The Demonstration allows the State to continue services that have been in place, albeit with a new funding partner. Independent variables expected to result in change throughout the Demonstration are based on delivery system enhancements and quality improvement strategies and not new IMD expenditure authorities.

RESULTS

Results for each hypothesis and measure are presented by evaluation question. Measure descriptions, analytics and statistical details are provided for each finding. Unless otherwise noted, the data source for all measures was Medicaid claims. Results for measures examined using the ITS approach were assessed using the variables in the table below.

ITS Model Variable	Description
General Trend (Time)	The impact of time overall (pre and post Demonstration) on the outcome variable
Immediate Effect of Demonstration Start	The immediate impact of the Demonstration start date (difference in the quarters immediately before and after the start date)
Sustained Effect (Time since demo start)	The trend seen after the start of the Demonstration through the last observation point
Counterfactual	This is the projected trend assuming pre-demonstration performance continued absent the Demonstration

A. SUD EVALUATION QUESTION ONE

Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?

Evaluation question one includes two subsidiary questions:

a. How does service utilization vary by age and aid category code?
b. How does utilization vary by service type?

Four hypotheses were examined under evaluation question one:

1. The Demonstration will maintain or increase utilization of SUD treatment services.
2. The Demonstration will maintain or increase SUD provider availability.
3. The Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug dependence.
4. The Demonstration will maintain or increase initiation and engagement in treatment.

The measures examined under ***hypothesis one*** are outlined below. The analytic methods and findings for each measure are outlined on the following pages.

1.1.1. Percentage of Medicaid members receiving any SUD treatment service
1.1.2. Percentage of members with SUD receiving SUD outpatient treatment services)
1.1.3. Percentage of members receiving with SUD receiving intensive outpatient (IOP) treatment and partial hospitalization (PH) services
1.1.4. Percentage of members with SUD receiving residential and inpatient treatment services
1.1.5. Percentage of members with SUD receiving withdrawal management services
1.1.6. Percentage of members with SUD receiving medication-assisted treatment (MAT)

Measure 1.1.1 - Percentage of Medicaid members receiving any SUD treatment service

Question 1.	Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?
Hypothesis 1.	The Demonstration will maintain or increase utilization of SUD treatment services.

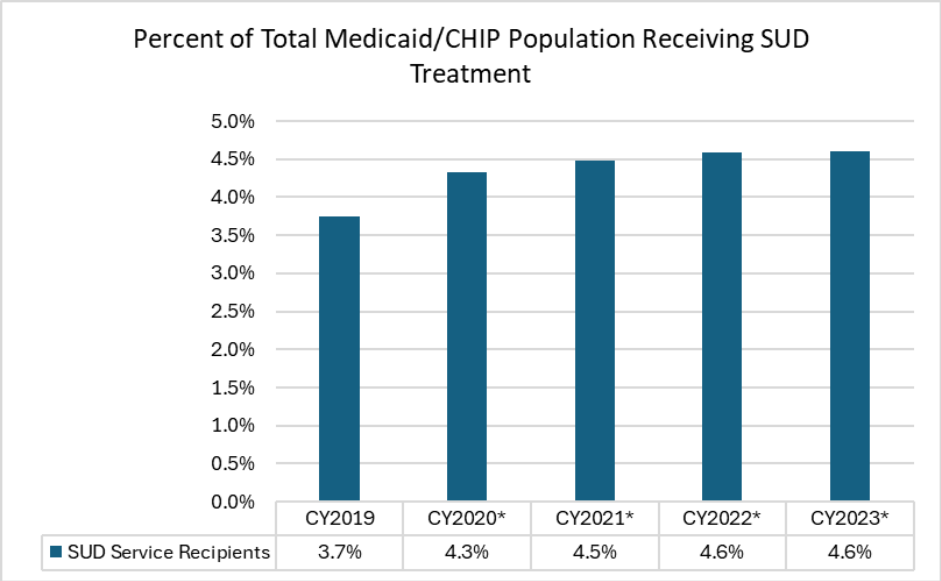
Measure Description: The numerator includes the number of Medicaid members with a claim for any type of SUD treatment services during the 12-month measurement period. The denominator includes the number of Medicaid/CHIP enrollments for each year studied.

Data Source and Time Period: MMIS paid claims CY2019-2023

Analytical Approach: Logistic Regression with t-test; Demonstration Year results (CY2021-23) were examined using 2019 as the baseline year.

Findings: In 2019, Maine substantially expanded Medicaid eligibility for adults under the Affordable Care Act. The percentage of Medicaid/CHIP enrollees receiving any type of SUD treatment was 3.7 percent. In 2020 the percentage increased to 4.3 and continued to increase, to 4.5 percent in 2021 and to 4.6 percent both in 2022 and 2023.

The change over baseline was statistically significant in each year of the Demonstration.



**Statistically significant change over baseline*

Measure 1.1.2 Percentage of members with a SUD diagnosis receiving SUD outpatient treatment services

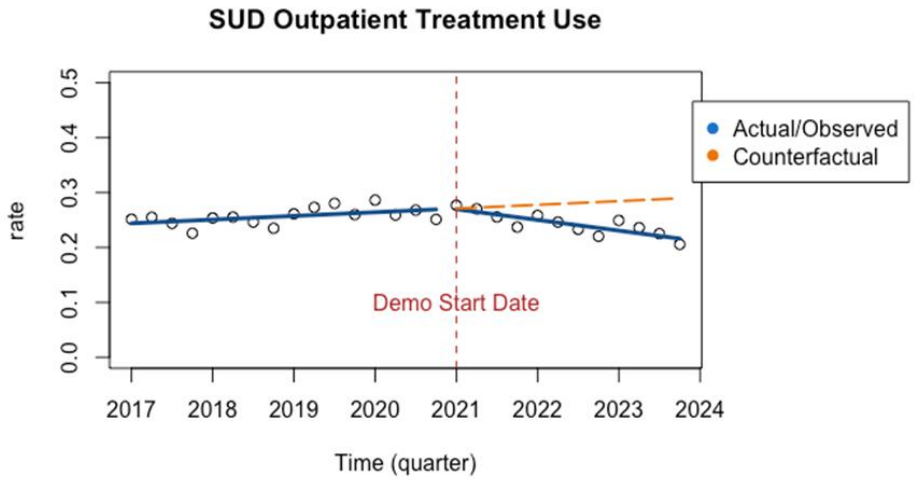
Question 1.	Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?
Hypothesis 1.	The Demonstration will maintain or increase utilization of SUD treatment services.

Measure Description: The denominator includes all enrollees with an SUD diagnosis. The numerator includes members with an SUD diagnosis who had a claim for SUD outpatient treatment during the measuring period (quarter).

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: The general trend showed a statistically significant increase over time. There was no statistically significant effect in utilization immediately following the Demonstration start date. The sustained effect showed a statistically significant decline in outpatient treatment use during the first years of the Demonstration.



Outpatient ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.01	0.003	p<0.05
Immediate Effect of Demonstration Start	0.01	0.01	None
Sustained Effect (Time since demo start)	-0.01	0.001	p<0.01
Constant	-13.36	5.66	p<0.05

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show that utilization is explained in part by the Demonstration period (immediate and sustained impact) as well as the demographic variables studied. Older members tend to use more outpatient services, as do women, expansion group members, non-ABD group members and those living in rural counties. Although coefficients are small, all temporal and individual factors showed statistically significant explanatory power.

Outpatient GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.006	(0.001)	p<0.01
Immediate Effect of Demonstration Start	0.005	(0.002)	p<0.01
Sustained Effect	-0.006	(0.0003)	p<0.01
Age	0.001	(0.00004)	p<0.01
Gender (Female)	0.021	(0.001)	p<0.01
Expansion Group	0.017	(0.001)	p<0.01
Non-ABD	0.017	(0.001)	p<0.01
Rural	0.007	(0.001)	p<0.01
Constant	-11.491	(1.358)	p<0.01

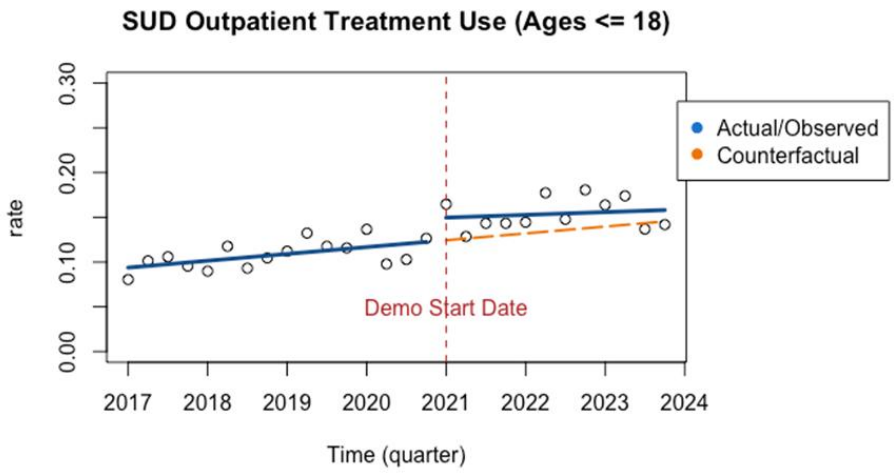
Age

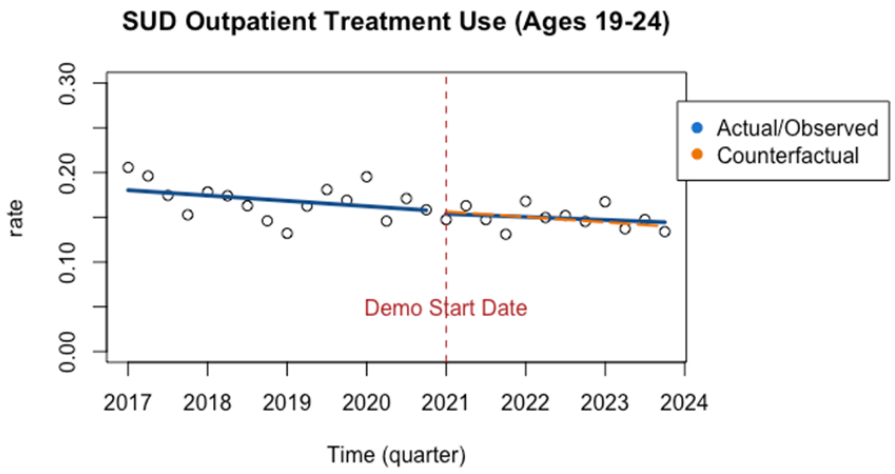
The general trend in utilization by age showed a statistically significant increase in use of outpatient treatment for members 18 and under, including immediately after the Demonstration started. There was no sustained increase in utilization for members 18 and under. There was no statistically significant effect for members ages 19-24.

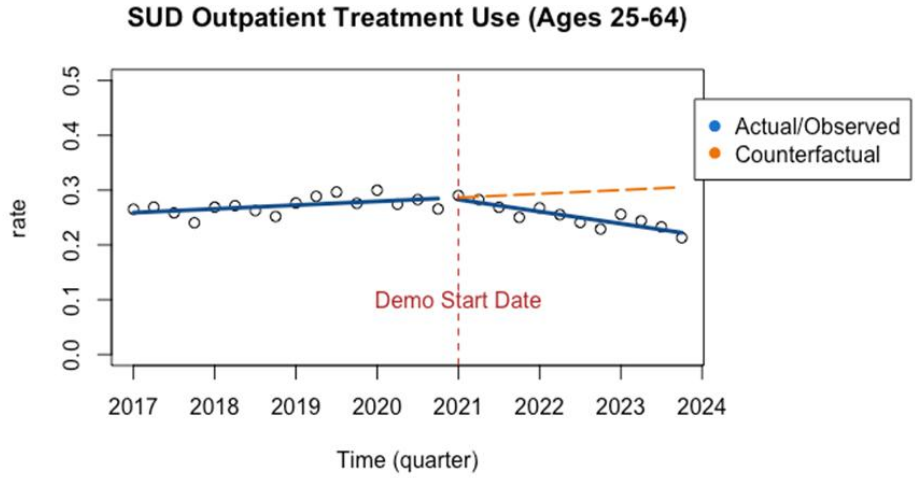
Members 25-64 showed a statistically significant general trend for increased use; however, there was a statistically significant sustained decrease in utilization for this age group. Members ages 65 and older showed a statistically significant increase in outpatient use immediately following the Demonstration start date.

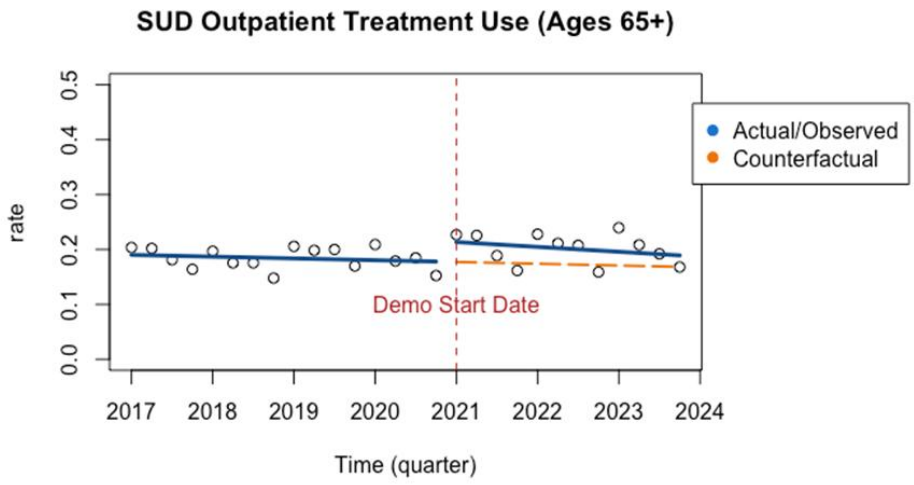
Outpatient ITS Model (Age)	Ages ≤18	Ages 19-24	Ages 25-64	Ages 65+
General Trend (Time)	0.01**	-0.01	0.01**	-0.003
(Standard Error)	(0.003)	(0.004)	(0.003)	(0.01)
Immediate Effect of Demonstration Start	0.03**	-0.003	0.004	0.04**
(Standard Error)	(0.01)	(0.01)	(0.01)	(0.02)
Sustained Effect	-0.001	0.001	-0.01***	-0.001
(Standard Error)	(0.002)	(0.002)	(0.001)	(0.02)
Constant	-15.32***	12.24	-13.61**	6.70
(Standard Error)	(6.73)	(7.32)	(5.52)	(10.16)

**p<0.05; ***p<0.01


SUD Outpatient Treatment Use (Ages <= 18)
rate
0.00
0.10
0.20
0.30
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


SUD Outpatient Treatment Use (Ages 19-24)
rate
0.00
0.10
0.20
0.30
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


SUD Outpatient Treatment Use (Ages 25-64)
rate
0.0
0.1
0.2
0.3
0.4
0.5
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

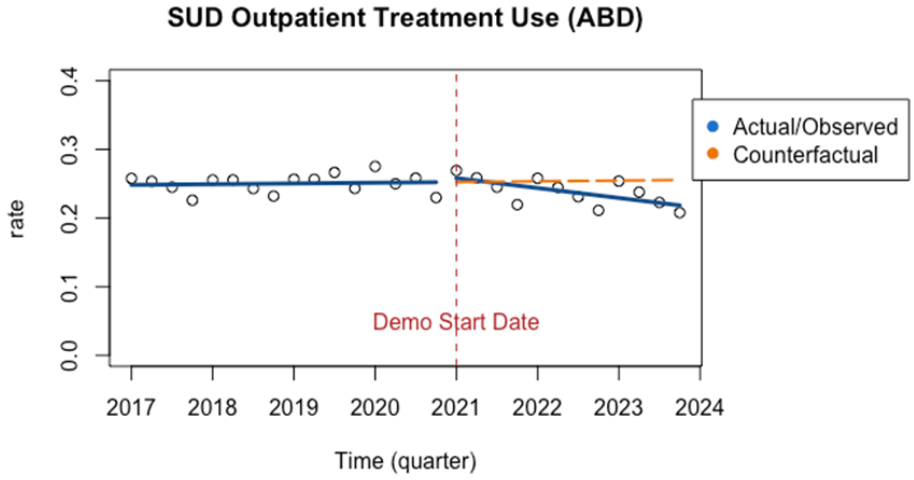


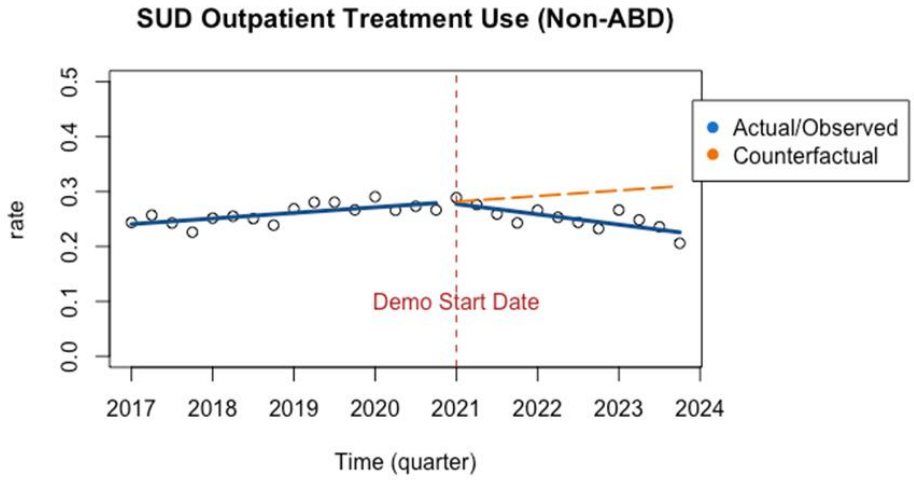
Aid Category

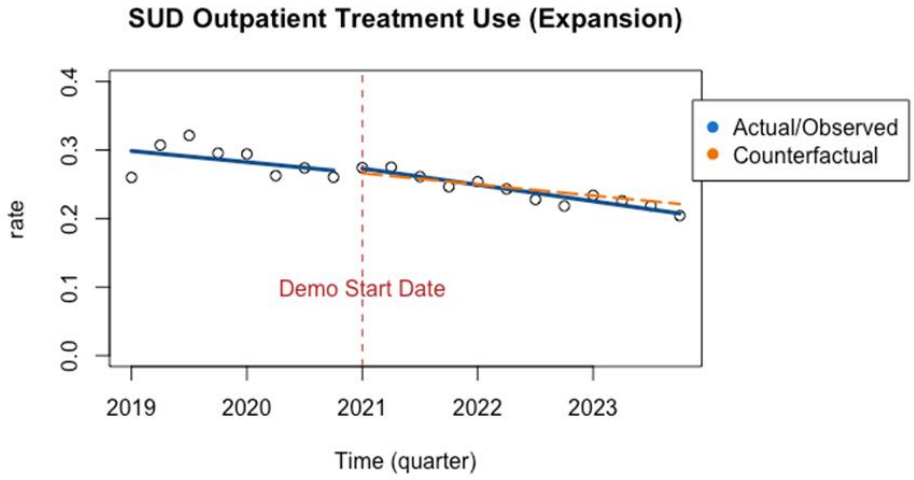
An analysis of utilization by aid category showed increased use associated with members in the non-ABD group, a statistically significant decline in utilization was sustained during the Demonstration for this group and members in the ABD group. There were no significant changes in trend for the expansion group.

Outpatient ITS Model (Aid Category)	ABD	Non-ABD	Expansion
General Trend (Time) (Standard Error)	0.001 (0.003)	0.01*** (0.003)	-0.02 (0.01)
Immediate Effect of Demonstration Start (Standard Error)	0.01 (0.01)	0.003 (0.01)	0.01 (0.01)
Sustained Effect (Standard Error)	-0.004** (0.001)	-0.01*** (0.001)	-0.002 (0.003)
Constant (Standard Error)	-1.87 (6.40)	-20.38*** (5.97)	33.18 (19.05)

**p<0.05; ***p<0.01




SUD Outpatient Treatment Use (Non-ABD)
rate
0.0
0.1
0.2
0.3
0.4
0.5
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


SUD Outpatient Treatment Use (Expansion)
rate
0.0
0.1
0.2
0.3
0.4
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

Measure 1.1.3 Percentage of members with a SUD diagnosis receiving intensive outpatient (IOP) treatment and partial hospitalization (PH) services.

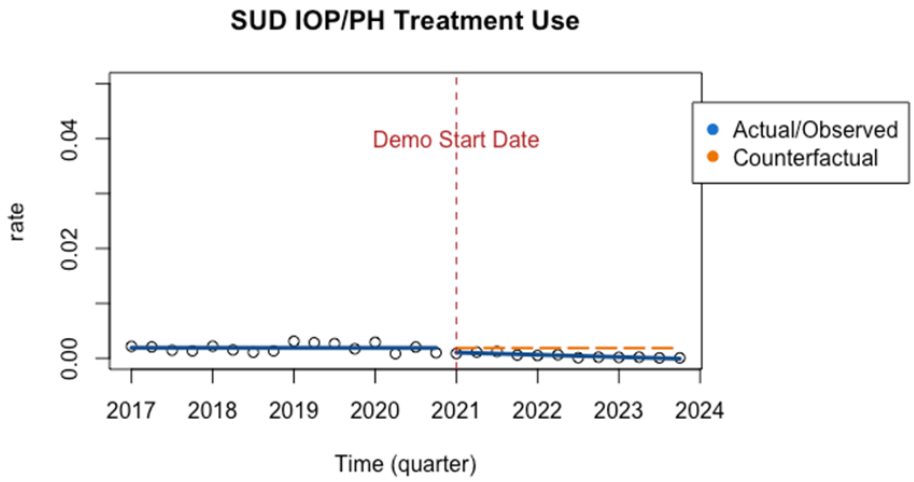
Question 1.	Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?
Hypothesis 1.	The Demonstration will maintain or increase utilization of SUD treatment services.

Measure Description: The denominator includes all enrollees with an SUD diagnosis. The numerator includes members with a claim for intensive outpatient treatment (IOP) or partial hospitalization (PH) during the measuring period (quarter).

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: An interrupted time series showed no statistically significant change in trends after the start of the Demonstration.



IOP/PH ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.0000	0.0001	None
Immediate Effect of Demonstration Start	-0.001	0.0005	None
Sustained Effect	-0.0001	0.0001	None
Constant	0.02	0.26	None

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show that a decrease in utilization is explained by the Demonstration period, as well as several demographic variables studied. Older members and members in rural counties used fewer IOP/PH services. Women and expansion group members used more IOP/PH services. Although coefficients are small, these individual factors showed statistically significant explanatory power.

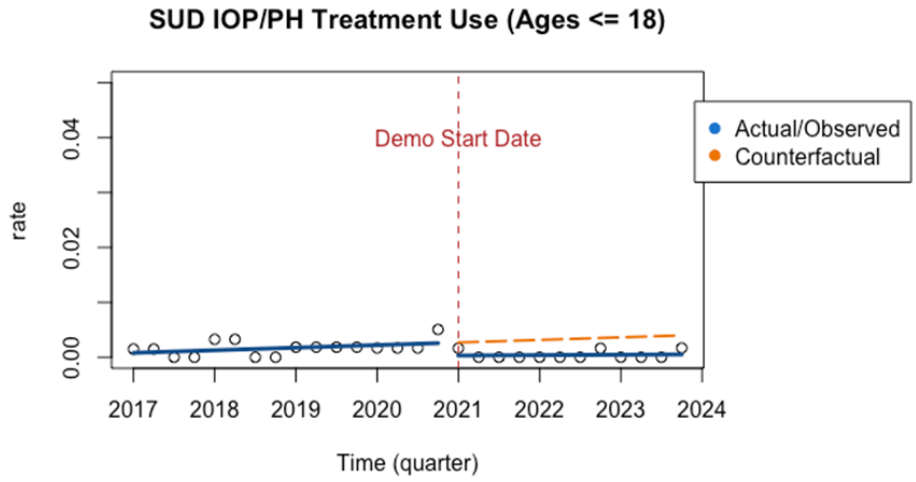
IOP/PH GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-0.0001	(0.0001)	p<0.05
Immediate Effect of Demonstration Start	-0.001	(0.0002)	p<0.01
Sustained Effect	-0.0001	(0.00002)	p<0.01
Age	-0.00002	(0.00000)	p<0.01
Gender (Female)	0.001	(0.0001)	p<0.01
Expansion Group	0.001	(0.0001)	p<0.01
Non-ABD	-0.00004	(0.0001)	None
Rural	-0.001	(0.0001)	p<0.01
Constant	0.223	(0.106)	p<0.05

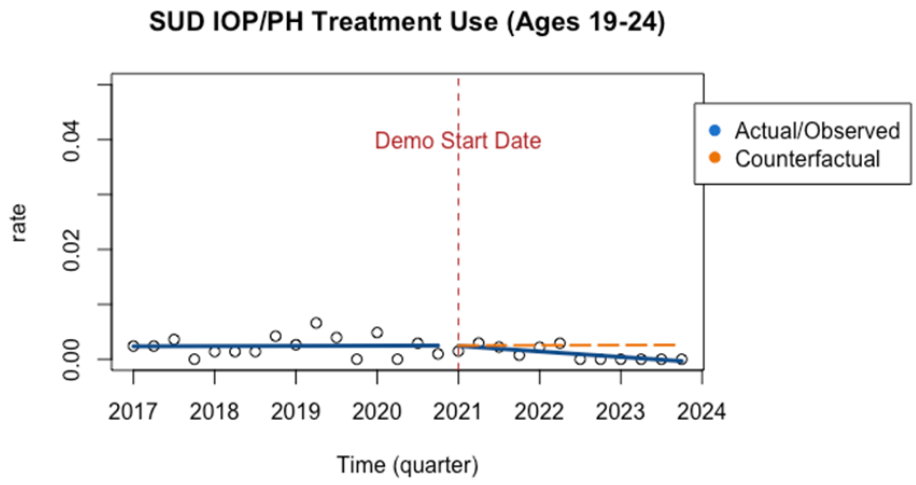
Age

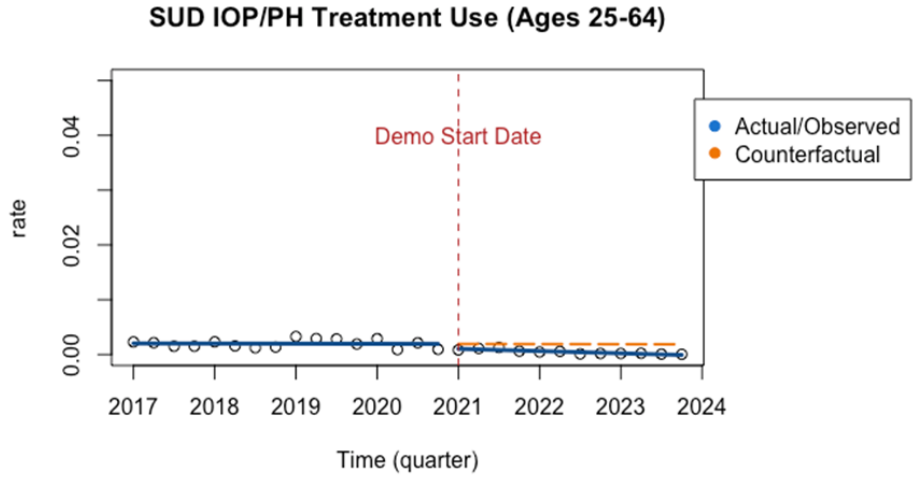
In an analysis of IOP/PH use by age, members 18 and under had a statistically significant decline in use immediately after the Demonstration started. There were no other statistically significant effects related to IOP/PH use and age.

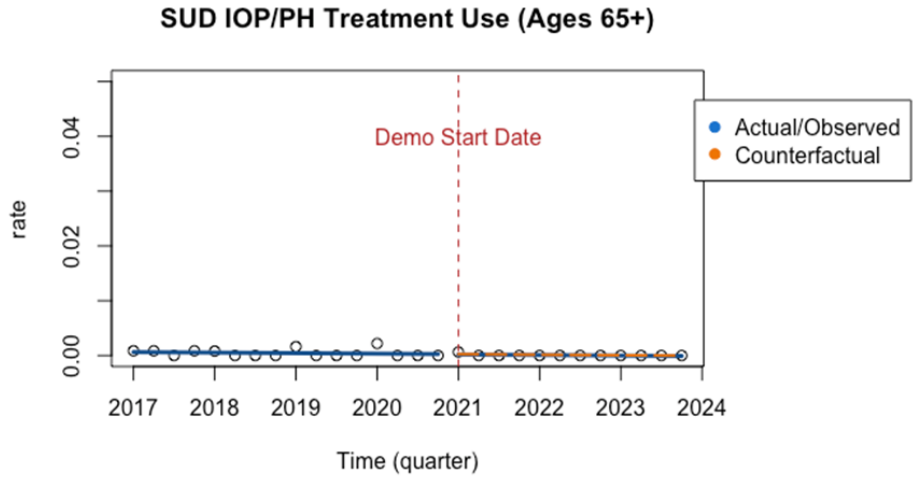
IOP/PH ITS Model (Age)	Ages ≤18	Ages 19-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	0.0005 (0.0002)	0.0000 (0.0003)	-0.0000 (0.0001)	-0.0001 (0.0001)
Immediate Effect of Demonstration Start (Standard Error)	-0.002** (0.001)	0.0002 (0.001)	-0.001 (0.0005)	-0.0001 (0.0004)
Sustained Effect (Standard Error)	-0.0001 (0.0001)	-0.0003 (0.0002)	-0.0001 (0.0001)	-0.0000 (0.0001)
Constant (Standard Error)	-0.95 (0.48)	-0.07 (0.70)	0.05 (0.26)	0.19 (0.24)

**p<0.05; ***p<0.01




SUD IOP/PH Treatment Use (Ages 19-24)
Demo Start Date
Actual/Observed
Counterfactual
rate
0.00
0.02
0.04
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)


SUD IOP/PH Treatment Use (Ages 25-64)
Demo Start Date
Actual/Observed
Counterfactual
rate
0.00
0.02
0.04
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)

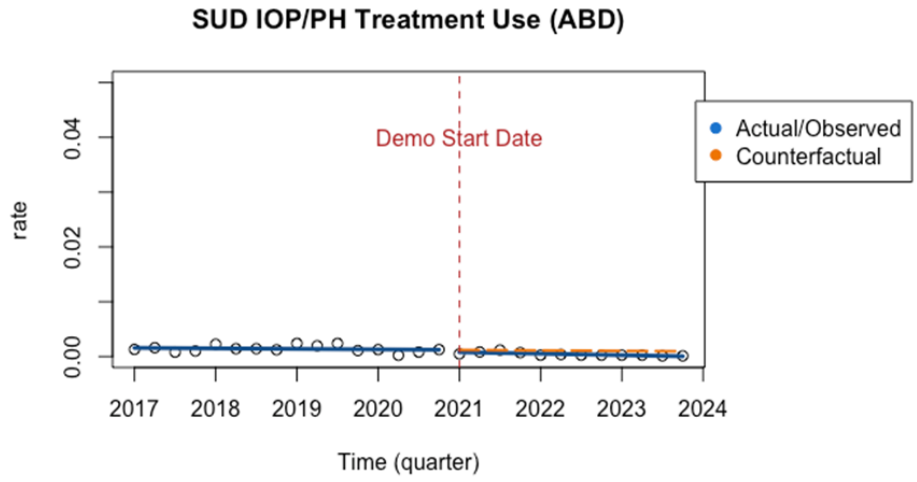

SUD IOP/PH Treatment Use (Ages 65+)
Demo Start Date
Actual/Observed
Counterfactual
rate
0.00
0.02
0.04
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)

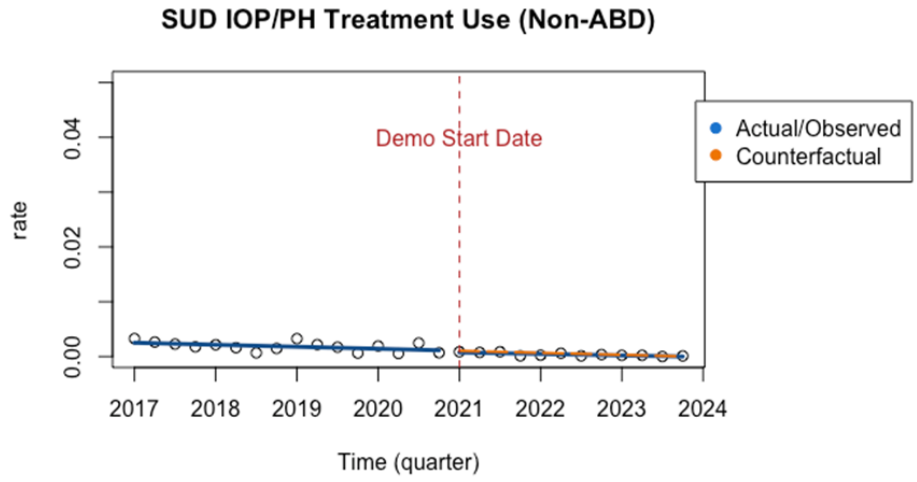
Aid Category

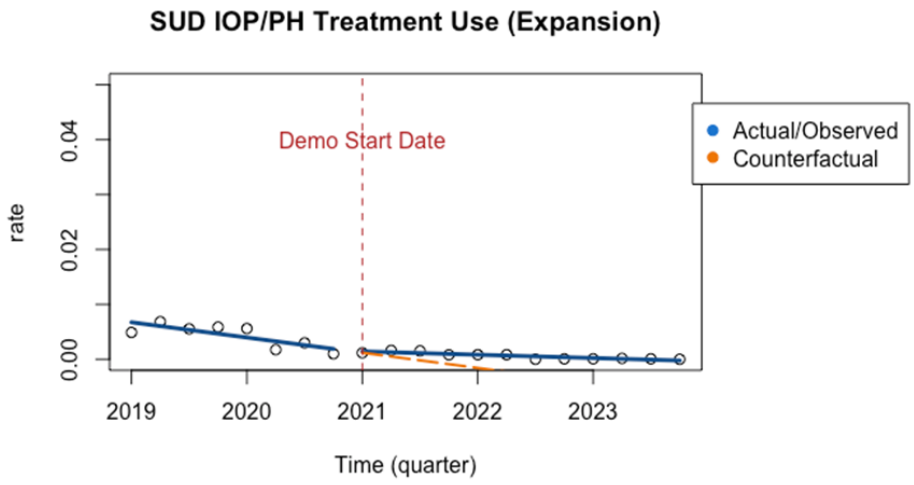
An analysis of utilization of IOP/PH services by aid category showed a general trend of decreased utilization associated with members in the non-ABD and expansion groups. There was no statistically significant effect immediately following the Demonstration. However, during the Demonstration period, the sustained effect showed a statistically significant increase in use for the expansion group.

IOP/PH ITS Model (Aid Category)	ABD	Non-ABD	Expansion
General (Time) (Standard Error)	-0.0001 (0.0001)	-0.0004** (0.0001)	-0.003*** (0.001)
Immediate Effect of Demonstration Start (Standard Error)	-0.0004 (0.0004)	-0.0003 (0.0005)	-0.0003 (0.001)
Sustained Effect (Standard Error)	-0.0000(0.0000)	0.0000 (0.0001)	0.001*** (0.0002)
Constant (Standard Error)	0.19 (0.22)	0.74** (0.27)	5.60*** (1.10)

**p<0.05; ***p<0.01






SUD IOP/PH Treatment Use (Expansion)
Demo Start Date
Actual/Observed
Counterfactual
rate
0.00
0.02
0.04
2019
2020
2021
2022
2023
Time (quarter)

Measure 1.1.4 Percentage of members with a SUD diagnosis receiving residential and inpatient treatment services.

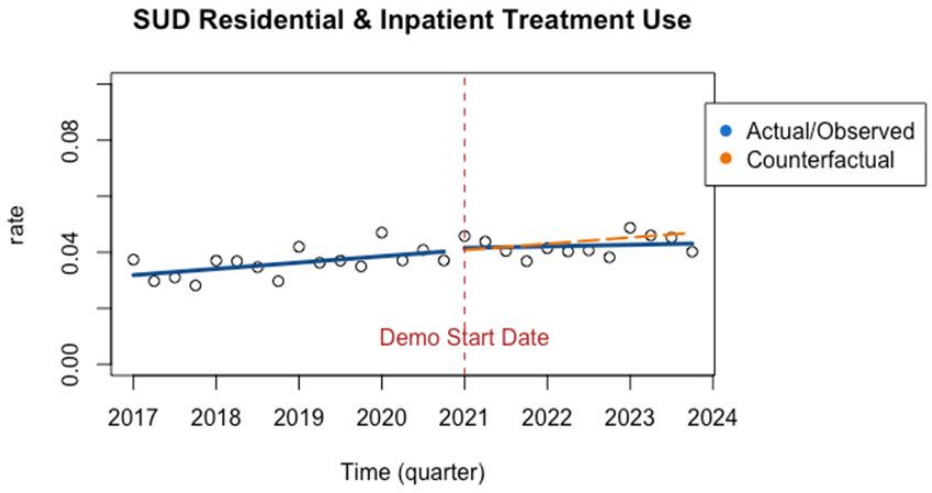
Question 1.	Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?
Hypothesis 1.	The Demonstration will maintain or increase utilization of SUD treatment services.

Measure Description: The denominator includes all enrollees with an SUD diagnosis. The numerator includes members with an SUD diagnosis who had a claim for SUD residential or inpatient treatment during the measuring period (quarter).

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: The general trend showed a statistically significant increase in SUD residential and inpatient treatment use. There were no statistically significant changes in trend during the first years of the Demonstration.



Inpatient/Res ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.002	(0.001)	p<0.05
Immediate Effect of Demonstration Start	0.001	(0.003)	None
Sustained Effect	-0.0004	(0.0004)	None
Constant	-4.49	(1.76)	p<0.05

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show that time was not a statistically significant factor for explaining the decreased utilization of residential and inpatient services. Older members, non-ABD group members, and those in rural counties tended to use less residential and inpatient treatment, while women and expansion group members

tended to use more. Although coefficients are small, the individual factors noted showed statistically significant explanatory power.

Inpatient/Res GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-0.0002	0.0003	None
Immediate Effect of Demonstration Start	-0.001	0.001	None
Sustained Effect	0.0002	0.0001	None
Age	-0.0001	0.00002	p<0.01
Gender (Female)	0.003	0.0005	p<0.01
Expansion Group	0.017	0.001	p<0.01
Non-ABD	-0.010	0.001	p<0.01
Rural	-0.014	0.001	p<0.01
Constant	0.494	0.611	None

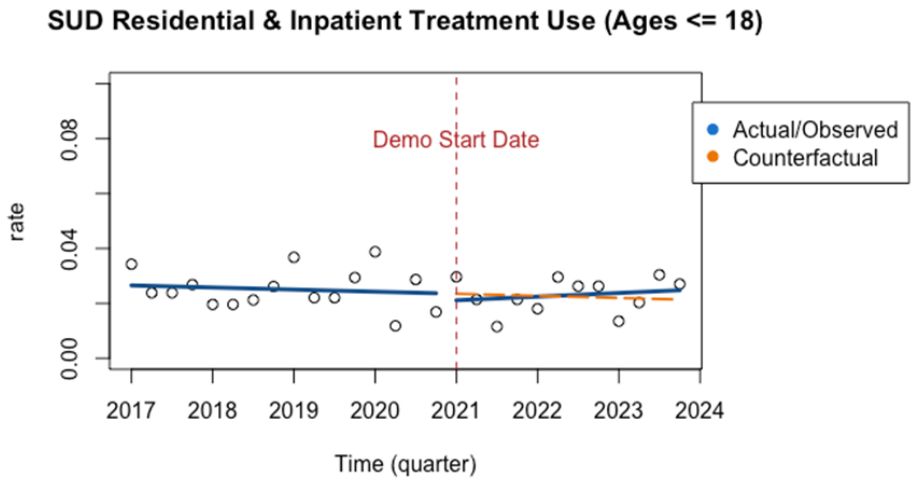
Age

An analysis of SUD residential and inpatient treatment by age showed a statistically significant decrease in the general trend for members ages 19-24 and an increase in use for the 25-64 age group.

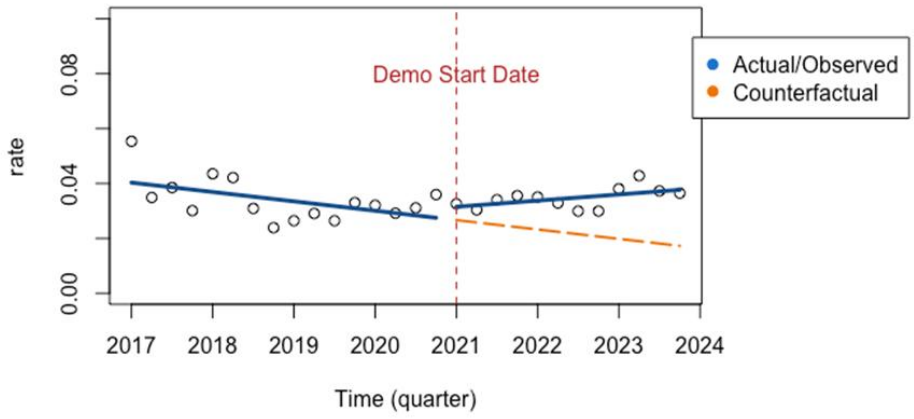
There was a statistically significant sustained increase in utilization for members ages 19-24 during the Demonstration period. There were no other statistically significant trends.

Inpatient/Res ITS Model (Age)	Ages ≤18	Ages 19-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	-0.001 (0.002)	-0.003** (0.001)	0.003*** (0.001)	-0.001 (0.001)
Immediate Effect of Demonstration Start (Standard Error)	-0.003 (0.01)	0.003 (0.005)	0.001 (0.003)	0.002 (0.005)
Sustained Effect (Standard Error)	0.001 (0.001)	0.001** (0.001)	0.001 (0.0004)	-0.0005 (0.001)
Constant (Standard Error)	1.56 (3.09)	6.93** (2.54)	-5.60*** (1.79)	2.81 (2.59)

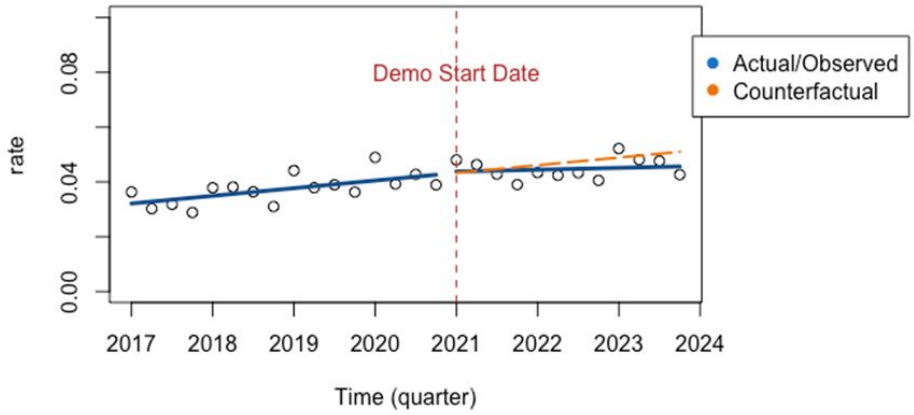
**p<0.05; ***p<0.01



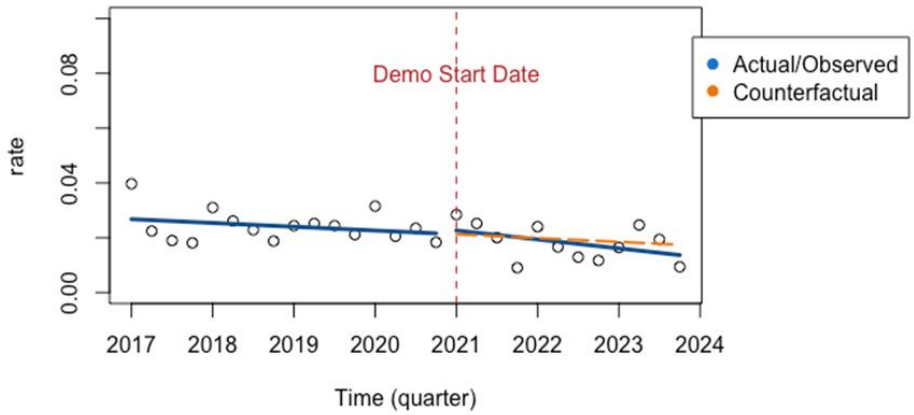
SUD Residential & Inpatient Treatment Use (Ages 19-24)



SUD Residential & Inpatient Treatment Use (Ages 25-64)



SUD Residential & Inpatient Treatment Use (Ages 65+)

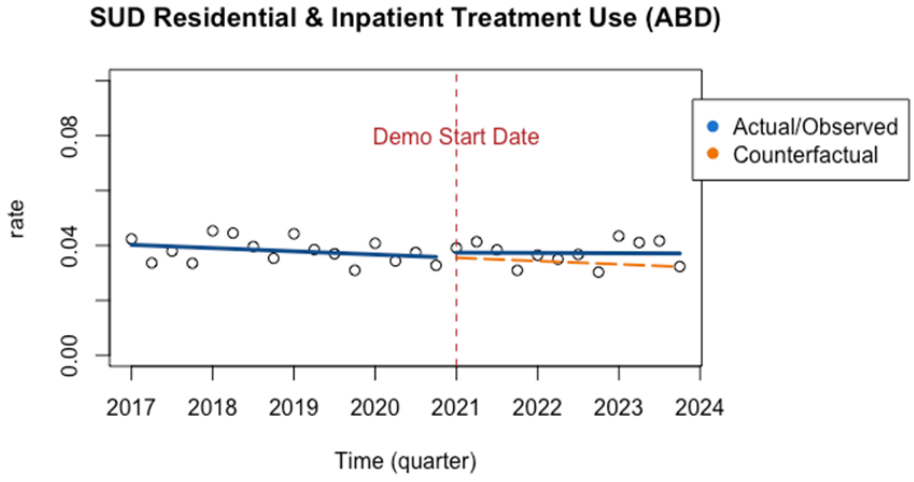


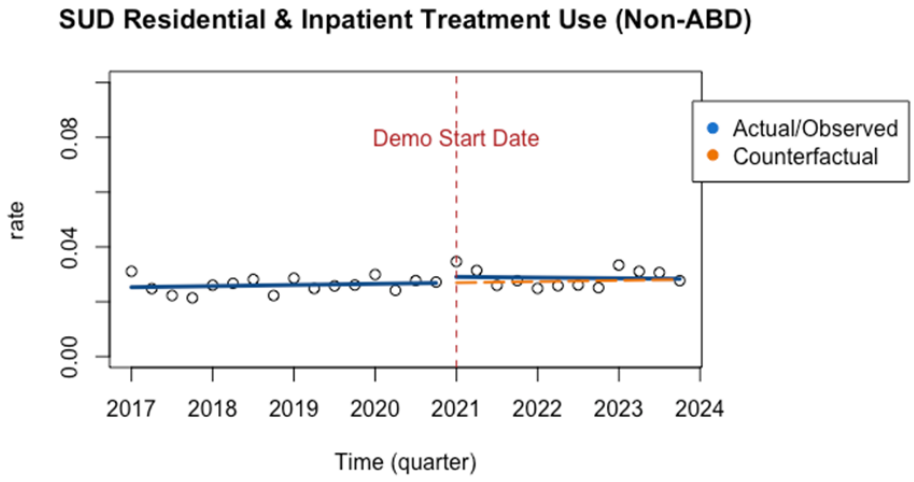
Aid Category

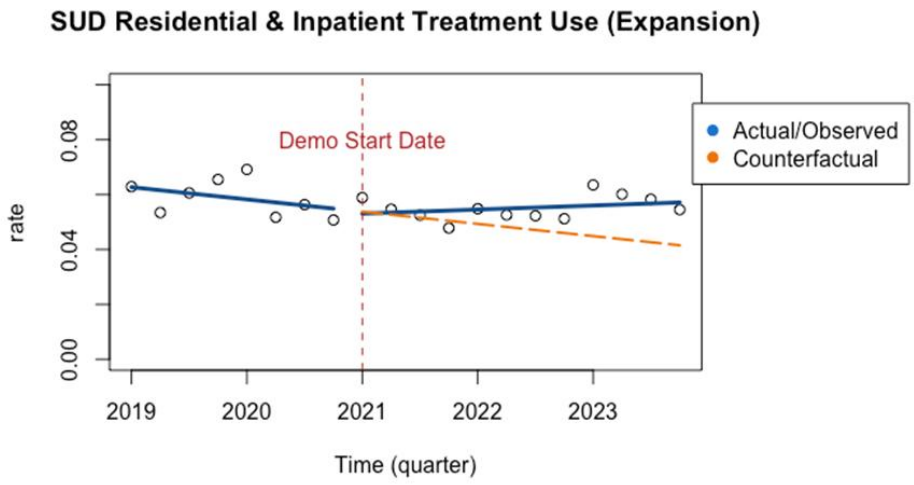
Utilization of SUD residential and inpatient treatment by aid category showed no statistically significant changes in trend.

Inpatient/Res ITS Model (Aid Category)	ABD	Non-ABD	Expansion
General Trend (Time) (Standard Error)	-0.001 (0.001)	0.0004 (0.001)	-0.004 (0.003)
Immediate Effect of Demonstration Start (Standard Error)	0.002 (0.004)	0.002 (0.002)	-0.002 (0.005)
Sustained Effect (Standard Error)	0.0003 (0.0004)	-0.0002 (0.0003)	0.001 (0.001)
Constant (Standard Error)	2.42 (1.97)	-0.80 (1.37)	9.06 (6.69)

**p<0.05; ***p<0.01






SUD Residential & Inpatient Treatment Use (Expansion)
Demo Start Date
Actual/Observed
Counterfactual
rate
0.00
0.04
0.08
2019
2020
2021
2022
2023
Time (quarter)

Measure 1.1.5 Percentage of members with a SUD diagnosis receiving withdrawal management services.

Question 1. Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?

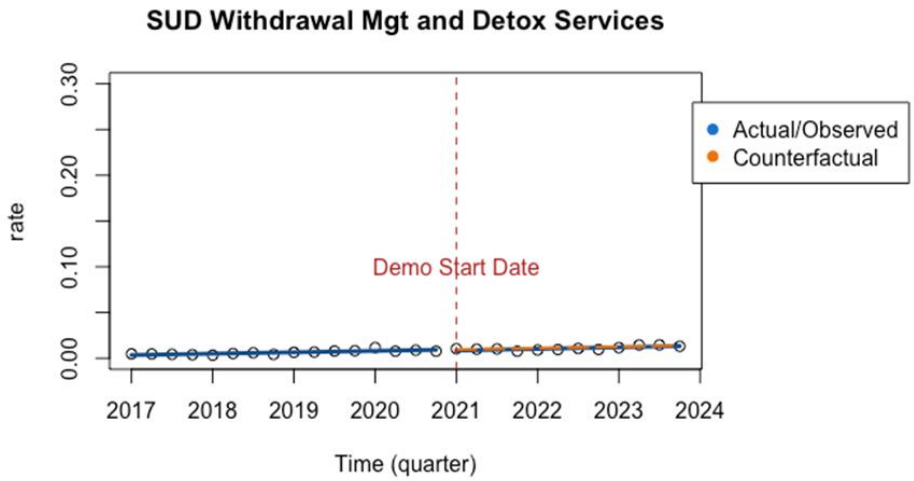
Hypothesis 1. The Demonstration will maintain or increase utilization of SUD treatment services.

Measure Description: The denominator includes all enrollees with an SUD diagnosis. The numerator includes members with an SUD diagnosis who had a claim for withdrawal management services during the measuring period (quarter).

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: The general trend showed a slight yet statistically significant increase in the use of withdrawal management and detox services. There was no statistically significant change in trend during the first years of the Demonstration.



Withdrawal Mgt/Detox ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.002	0.0003	p<0.01
Immediate Effect of Demonstration Start	-0.001	0.001	None
Sustained Effect	0.0001	0.0001	None
Constant	-3.07	0.64	p<0.01

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show that the decline in utilization is explained by the start of the Demonstration, while an increase was sustained during the Demonstration period. Older members tend to use fewer services, as do women, non-ABD group members, and those living in rural counties. Expansion group members tend

to use more withdrawal management/detox services. Although coefficients are small, all individual factors showed statistically significant explanatory power.

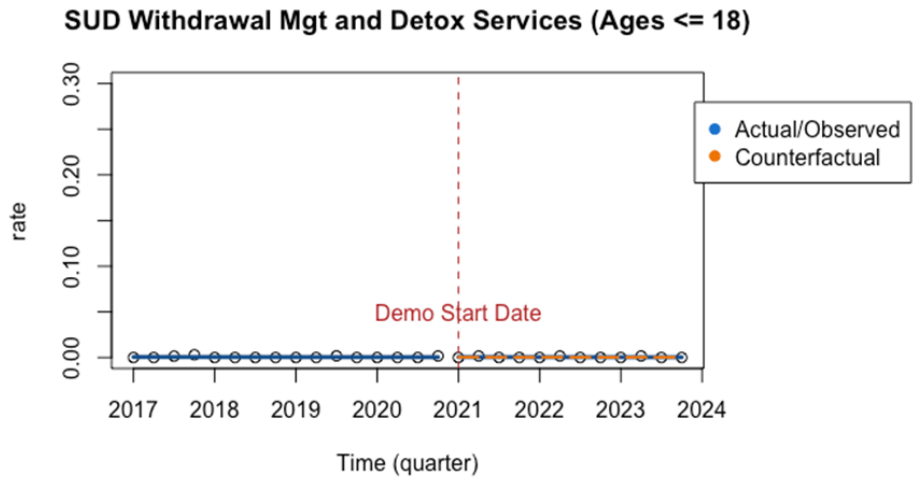
Withdrawal Mgt/Detox ITS GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.0004	0.0001	p<0.01
Immediate Effect of Demonstration Start	-0.002	0.0005	p<0.01
Sustained Effect	0.0003	0.0001	p<0.01
Age	-0.00005	0.00001	p<0.01
Gender (Female)	-0.003	0.0002	p<0.01
Expansion Group	0.009	0.0003	p<0.01
Non-ABD	-0.002	0.0003	p<0.01
Rural	-0.007	0.0002	p<0.01
Constant	-0.770	0.294	p<0.01

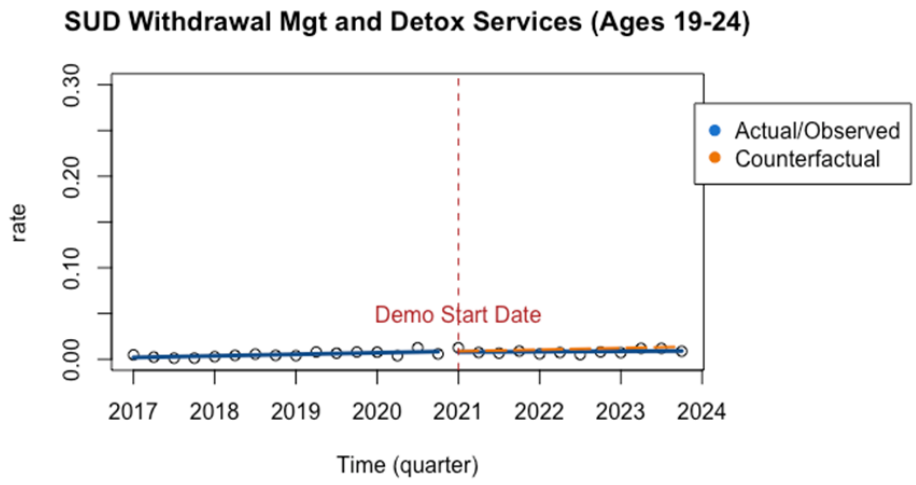
Age

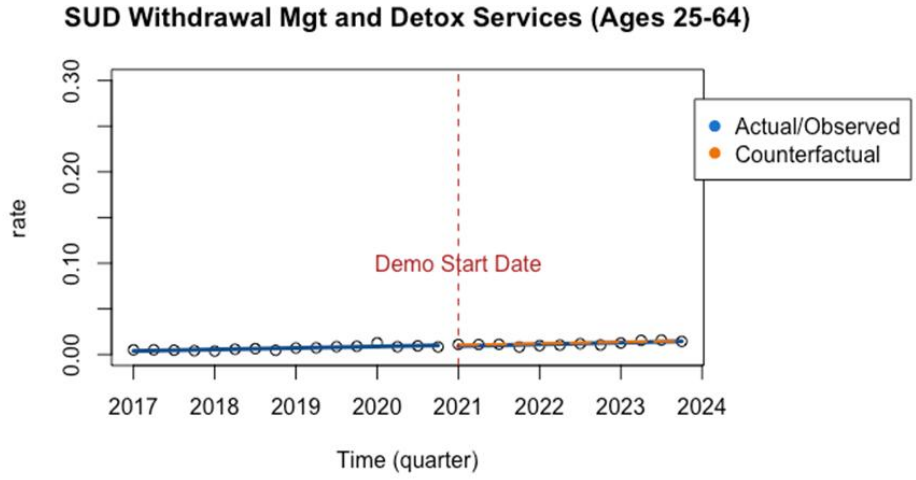
Members in the 19-24 and 25-64 age group showed a statistically significant general trend for increased utilization of withdrawal management and detox services. There were no statistically significant changes in trend associated with the Demonstration period or start date.

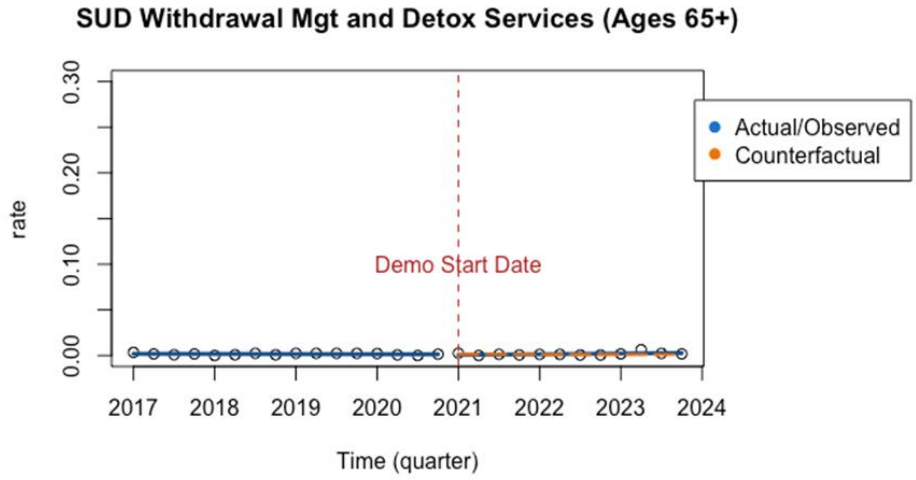
Withdrawal Mgt/Detox ITS Model (Age)	Ages ≤18	Ages 19-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	-0.0001 (0.0002)	0.002*** (0.001)	0.002*** (0.0003)	-0.0001 (0.0003)
Immediate Effect of Demonstration Start (Standard Error)	0.0001 (0.001)	-0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)
Sustained Effect (Standard Error)	-0.0000 (0.0001)	-0.0003 (0.0002)	0.0001 (0.0002)	0.0002 (0.0001)
Constant (Standard Error)	0.10 (0.39)	-3.45*** (1.03)	-3.30*** (0.68)	0.27 (0.57)

**p<0.05; ***p<0.01




SUD Withdrawal Mgt and Detox Services (Ages 19-24)
rate
0.00
0.10
0.20
0.30
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)


SUD Withdrawal Mgt and Detox Services (Ages 25-64)
rate
0.00
0.10
0.20
0.30
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)

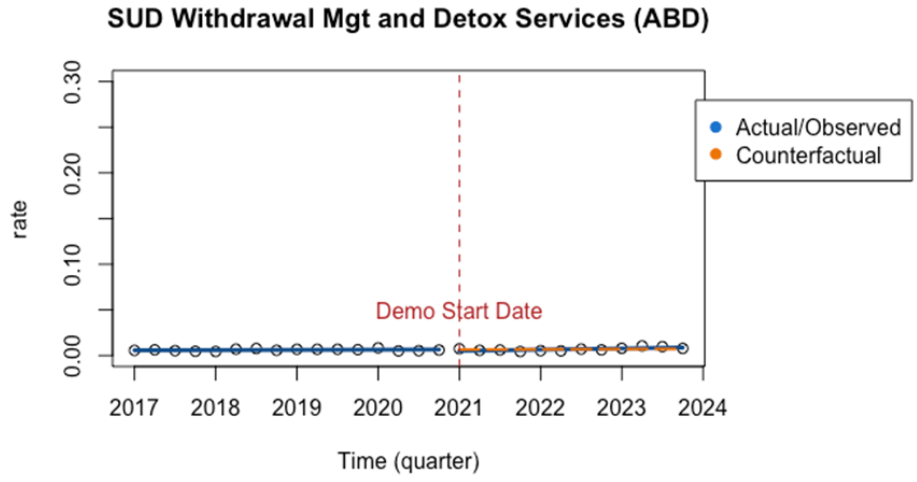

SUD Withdrawal Mgt and Detox Services (Ages 65+)
rate
0.00
0.10
0.20
0.30
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)

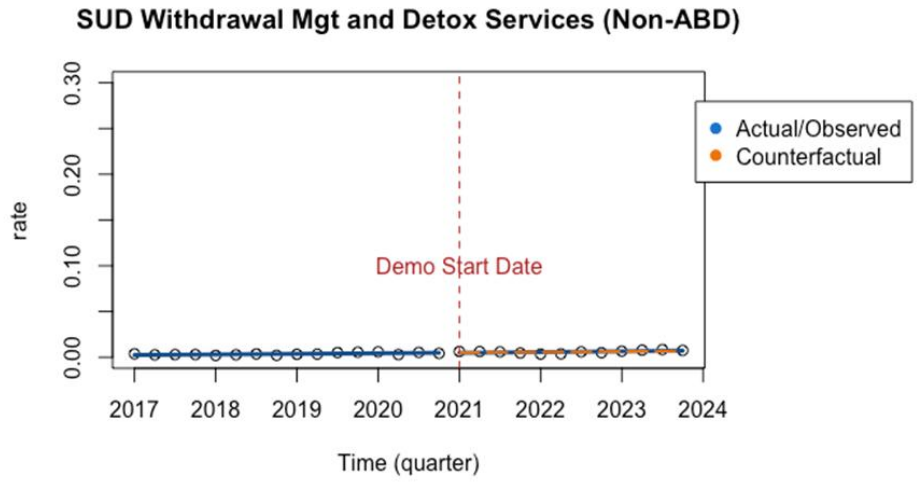
Aid Category

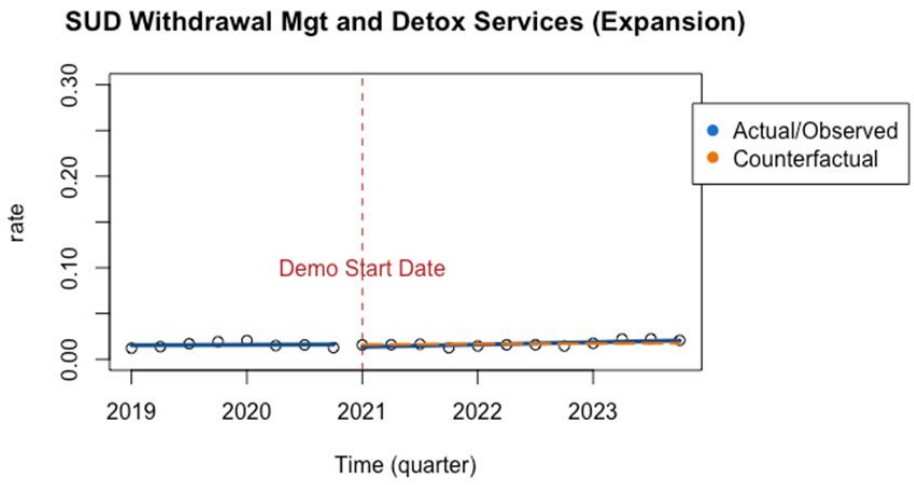
There was a slight increase in the general trend for members in the non-ABD group. Members in the ABD group showed a slight increase in use during the Demonstration period. There were no other statistically significant changes in trend.

Withdrawal Mgt/Detox ITS Model (Aid Category)	ABD	Non-ABD	Expansion
General Trend (Time) (Standard Error)	0.0002 (0.0003)	0.001** (0.0003)	0.0005 (0.002)
Immediate Effect of Demonstration Start (Standard Error)	-0.002 (0.001)	-0.0003 (0.001)	-0.003 (0.002)
Sustained Effect (Standard Error)	0.0003** (0.0001)	0.0001 (0.0001)	0.001 (0.0005)
Constant (Standard Error)	-0.43 (0.57)	-1.27** (0.52)	-0.90 (3.35)

**p<0.05; ***p<0.01






SUD Withdrawal Mgt and Detox Services (Expansion)
rate
0.00
0.10
0.20
0.30
Demo Start Date
Actual/Observed
Counterfactual
2019
2020
2021
2022
2023
Time (quarter)

Measure 1.1.6 Percentage of members with a SUD diagnosis receiving medication-assisted treatment.

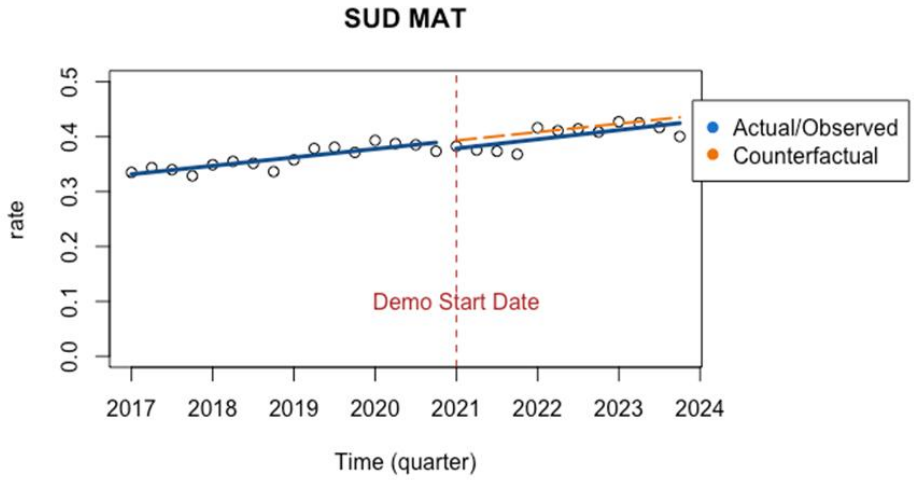
Question 1.	Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?
Hypothesis 1.	The Demonstration will maintain or increase utilization of SUD treatment services.

Measure Description: The denominator includes all enrollees with an SUD diagnosis. The numerator includes members with an SUD diagnosis who had a claim for Medication Assisted Treatment (MAT) during the measuring period (quarter) from any of the following HEDIS MY 2020 Value Sets and Medications Lists: AOD Medication Treatment Value Set; Alcohol Use Disorder Treatment Medication Lists; Opioid Use Disorder Treatment Medication Lists.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: The general trend showed a statistically significant increase in the use of MAT for SUD. There were no significant changes in trend during the first years of the Demonstration.



MAT ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.02	0.003	p<0.01
Immediate Effect of Demonstration Start	-0.01	0.01	None
Sustained Effect	0.0004	0.001	None
Constant	-30.64	5.65	p<0.01

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show that increased utilization was negatively impacted at the start of the Demonstration. However, increased use of MAT was sustained during the Demonstration period. Older members tend to use less MAT services, while women, expansion group, non-ABD group members and those living in rural

counties used more MAT services. Although coefficients are small, all temporal and individual factors showed statistically significant explanatory power.

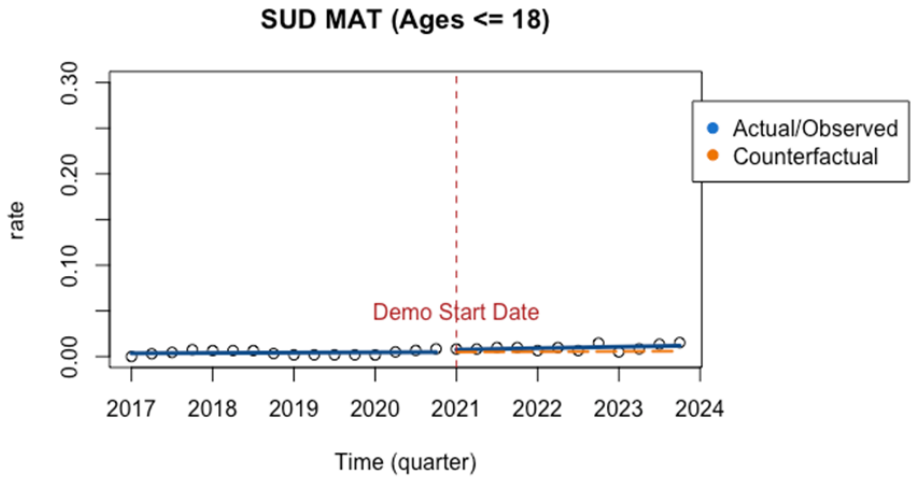
MAT GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.006	0.001	p<0.01
Immediate Effect of Demonstration Start	-0.024	0.002	p<0.01
Sustained Effect	0.003	0.0003	p<0.01
Age	-0.004	0.00005	p<0.01
Gender (Female)	0.080	0.001	p<0.01
Expansion Group	0.119	0.002	p<0.01
Non-ABD	0.067	0.002	p<0.01
Rural	0.003	0.001	p<0.01
Constant	-11.856	1.497	p<0.01

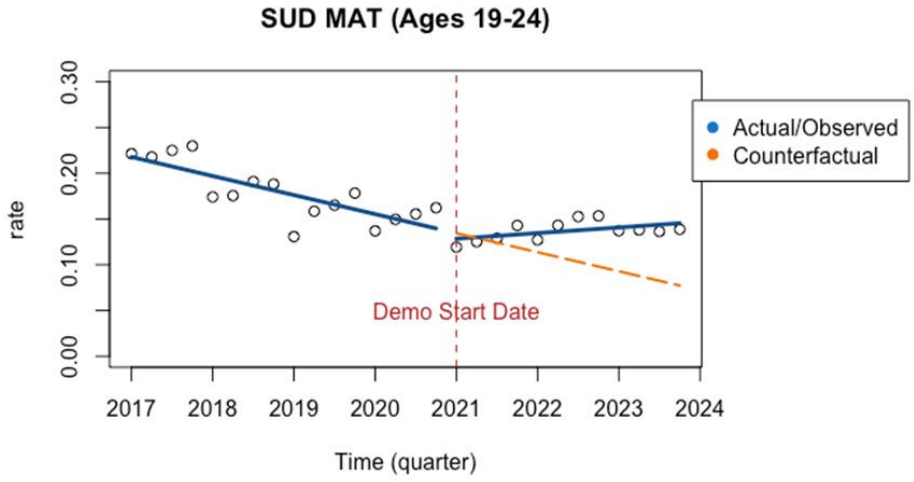
Age

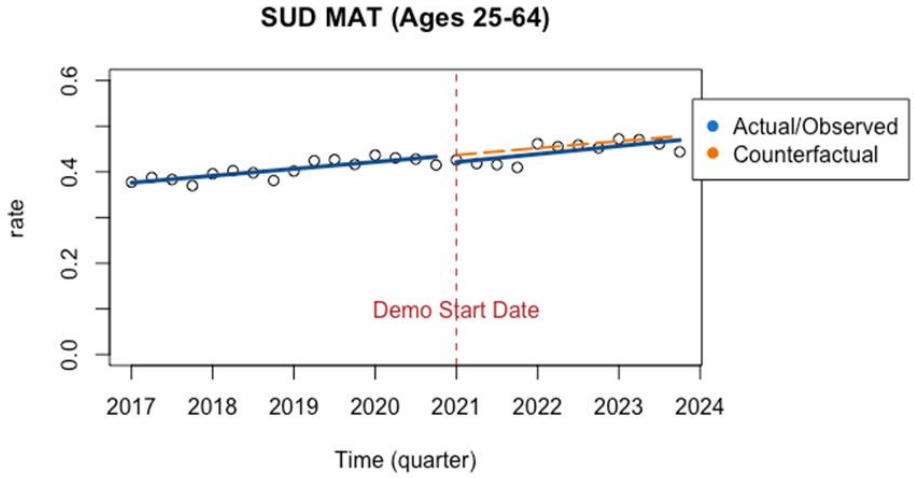
An analysis of utilization by age showed a general increase in use of MAT in all groups 19 and older. The trend showed a statistically significant and sustained increase after the Demonstration in the 19-24 age group.

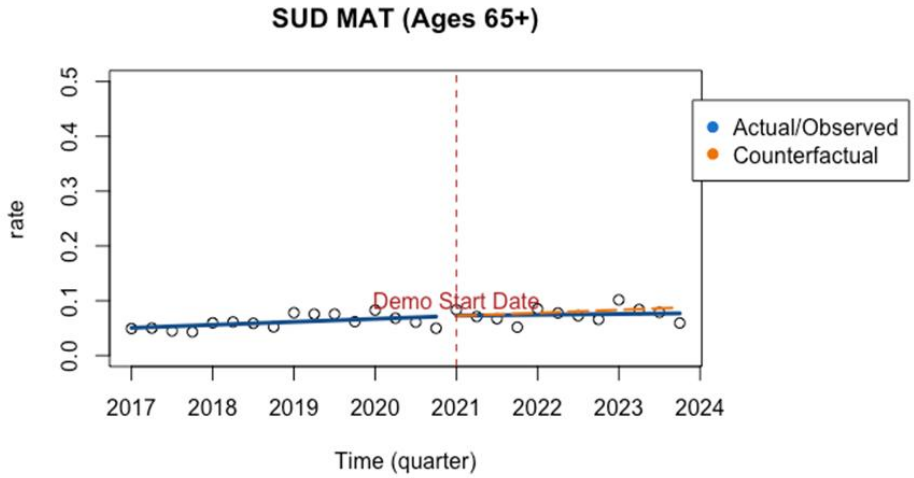
MAT ITS Model (Age)	Ages ≤18	Ages 19-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	0.0003 (0.001)	-0.02*** (0.004)	0.02*** (0.003)	0.01 (0.003)
Immediate Effect of Demonstration Start (Standard Error)	0.002 (0.002)	-0.01 (0.01)	-0.02 (0.01)	0.001 (0.01)
Sustained Effect (Standard Error)	0.0003 (0.0003)	0.01*** (0.002)	0.001 (0.001)	-0.001 (0.001)
Constant (Standard Error)	-0.69 (1.25)	42.21*** (7.11)	-30.17*** (6.04)	-10.96 (5.34)

**p<0.05; ***p<0.01




SUD MAT (Ages 19-24)
rate
0.00
0.10
0.20
0.30
Actual/Observed
Counterfactual
Demo Start Date
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)


SUD MAT (Ages 25-64)
rate
0.0
0.2
0.4
0.6
Actual/Observed
Counterfactual
Demo Start Date
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)

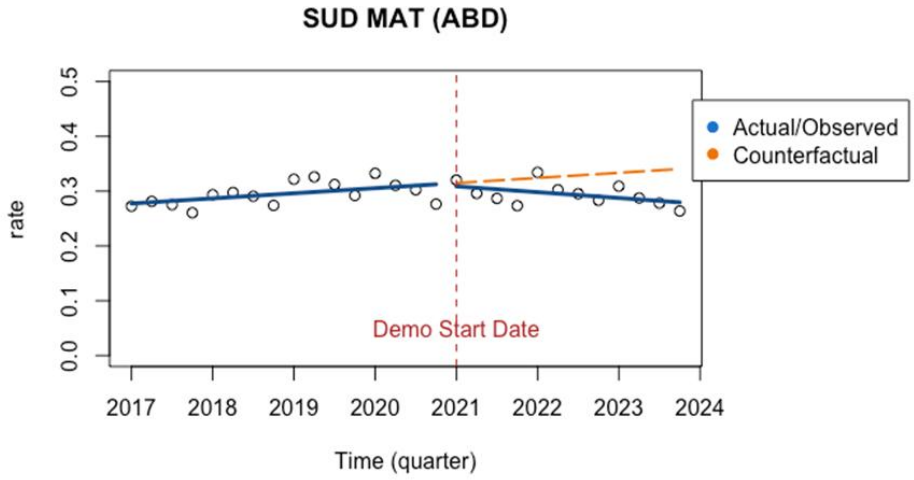

SUD MAT (Ages 65+)
rate
0.0
0.1
0.2
0.3
0.4
0.5
Actual/Observed
Counterfactual
Demo Start Date
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)

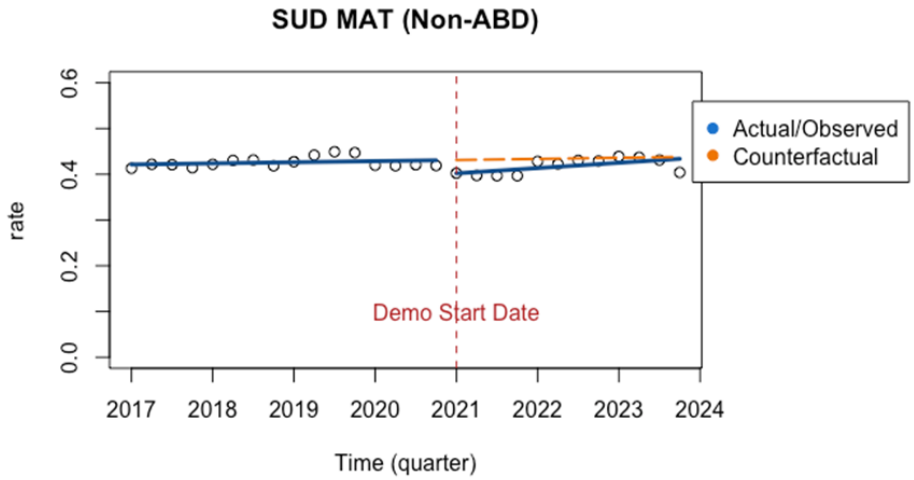
Aid Category

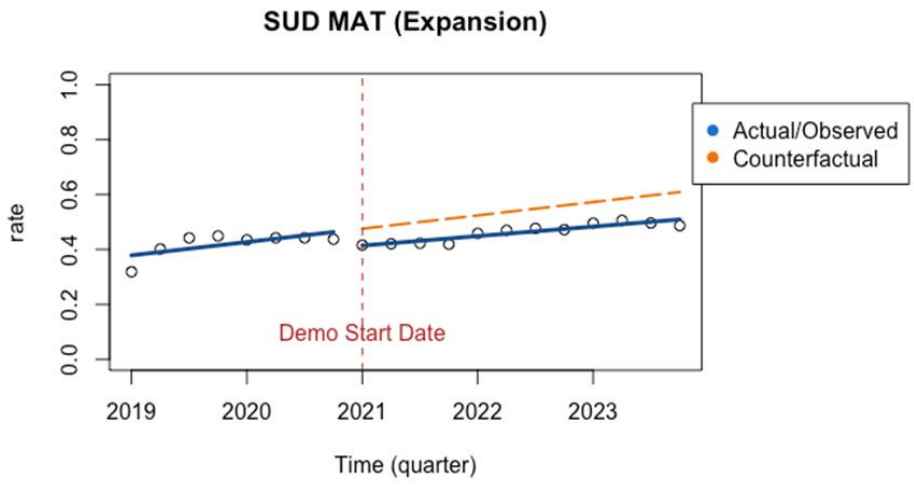
The general trend by aid category showed a decrease in MAT services for ABD and expansion groups. There was a statistically significant decrease in MAT use for the non-ABD and expansion groups immediately following the Demonstration and a sustained decrease for the ABD group.

MAT ITS Model (Aid Category)	ABD	Non-ABD	Expansion
General Trend (Time) (Standard Error)	0.01** (0.004)	0.002 (0.003)	0.05*** (0.01)
Immediate Effect of Demonstration Start (Standard Error)	-0.001 (0.01)	-0.03*** (0.01)	-0.06** (0.02)
Sustained Effect (Standard Error)	-0.005** (0.002)	0.002 (0.001)	-0.003 (0.004)
Constant (Standard Error)	-18.56** (8.16)	-4.50 (5.45)	-97.61*** (29.61)

**p<0.05; ***p<0.01






SUD MAT (Expansion)
rate
0.0
0.2
0.4
0.6
0.8
1.0
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

Measures studied under ***hypothesis two***, the Demonstration will maintain or increase SUD provider availability, are summarized below. There are no subsidiary analyses associated with evaluation question one, hypothesis two.

1.2.1. Percentage change in the number of Medicaid SUD billing providers each year
1.2.2. Percentage change in the number of Medicaid providers billing MAT treatment services

Measure 1.2.1 Percentage change in the number of providers enrolled in Medicaid and billing SUD services.

Measure 1.2.2 Percentage change in the number of providers enrolled in Medicaid and billing MAT services.

Question 1.	Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?
Hypothesis 2.	The Demonstration will maintain or increase SUD provider availability.

Measure Description: The number of Medicaid SUD providers billing for treatment services, including MAT was obtained from OMS monitoring protocol metric results reported to CMS for each year of the Demonstration. MAT was defined using HEDIS MY 2020 Value Sets and Medications Lists: AOD Medication Treatment Value Set; Alcohol Use Disorder Treatment Medication Lists; Opioid Use Disorder Treatment Medication Lists.

Data Source and Time Period: Medicaid claims SUD Monitoring Protocol reports.

Analytical Approach: A 2-sample test for equality of proportions with continuity correction for the absolute change over time.

Findings: The total number of SUD treatment providers billing for services decreased by 3.61 percent in 2023. However, providers billing MAT increased by 9.68 percent. Approximately 39 percent of Medicaid enrolled SUD treatment providers billed for MAT.

Medicaid SUD Treatment Providers Billing for Services					
Year	**Total**	**Percent Change**	**Total MAT**	**Percent Change**	**% MAT**
2021	6,559	-	2,241	-	34.17%
2022	6,561	0.03%	2,242	0.04%	34.17%
2023	6,322	-3.61%*	2,458	9.68%*	38.88%

**Statistically significant rate of change over baseline*

Measures studied under ***hypothesis three***, the Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug dependence, are listed below. There are no subsidiary analyses associated with evaluation question one, hypothesis three.

1.3.2. Percentage of ED visits for Alcohol and Other Drug (AOD) abuse or dependence for which the member received follow-up within 7-days of discharge

1.3.2. Percentage of ED visits for AOD abuse or dependence for which the member received follow-up within 30-days of discharge

Measure 1.3.1 Percentage of ED visits for AOD abuse or dependence for which the member received follow-up within 7-days of discharge.

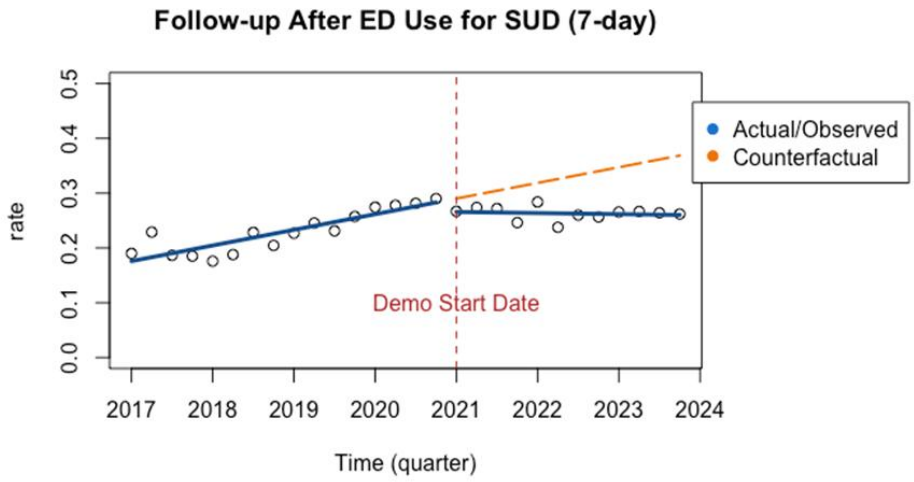
Question 1.	Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?
Hypothesis 3.	The Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug dependence.

Measure Description: The denominator included the number of ED visits with a principal diagnosis of SUD abuse or dependence for members 18 and older. The numerator included the number of visits with a follow-up with an outpatient provider within 7 days of the ED visit.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model controlling for member demographics.

Findings: The general trend showed a statistically significant increase in follow-up after the ED within 7 days. A statistically significant decrease was associated with the first years of the Demonstration period.



7-Day Follow-up ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.03	0.004	p<0.01
Immediate Effect of Demonstration Start	-0.02	0.01	None
Sustained Effect	-0.01	0.002	p<0.01
Constant	-57.39	7.31	p<0.01

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show that the decline in follow-up after the ED for SUD is explained by temporal factors (Demonstration start date and period). Older members tend to have less follow-up, while women and expansion group members engaged in more follow-up. Members in rural counties and in non-ABD

groups tended to engage in follow-up less. Although coefficients are small, all temporal and individual factors showed statistically significant explanatory power.

7-Day Follow-up GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.023	0.003	p<0.01
Immediate Effect of Demonstration Start	-0.022	0.010	p<0.05
Sustained Effect	-0.006	0.001	p<0.01
Age	-0.002	0.0002	p<0.01
Gender (Female)	0.032	0.005	p<0.01
Expansion Group	0.030	0.007	p<0.01
Non-ABD	-0.026	0.007	p<0.01
Rural	-0.012	0.006	None
Constant	-46.163	6.471	p<0.01

Measure 1.3.2 Percentage of ED visits for AOD abuse or dependence for which the member received follow-up within 30 days of discharge.

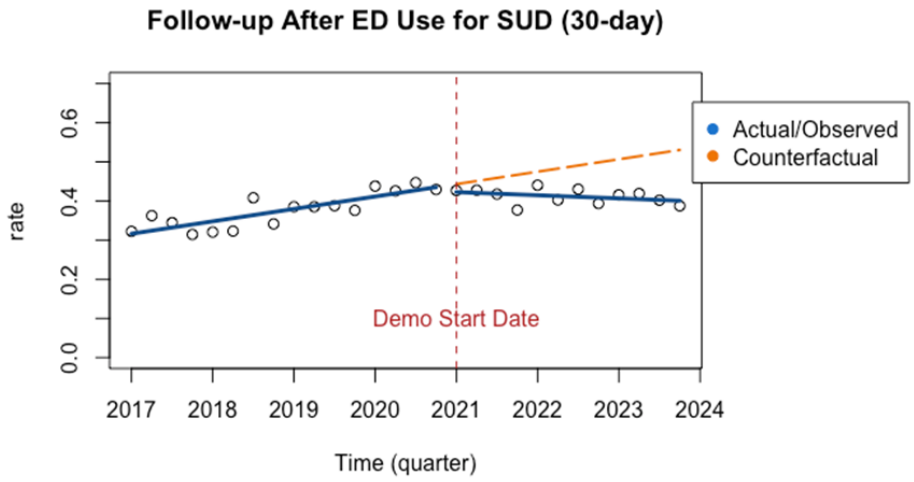
Question 1.	Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?
Hypothesis 3.	The Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug dependence.

Measure Description: The denominator included the number of ED visits with a principal diagnosis of SUD abuse or dependence for members 18 and older. The numerator included the number of visits with a follow-up with an outpatient provider within 30 days of the ED visit.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model controlling for member demographics.

Findings: There was a statistically significant trend for increased follow-up after the ED for SUD within 30 days. A sustained decrease was statistically significant during the first years of the Demonstration period.



30-Day Follow-up ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance level
General Trend (Time)	0.03	0.005	p<0.01
Immediate Effect of Demonstration Start	-0.01	0.02	None
Sustained Effect	-0.01	0.002	p<0.01
Constant	-63.64	10.00	p<0.01

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show that the decline in the 30-day follow-up rate after ED use for SUD is explained by temporal factors associated with the Demonstration period. Older members and non-ABD group members tend to

engage in follow-up less. Women and expansion group members tend to engage in follow-up after the ED more often. Although coefficients are small, these factors showed statistically significant explanatory power.

30-Day Follow-up GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.025	0.004	p<0.01
Immediate Effect of Demonstration Start	-0.018	0.011	None
Sustained Effect	-0.008	0.002	p<0.01
Age	-0.002	0.002	p<0.01
Gender (Female)	0.052	0.006	p<0.01
Expansion Group	0.047	0.008	p<0.01
Non-ABD	-0.031	0.008	p<0.01
Rural	-0.012	0.007	None
Constant	-49.319	7.330	p<0.01

Measures studied under ***hypothesis four***, the Demonstration will maintain or increase initiation and engagement in treatment, are listed below. There are no subsidiary analyses associated with evaluation question one, hypothesis four.

1.4.1. Percentage of members ages 18 and older with a new episode of AOD abuse or dependence who initiate in SUD treatment
1.4.2. Percentage of members with a new episode of alcohol and other drug abuse or dependence who engage in SUD treatment

Measure 1.4.1 Percentage of members ages 18 and older with a new episode of AOD abuse or dependence who initiate in SUD treatment.

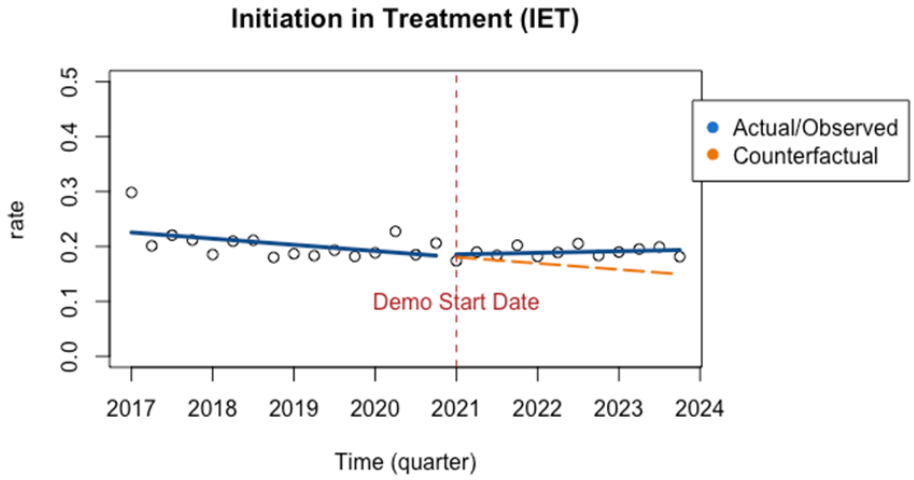
Question 1.	Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?
Hypothesis 4.	Demonstration will maintain or increase initiation and engagement in treatment.

Measure Description: The denominator includes the number of members 18 and older with at least one AOD abuse or dependence diagnoses. The numerator includes the number of members who initiate treatment within 14 days of diagnosis.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model controlling for member demographics.

Findings: The general trend showed a statistically significant decline in members initiating treatment. Increases were observed during the Demonstration period. However, the change was not statistically significant.



Initiation ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.01	0.005	P<0.05
Immediate Effect of Demonstration Start	0.002	0.02	None
Sustained Effect	0.004	0.002	None
Constant	22.90	9.36	P<0.05

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show that a general decline in initiation in treatment was reversed during the first few years of the Demonstration. Older members and those in rural counties tend to initiate less. Women and

expansion group members tend to initiate in treatment more often. Although coefficients are small, these factors showed statistically significant explanatory power.

Initiation GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-0.030	0.002	p<0.01
Immediate Effect of Demonstration Start	0.005	0.006	None
Sustained Effect	0.009	0.001	p<0.01
Age	-0.0003	0.0001	p<0.01
Gender (Female)	0.007	0.003	p<0.05
Expansion Group	0.069	0.004	p<0.01
Non-ABD	-0.007	0.004	None
Rural	-0.021	0.003	p<0.01
Constant	60.802	3.687	p<0.01

Measure 1.4.2 Percentage of members with a new episode of alcohol and other drug abuse or dependence who engage in SUD treatment.

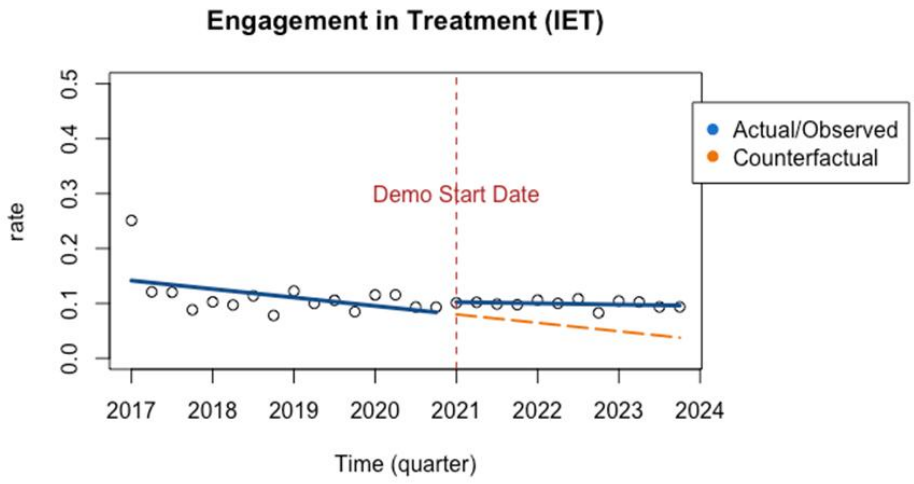
Question 1.	Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?
Hypothesis 4.	Demonstration will maintain or increase initiation and engagement in treatment.

Measure Description: The denominator includes the number of members 18 and older with at least one AOD abuse or dependence diagnosis who initiated treatment within 14 days of diagnosis. The numerator includes the number of members who received two or more services for AOD abuse or dependence within 34 days of the initiation visit.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model controlling for member demographics.

Findings: Overall engagement in treatment was trending downward. There was an increase in engagement during the Demonstration. However, neither the immediate nor sustained effect of the increase were statistically significant in the aggregate ITS model.



Engagement ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.02	0.01	p<0.05
Immediate Effect of Demonstration Start	0.02	0.02	None
Sustained Effect	0.003	0.003	None
Constant	31.19	12.23	p<0.05

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show a general trend of fewer members engaging in SUD treatment. However, the Demonstration start date, and first few years show a statistically significant effect and sustained trend for improvements in the number of members engaging in treatment. Older members tend to engage in

SUD treatment less. Women, non-ABD, and expansion group members tend to engage in treatment more often. Although coefficients are small, these factors showed statistically significant explanatory power.

Engagement GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-0.038	0.001	p<0.01
Immediate Effect of Demonstration Start	0.025	0.005	p<0.01
Sustained Effect	0.009	0.001	p<0.01
Age	-0.001	0.0001	p<0.01
Gender (Female)	0.012	0.003	p<0.01
Expansion Group	0.074	0.003	p<0.01
Non-ABD	0.018	0.003	p<0.01
Rural	-0.004	0.003	None
Constant	77.562	2.920	p<0.01

A summary of the ITS aggregate findings related to evaluation question one is presented below.

Measure	Interrupted Time Series (Statistically Significant Trends)		
	General Trend	Immediate Effect	Sustained Effect
Hypothesis 1. The Demonstration will maintain or increase utilization of SUD treatment services			
1.1.1. Members receiving SUD outpatient treatment	↑	-	↓
1.1.2. Members receiving IOP/PH	-	-	-
1.1.3. Members receiving residential and inpatient	↑	-	-
1.1.4. Members receiving withdrawal mgt/detox	↑	-	-
1.1.5. Members receiving MAT	↑	-	-
Hypothesis 3. The Demonstration will maintain or increase follow-up after ED visits for alcohol and other drug abuse			
1.3.1. ED visits for AOD abuse or dependence with follow-up within 7-days of discharge	↑	-	↓
1.3.2. ED visits for AOD abuse or dependence with follow-up within 30-days of discharge	↑	-	↓
Hypothesis 4. The Demonstration will maintain or increase initiation and engagement in SUD treatment			
1.4.1. Members ages 18 and older who initiate in SUD treatment	↓	-	-
1.4.2. Members who initiate treatment and engage in SUD treatment	↓	-	-

Notes

- No statistically significant change in trend

↑Statistically significant increase in trend

↓Statistically significant decrease in trend

A summary of the Generalized Linear Model Results (i.e., how individual factors contribute to the variation in the data) related to evaluation question one is presented below.

Measure	General Trend	Immediate Effect	Sustained Effect	Age (Older)	Gender (Female)	Expansion Group	Non-ABD	Rural Counties
Hypothesis 1. The Demonstration will maintain or increase utilization of SUD treatment services								
1.1.2. Members receiving SUD outpatient treatment	↑	↑	↓	↑	↑	↑	↑	↑
1.1.3. Members receiving IOP/PH	↓	↓	↓	↓	↑	↑	-	↓
1.1.4. Members receiving residential and inpatient	-	-	-	↓	↑	↑	↓	↓
1.1.5. Members receiving withdrawal mgt/detox	↑	↓	↑	↓	↓	↑	↓	↓
1.1.6. Members receiving MAT	↑	↓	↑	↓	↑	↑	↑	↑
Hypothesis 3. The Demonstration will maintain or increase follow-up after ED visits for alcohol and other drug abuse								
1.3.1. ED visits for AOD with follow-up within 7-days	↑	↓	↓	↓	↑	↑	↓	-
1.3.2. ED visits for AOD with follow-up within 30-days	↑	-	↓	↓	↑	↑	↓	-
Hypothesis 4. The Demonstration will maintain or increase initiation and engagement in SUD treatment								
1.4.1. Members ages 18 and older who initiate in SUD treatment	↓	-	↑	↓	↑	↑	-	↓
1.4.2. Members who initiate treatment and engage in SUD treatment	↓	↑	↑	↓	↑	↑	↑	-

Notes:

- No statistically significant explanatory power

↑Statistically significant explanatory power

↓Statistically significant explanatory power

B. SUD EVALUATION QUESTION TWO

Does the Demonstration maintain or increase adherence to and retention in treatment for alcohol or other drug use?

This evaluation question has one hypothesis: The Demonstration will maintain or increase continuity of pharmacotherapy for OUD for Opioid Health Home members. The measure studied is outlined below. There are no subsidiary analyses associated with evaluation question two, hypothesis one.

2.1.1. Percentage of OHH eligible members ages 18 and older with pharmacotherapy for OUD who have at least 180 days of continuous treatment

Measure 2.1.1 Percentage of members ages 18 and older eligible for opioid health homes with pharmacotherapy for OUD who have at least 180 days of continuous treatment

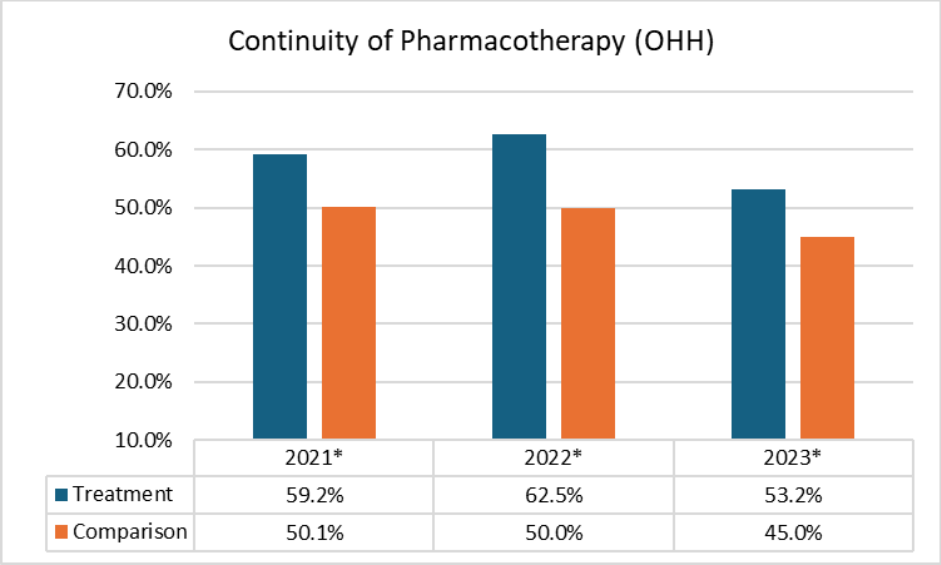
Question 2.	Does the Demonstration maintain or increase adherence to and retention in treatment for alcohol or other drug use?
Hypothesis 1.	The Demonstration will maintain or increase continuity of pharmacotherapy for OUD.

Measure Description: The denominator includes the number of OHH members 18 and older with an OUD who have at least one claim for an OUD medication. The numerator includes the number of OHH members with an OUD who had at least 180 days of continuous pharmacotherapy.

Data Source and Time Period: MMIS paid claims 2017-2023; OMS Health Home enrollment reports.

Analytical Approach: Comparison group strategy using Coarsened Exact Matching for members with an OUD, not receiving OHH services.

Findings: In each of the years studied, the treatment group (members receiving OHH services) showed a statistically significant improvement over the comparison group. In 2021, 59.2 percent of OHH members had 180 days of continuous treatment with 62.5 percent in 2022 and 53.2 percent in 2023. Comparison group scores were 50.1 percent, 50.0 percent, and 45.0 percent, respectively.



A summary of results for evaluation question two is provided below.

Measure	Analytic Approach	Treatment Group Maintain/Improve	Statistically Significant
Hypothesis 1. The Demonstration will maintain or increase continuity of pharmacotherapy for OUD for Opioid Health Home members.			
2.1.1. OHH members who have at least 180 days of continuous OUD treatment	Comparison Strategy	Yes	Yes

C. SUD EVALUATION QUESTION THREE

Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?

Evaluation question three has three hypotheses:

1. The Demonstration will contain or reduce the use of opioids at a high dosage.
2. The Demonstration will contain or reduce the use of opioids concurrent with benzodiazepines for ACO attributed members.
3. The Demonstration will contain or reduce the rate of overdose deaths due to opioids in the Medicaid population.

Measures studied under ***hypothesis one*** are listed below. There are no subsidiary analyses associated with evaluation question three.

3.1.1. Percentage of members ages 18 and older who receive prescriptions for opioids with an average daily dose greater than or equal to 90 morphine milligram equivalents (MME) over a period of 90 days or more

Measure 3.1.1 Percentage of members ages 18 and older who receive prescriptions for opioids with an average daily dose greater than or equal to 90 morphine milligram equivalents (MME) over a period of 90 days or more.

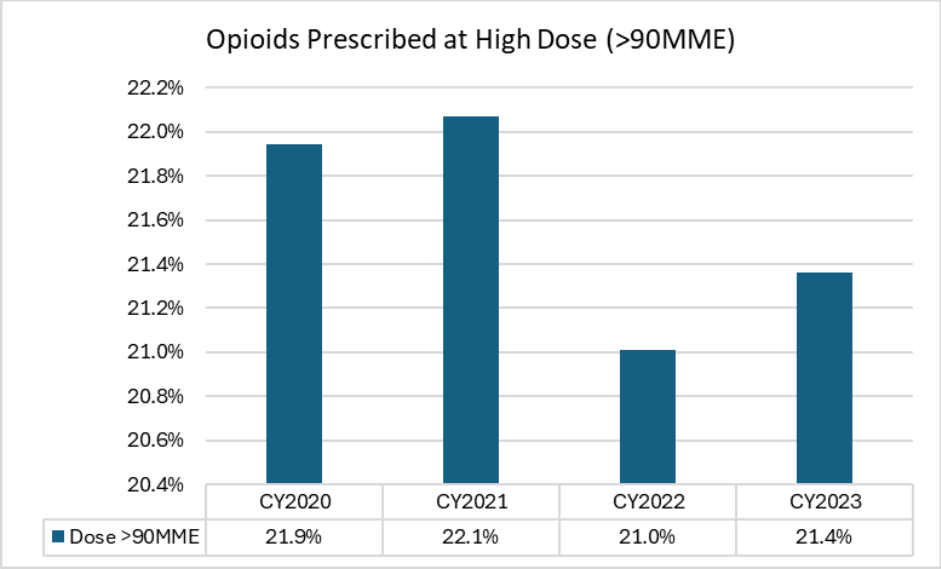
Question 3.	Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?
Hypothesis 1.	The Demonstration will contain or reduce the use of opioids at a high dosage.

Measure Description: The denominator includes the number of members with two or more claims for opioid medications on different dates with a cumulative supply of 15 or more days. The numerator includes the number of members with an average daily dosage greater than or equal to 90 MME.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Logic regression with t-test. Demonstration Year results (CY2021-23) were examined using 2020 as the baseline. To assess the potential impact of the PHE on data, the evaluator tested the means for 2019 and 2020. The evaluator found no statistically significant difference between 2019 and 2020 results.

Findings: In 2020 the percentage of members with SUD prescribed opioids at a high dose was 21.9 percent. The number rose slightly in 2021 to 22.1 percent before declining to 21 percent in 2022 and 21.4 percent in 2023 (lower rates are preferred). The change over baseline was not statistically significant any year of the Demonstration.



Hypothesis two, the Demonstration will maintain or increase continuity of pharmacotherapy for OUD for members eligible for the Accountable Community program, was examined with one measure, listed below. There are no subsidiary analyses associated with evaluation question three, hypothesis two.

3.2.1. Percentage of members aged 18 and older with concurrent use of prescription opioids and benzodiazepines

Measure 3.2.1 Percentage of members ages 18 and older with concurrent use of prescription opioids and benzodiazepines

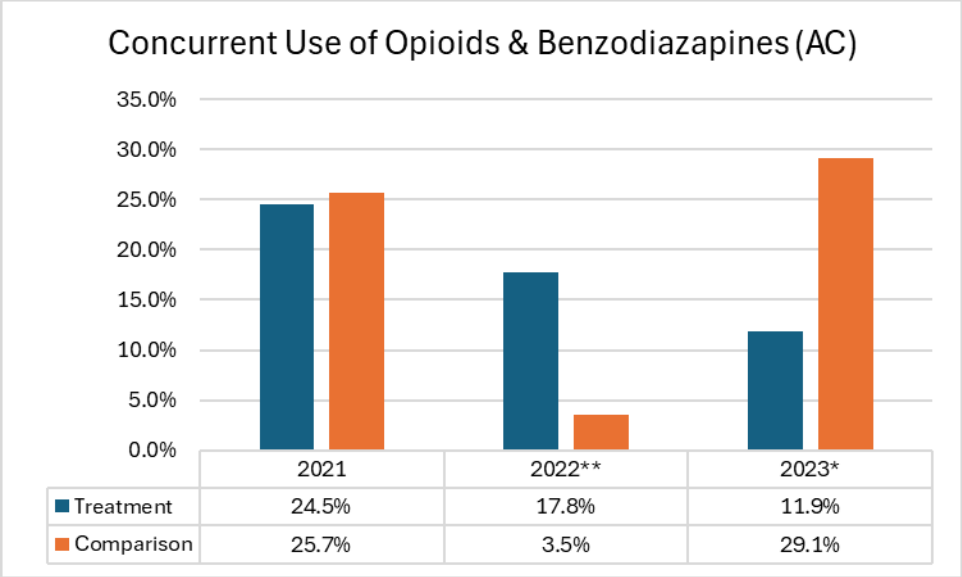
Question 3.	Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?
Hypothesis 2.	The Demonstration will contain or reduce the use of opioids concurrent with benzodiazepines for Accountable Community (AC) attributed members.

Measure Description: The denominator includes the number of AC members with two or more claims for opioid medications on different dates of service and with a cumulative day supply of 15 or more days. The numerator includes the number of AC members with two or more claims for any benzodiazepine and concurrent use of opioids for 30 or more consecutive days.

Data Source and Time Period: MMIS paid claims 2017-2023; OMS Accountable Community enrollment reports.

Analytical Approach: Comparison group strategy using Coarsened Exact Matching for members not receiving AC services.

Findings: Lower scores are preferred. In 2021 there was no statistically significant difference in performance in the AC group (24.5 percent) versus comparison group (257 percent). Members receiving AC services performed better than the control group in 2023 (11.9 percent versus 29.1 percent, respectively). In 2022 the comparison sample was fewer than 50 members, causing a considerable fluctuation in findings and inconclusive results.



	2021	2022**	2023*
Treatment	24.5%	17.8%	11.9%
Comparison	25.7%	3.5%	29.1%

**Statistically significant difference*
***Comparison sample was small causing extreme fluctuations in results*

Evaluation question three, ***hypothesis three*** suggests the Demonstration will contain or reduce the rate of overdose deaths due to opioids in the Medicaid population. There are no subsidiary analyses associated with evaluation question three, hypothesis three. A summary of the measures examined is provided below.

3.3.1. The rate of opioid overdose deaths per 1,000 Medicaid members
3.3.2. The total number of PMP users during the twelve-month measurement period
3.3.3. The total number of PMP inquires performed during the twelve-month measurement period

Measure 3.3.1 The rate of opioid overdose deaths per 1,000 Medicaid members

Question 3.	Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?
Hypothesis 3.	The Demonstration will contain or reduce the rate of overdose deaths due to opioids in the Medicaid population.

Measure Description: The denominator includes members enrolled in Medicaid for at least one month during the measurement period or 30 days prior to the beginning of the measurement period. The numerator includes the total number of overdose deaths. For opioid related deaths, the denominator is the number of members with an OUD and the numerator is the number of overdose deaths for that group.

Data Source and Time Period: CY2020 (Baseline) – CY2023 (Demonstration Year 2) results reported by OMS to CMS as part of the SUD Monitoring Protocol metrics.

Analytical Approach: A 2-sample test for equality of proportions with continuity correction comparing overdose deaths per Medicaid member.

Findings: Overdose deaths per 1,000 Medicaid members rose from 1.14 at baseline to 1.34 in CY2022. Overdose deaths related to members with an OUD also rose from 8.13 at baseline to 9.64 in CY2022. In CY2023 both rates declined to 1.03 for overdose deaths and 6.89 per 1,000 for members with an OUD. Change over baseline was statistically significant in each year for both metrics.

Overdose Death Rate per 1,000 Members		
Year	All Members	Members with OUD
CY2021	1.14	8.13
CY2022	1.34*	9.64*
CY2023	1.03*	6.89*

**Statistically significant change over baseline*

Measure 3.3.2 The total number of PMP users during the twelve-month measurement period.

Measure 3.3.3 The total number of PMP inquiries performed during the twelve-month measurement period.

Question 3.	Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?
Hypothesis 3.	The Demonstration will contain or reduce the rate of overdose deaths due to opioids in the Medicaid population.

Measure(s) Description: Each measure is a count from the Maine Prescription Monitoring System of registered users and the number of inquiries made in each 12-month period.

Data Source and Time Period: Maine Prescription Monitoring System Annual Report to the Legislature 2020 – 2023.

Analytical Approach: A 2-sample test for equality of proportions with continuity correction

Findings: The total number of PMP inquiries has been increasing in each year of the Demonstration. CY2020 had 1,837,295 inquires while CY2023 had 2,876,518 inquires. The number of dispensers has also been steadily increasing with 1,970 at baseline and 2,174 in CY2023. The number of prescribers decreased in CY2023 due a purging of inactive accounts. The rate of change was significantly different year over year.

	PMP Users				Inquiries	
Year	**Prescribers**	**Dispensers**	**Total Users**	**Percent Change**	**Total # Inquires**	**Percent Change**
Baseline	13,732	1,970	15,702	-	1,837,295	-
CY2021	13,571	1,867	15,438	-1.68%	1,847,726	0.57%
CY2022	12,106	2,030	14,136	-9.97%*	2,474,768	34.70%*
CY2023	8,266**	2,174	10,440	-32.37%*	2,876,518	55.68%*

**Statistically significant change over baseline;*
***Prescribers who were inactive since 2021 were removed from the system*

A summary of results for evaluation question three is presented below.

Measure	Analytic Approach	Improve or Maintain	Statistical Significance
Hypothesis 1. The Demonstration will contain or reduce the use of opioids at a high dosage.			
3.1.1. Percentage of members ages 18 and older who receive prescriptions for opioids with an average daily dose greater than or equal to 90 morphine milligram equivalents (MME) over a period of 90 days or more	Logistic Regression	Yes	-
Hypotheses 2. The Demonstration will contain or reduce the use of opioids concurrent with benzodiazepines for AC attributed members.			
3.2.1. Percentage of members ages 18 and older eligible for AC participation with concurrent use of prescription opioids and benzodiazepines	Comparison Strategy	Yes	↑
Hypothesis 3. The Demonstration will contain or reduce the rate of overdose deaths due to opioids in the Medicaid population.			
3.3.1. The rate of opioid overdose deaths per 1,000 Medicaid members	Proportional T-test	Yes	↓
3.3.2. The total number of PMP users during the twelve-month measurement period		Inconclusive*	
3.3.3. The total number of PMP inquires performed during the twelve-month measurement period		Yes	↑

** Inactive users were purged from the system in 2023*

D. SUD EVALUATION QUESTION FOUR

Does the Demonstration contain or reduce preventable ED visits and inpatient hospitalizations for individuals with a SUD?

Evaluation question four includes two subsidiary questions:

a. How does utilization vary by age, aid category code?
b. How does utilization vary by geographic characteristics (e.g., rural v. urban)?

There are two hypotheses:

1. The Demonstration will contain or reduce the rate of preventable ED visits for individuals with a SUD.
2. The Demonstration will contain or reduce preventable inpatient admissions.

Measures examined under ***hypothesis one*** are outlined below.

4.1.1. Total number of ED visits for SUD per 1,000 members
4.1.2. The rate of non-emergent ED visits per 1,000 member months

Measure 4.1.1 Total number of ED visits for SUD per 1,000 members

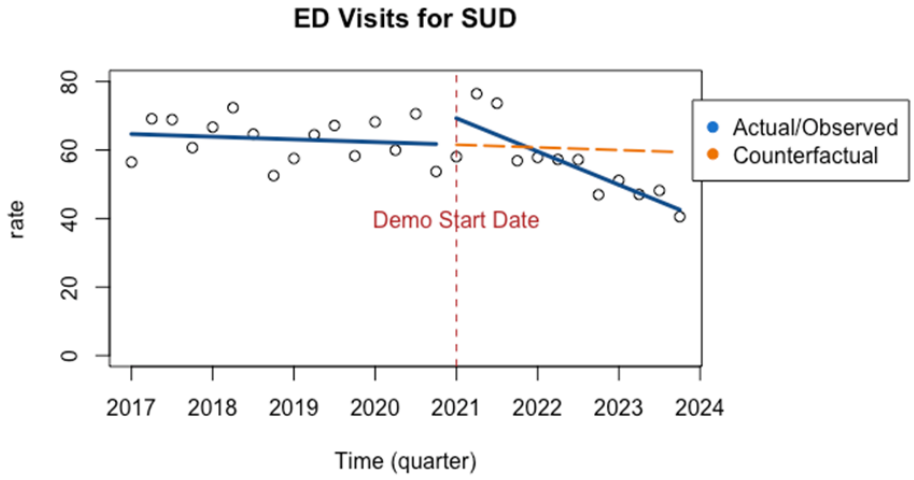
Question 4.	Does the Demonstration contain or reduce preventable ED visits and inpatient hospitalizations for individuals with a SUD?
Hypothesis 1.	The Demonstration will contain or reduce the rate of preventable ED visits for individuals with a SUD.

Measure Description: The denominator represents the number of members with an SUD who had an ED visit during the measurement period. The numerator includes the number of ED visits with SUD as the primary diagnosis.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for members demographics.

Findings: ED visits for SUD showed a statistically significant sustained decline during the first years of the Demonstration.



ED for SUD ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.78	1.37	None
Immediate Effect of Demonstration Start	9.97	4.91	None
Sustained Effect	-2.23	0.63	p<0.01
Constant	1,637.38	2,763.36	None

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show a general trend of declining ED use for SUD. There was an increase in ED use for SUD associated with the Demonstration's start and a sustained decline in use after that date. Women, older members, non-ABD group members and members in rural counties have fewer visits to the ED for SUD.

Expansion group members tend to have more visits to the ED for SUD. All temporal and demographic factors showed statistically significant explanatory power.

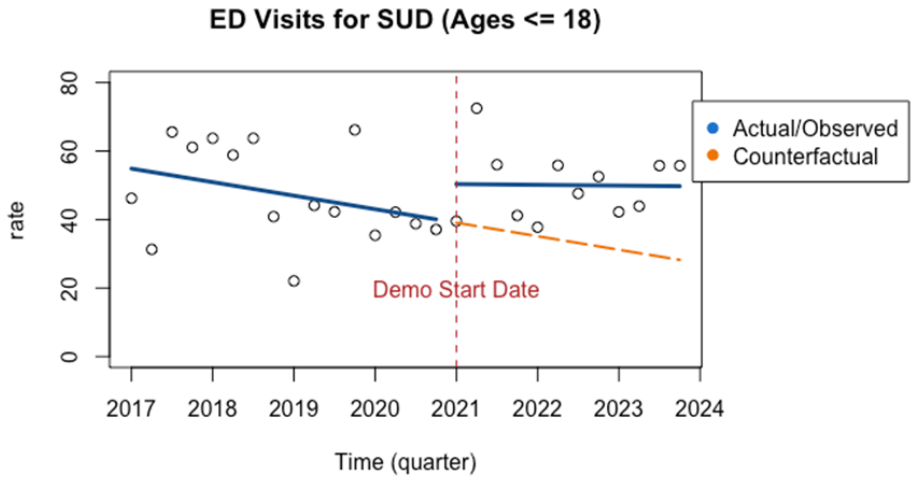
ED for SUD GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-3.054	0.596	p<0.01
Immediate Effect of Demonstration Start	8.629	1.867	p<0.01
Sustained Effect	-1.617	0.240	p<0.01
Age	-0.097	0.039	p<0.05
Gender (Female)	-20.053	0.964	p<0.01
Expansion Group	7.412	1.317	p<0.01
Non-ABD	-23.750	1.222	p<0.01
Rural	-36.856	0.994	p<0.01
Constant	6,264.726	1,202.756	p<0.01

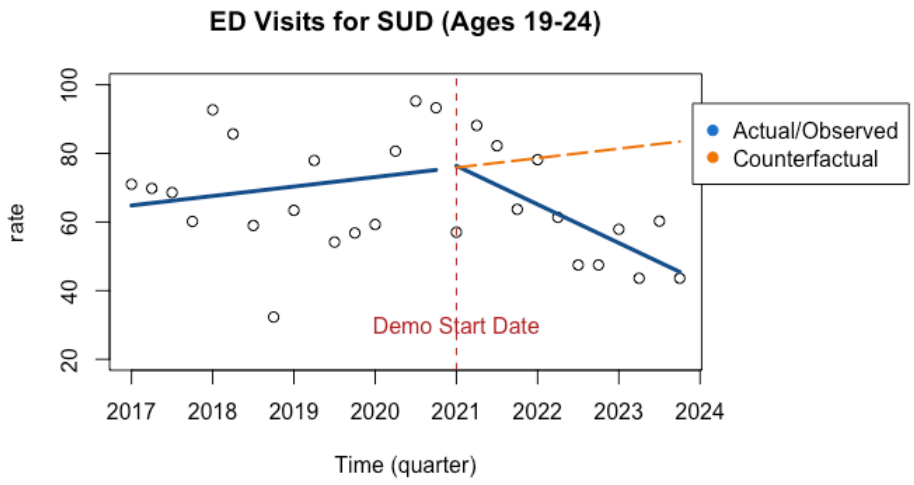
Age

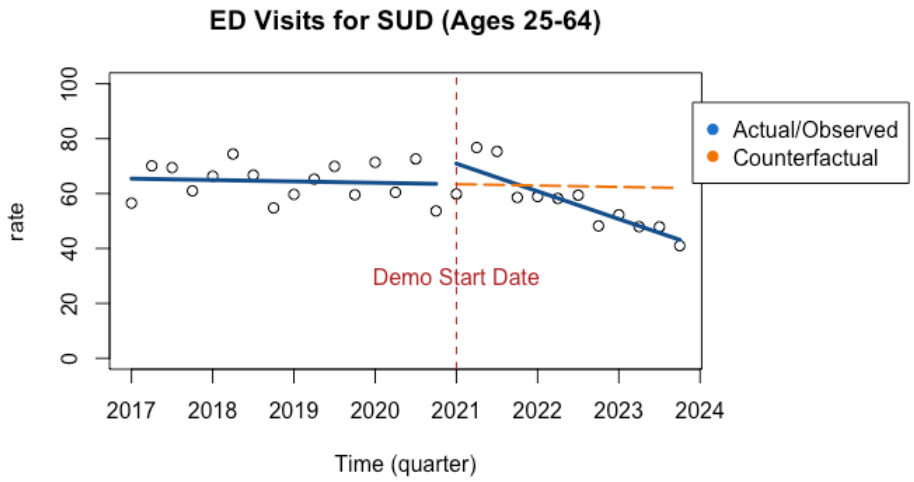
In general, members 65 and older use the ED for SUD less frequently. The was also a statistically significant sustained trend for fewer ED visits for SUD for members in the 19-24 and 25-64 age groups.

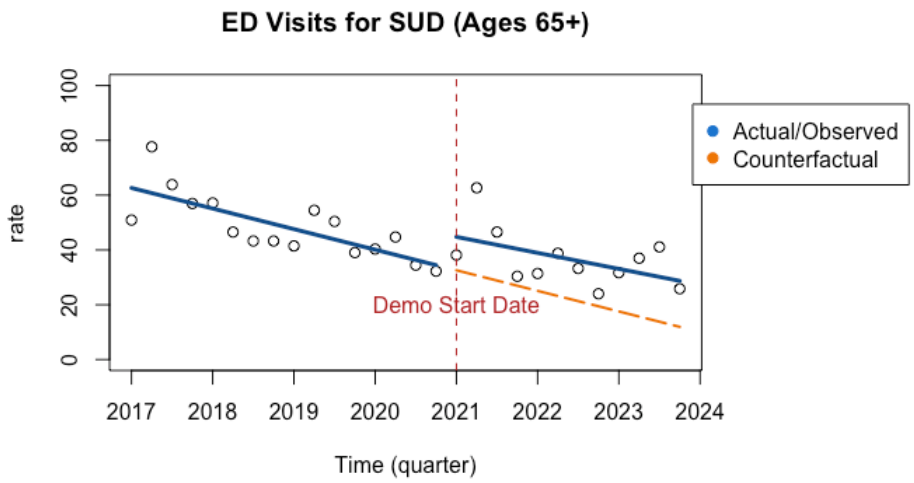
ED for SUD ITS Model (Age)	Ages ≤18	Ages 19-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	-3.95 (2.67)	2.76 (3.29)	-0.50 (1.41)	-7.51*** (1.82)
Immediate Effect of Demonstration Start (Standard Error)	10.35 (9.57)	4.01 (11.83)	9.89 (5.06)	11.77 (6.55)
Sustained Effect (Standard Error)	0.93 (1.22)	-3.50** (1.51)	-2.40*** (0.65)	0.42 (0.84)
Constant (Standard Error)	8,017.22 (5,382.32)	-5,500.84 (6,651.72)	1,079.08 (2,845.25)	15,212.63*** (3,681.06)

**p<0.05; ***p<0.01




ED Visits for SUD (Ages 19-24)
rate
20
40
60
80
100
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


ED Visits for SUD (Ages 25-64)
rate
0
20
40
60
80
100
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

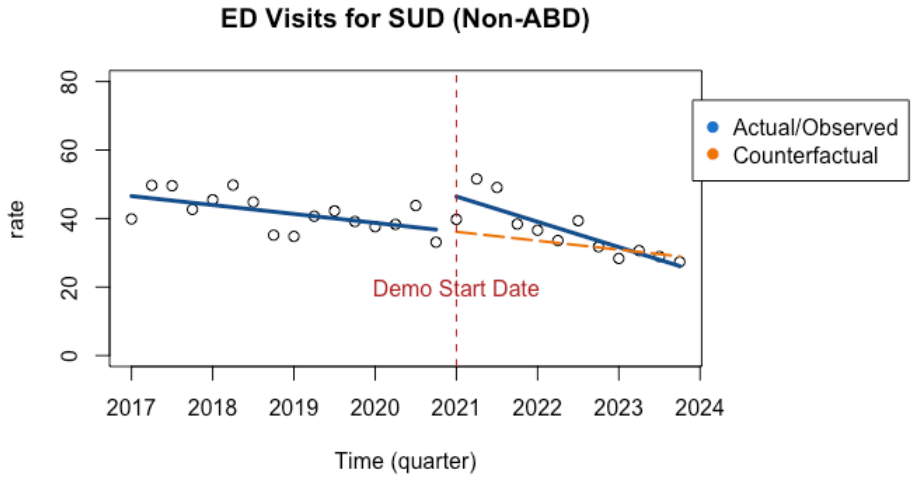

ED Visits for SUD (Ages 65+)
rate
0
20
40
60
80
100
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

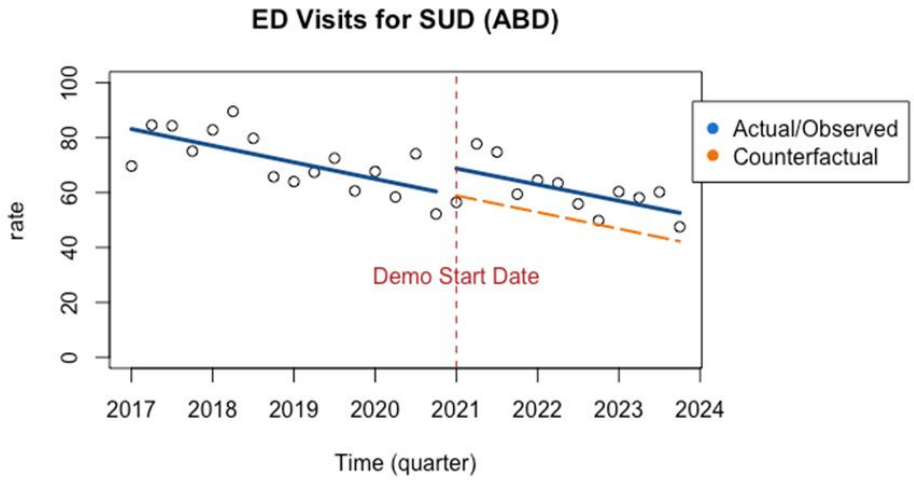
Aid Category

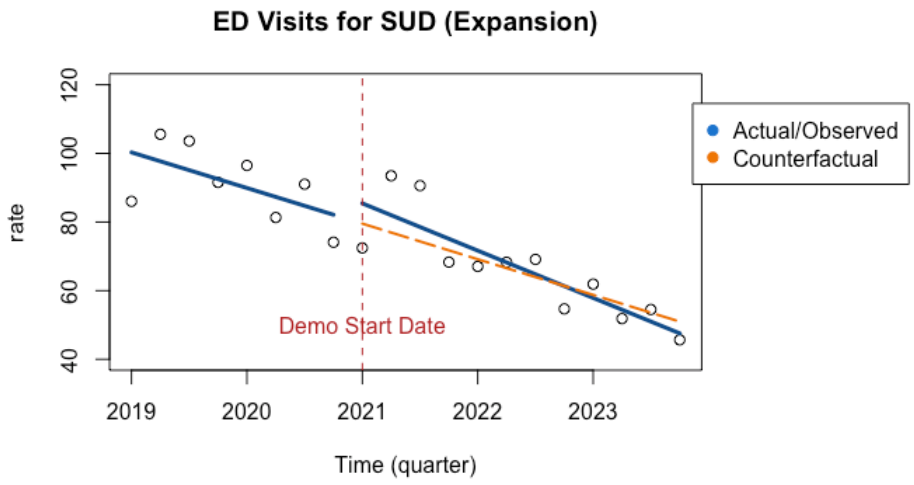
An analysis of utilization by aid category showed statistically significant general trend for fewer ED visits for SUD in the ABD and non-ABD groups. Immediately following the start of the Demonstration members in the non-ABD group had more frequent visits to the ED for SUD before a decline was sustained during the first few years of the Demonstration.

ED for SUD ITS Model (Aid Category)	ABD	Non-ABD	Expansion
General Trend (Time)	-6.06***	-2.61**	-10.38
(Standard Error)	(1.67)	(0.96)	(5.20)
Immediate Effect of Demonstration Start	9.83	11.50***	6.75
(Standard Error)	(6.01)	(3.46)	(7.52)
Sustained Effect	0.04	-1.20**	-0.85
(Standard Error)	(0.77)	(0.44)	(1.48)
Constant	12,302.05***	5,305.59**	21,066.30
(Standard Error)	(3,379.85)	(1,943.46)	(10,510.49)

**p<0.05; ***p<0.01





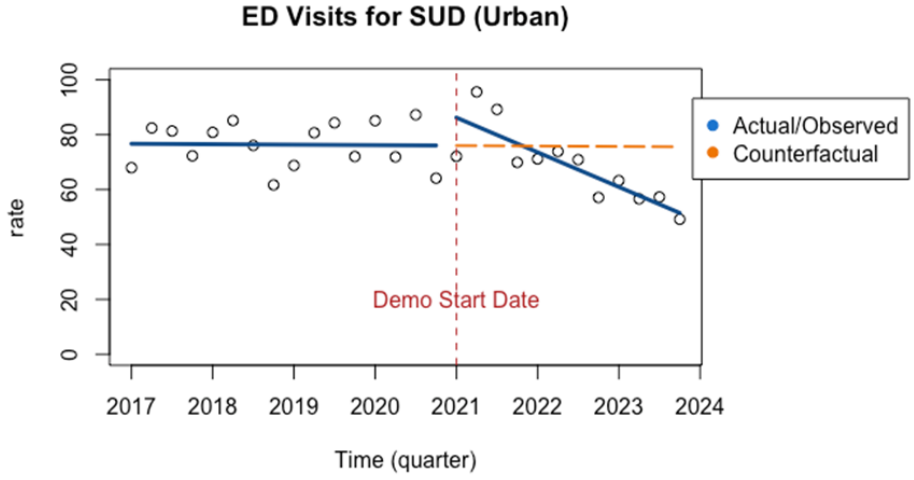


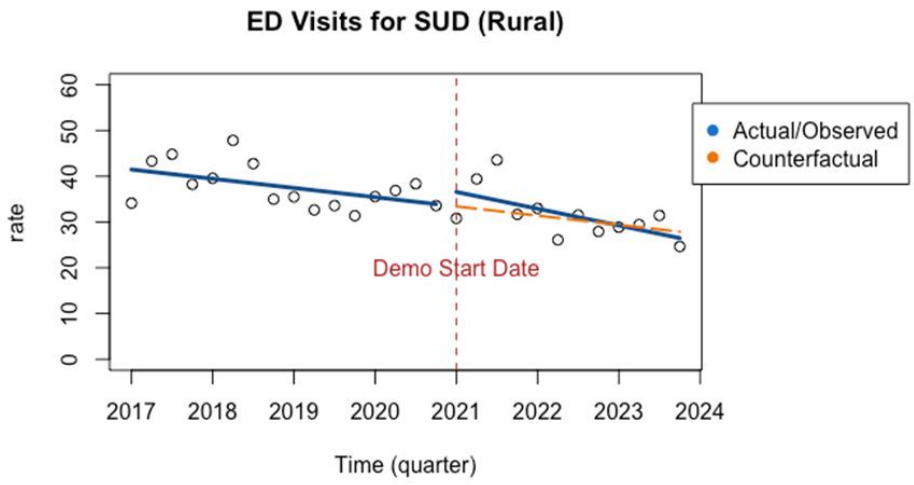
Urban/Rural

In general, members living in rural counties used the ED for SUD less frequently. There were no immediate or sustained effects of the Demonstration period for members in rural counties. Immediately following the start of the Demonstration members in urban counties showed a statistically significant increase in use of the ED for SUD followed by a statistically significant sustained decrease in use for the first few years of the Demonstration.

ED for SUD ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	-0.16 (1.76)	-2.01** (0.94)
Immediate Effect of Demonstration Start (Standard Error)	13.31** (6.30)	3.57 (3.37)
Sustained Effect (Standard Error)	-3.12*** (0.81)	-0.41 (0.43)
Constant (Standard Error)	408.18 (3,544.64)	4,105.12** (1,893.95)

**p<0.05; ***p<0.01




ED Visits for SUD (Rural)
rate
0
10
20
30
40
50
60
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

Measure 4.1.2 The rate of non-emergent ED visits per 1,000 member months

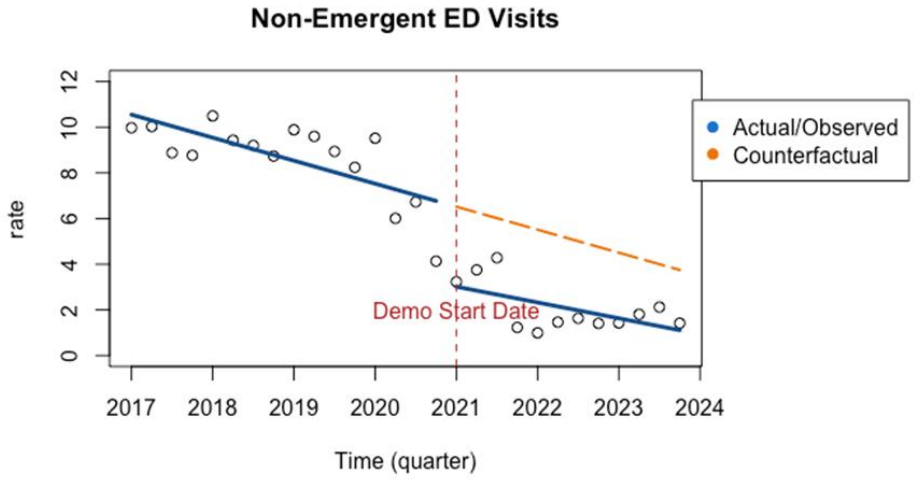
Question 4.	Does the Demonstration contain or reduce preventable ED visits and inpatient hospitalizations for individuals with a SUD?
Hypothesis 1.	The Demonstration will contain or reduce the rate of preventable ED visits for individuals with a SUD.

Measure Description: The denominator represents the number of members with an SUD who had an ED visit during the measurement period. The numerator includes the number of ED visits with a diagnosis identified as non-emergent (see Appendix B) as the primary diagnosis.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for members demographics.

Findings: Non-emergent ED visits showed a declining trend. There was a statistically significant decline immediately following the start of the Demonstration.



Non-Emergent ED ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-1.01	0.24	p<0.01
Immediate Effect of Demonstration Start	-3.58	0.86	p<0.01
Sustained Effect	0.08	0.11	None
Constant	2,042.66	485.87	p<0.01

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show a general trend of declining non-emergent ED use with an immediate decline immediately following the start of the Demonstration. Older members, those in rural counties and those in the non-ABD and expansion group had fewer non-emergent ED visits. Women had more non-emergent ED visits. All temporal and demographic factors showed statistically significant explanatory power.

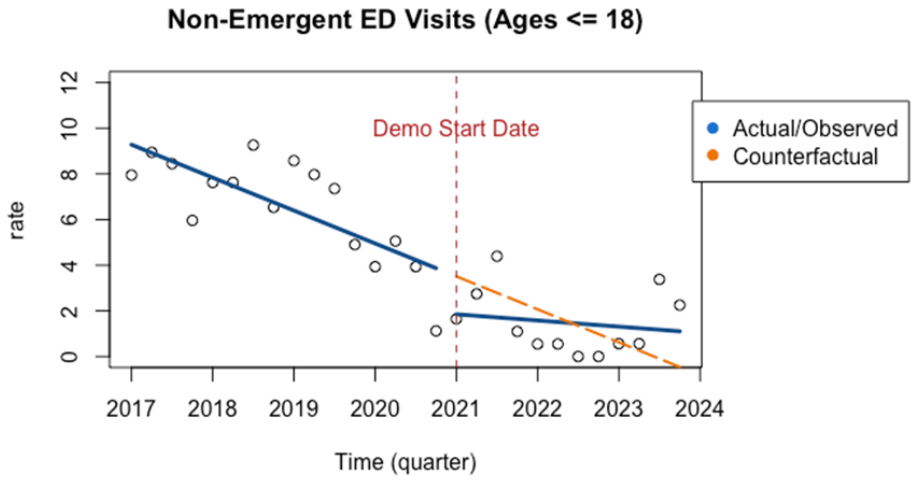
Non-Emergent ED GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-1.085	0.077	p<0.01
Immediate Effect of Demonstration Start	-3.434	0.241	p<0.01
Sustained Effect	0.113	0.031	p<0.01
Age	-0.011	0.005	p<0.05
Gender (Female)	1.167	0.124	p<0.01
Expansion Group	-0.744	0.170	p<0.01
Non-ABD	-2.424	0.158	p<0.01
Rural	-1.726	0.128	p<0.01
Constant	2,200.198	155.205	p<0.01

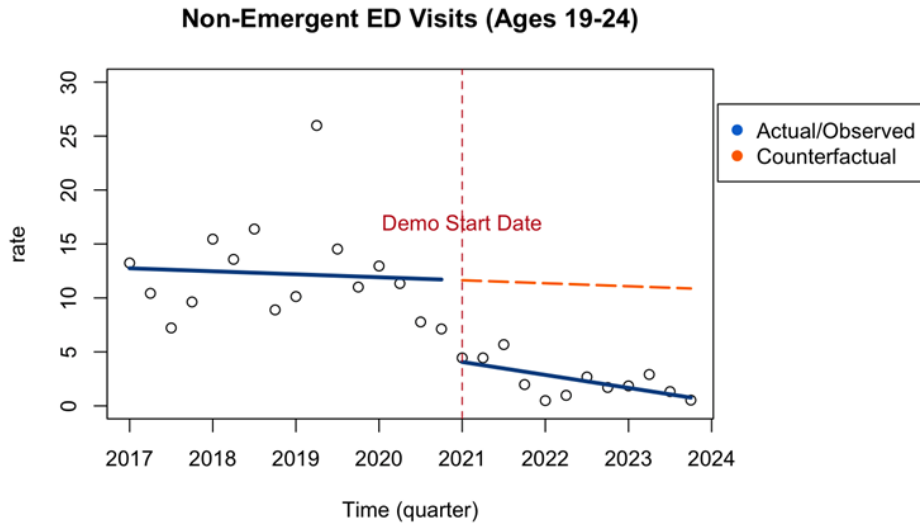
Age

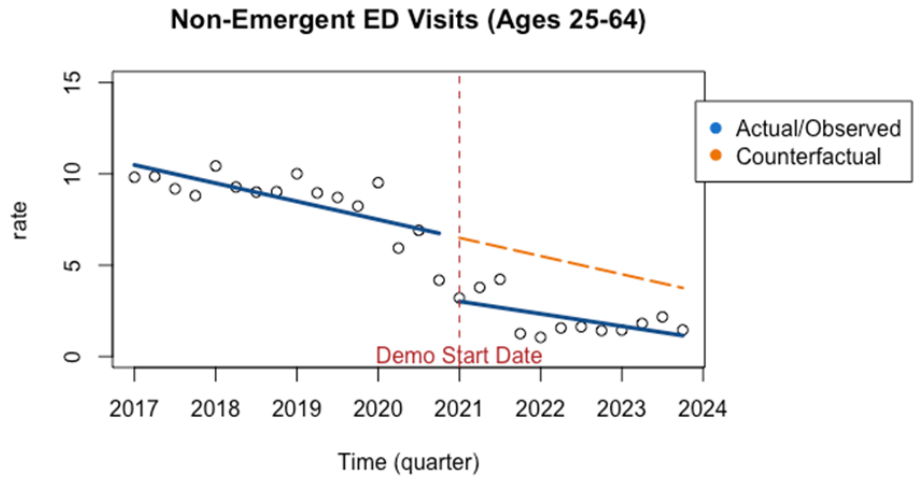
Utilization by age showed a general decline in non-emergent ED use for all age groups, apart from the 19–24-year-olds. The start of the Demonstration was associated with an immediate decline in all age groups, apart from those 18 and under. The sustained effect was not statistically significant.

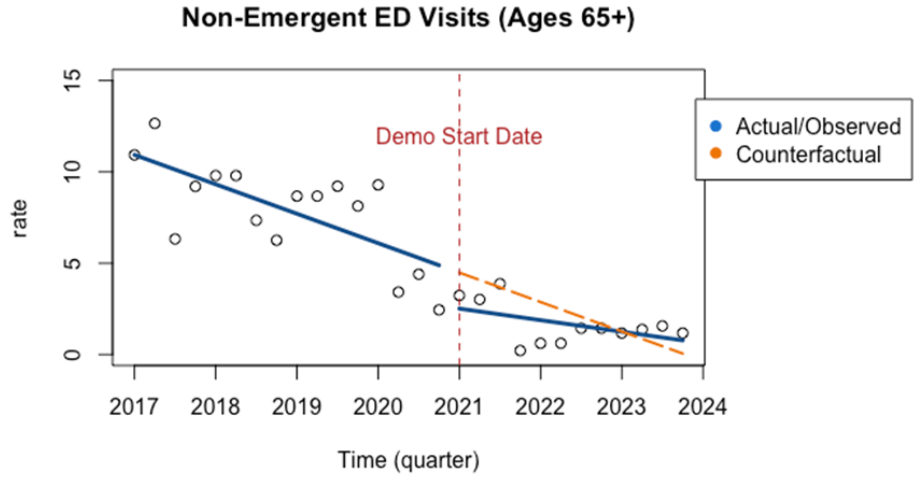
Non-Emergent ED ITS Model (Age)	Ages ≤18	Ages 19-24	Ages 25-64	Ages 65+
General Trend (Time)	-1.44***	-0.28	-1.00***	-1.61***
(Standard Error)	(0.32)	(0.82)	(0.23)	(0.37)
Immediate Effect of Demonstration Start	-1.95	-7.34**	-3.56***	-2.22
(Standard Error)	(1.16)	(2.93)	(0.83)	(1.32)
Sustained Effect	0.29	-0.23	0.08	0.25
(Standard Error)	(0.15)	(0.38)	(0.11)	(0.17)
Constant	2,918.53***	572.75	2,021.34***	3,261.88***
(Standard Error)	(653.76)	(1,649.45)	(466.30)	(739.97)

**p<0.05; ***p<0.01




Non-Emergent ED Visits (Ages 19-24)
rate
0
5
10
15
20
25
30
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


Non-Emergent ED Visits (Ages 25-64)
rate
0
5
10
15
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

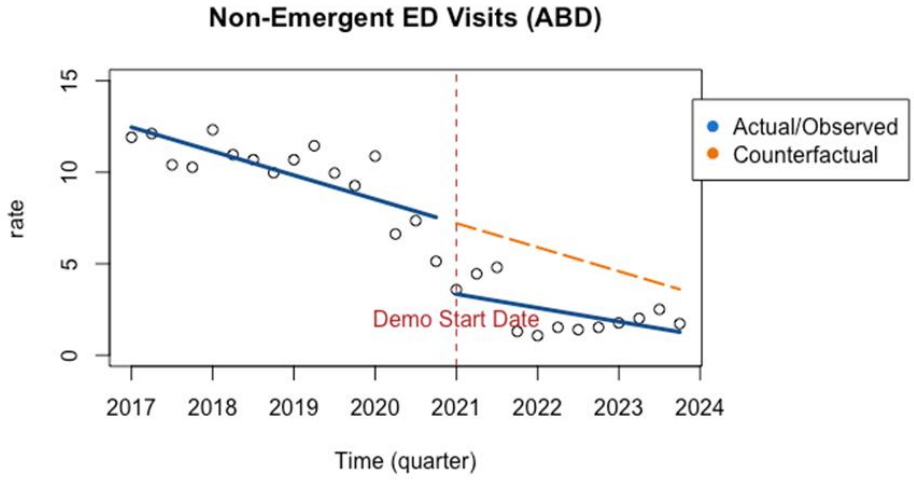

Non-Emergent ED Visits (Ages 65+)
rate
0
5
10
15
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

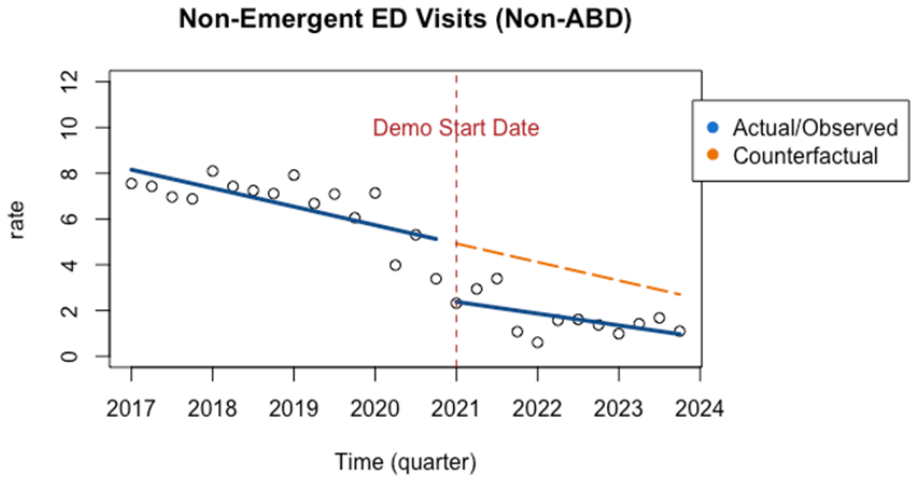
Aid Category

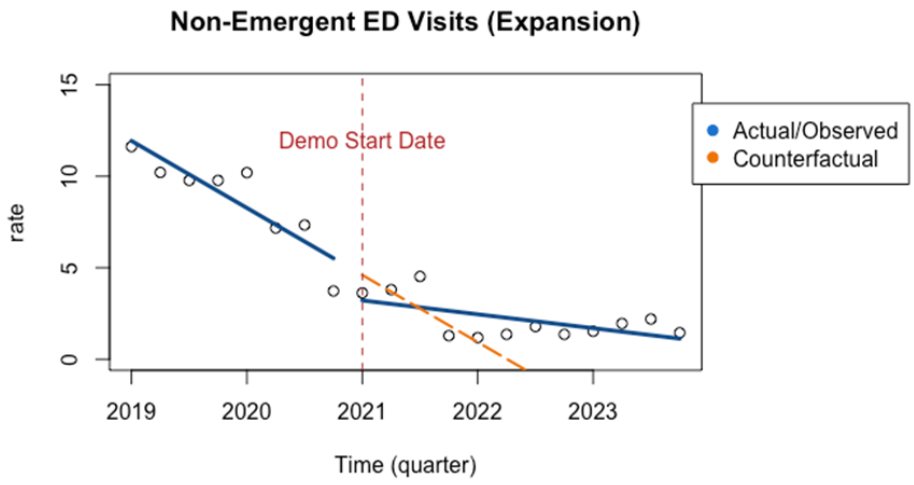
An analysis of non-emergent ED use by aid category showed statistically significant decreases for all eligibility groups in the general trend, with an immediate effect associated with the start of the Demonstration. Non-emergent ED use showed a statistically significant sustained increase for members in the expansion group during the first few years of the Demonstration.

Non-Emergent ED ITS Model (Aid Category)	ABD	Non-ABD	Expansion
General Trend (Time) (Standard Error)	-1.31*** (0.27)	-0.81*** (0.19)	-3.67*** (0.66)
Immediate Effect of Demonstration Start (Standard Error)	-4.01*** (0.97)	-2.62*** (0.68)	-2.11** (0.96)
Sustained Effect (Standard Error)	0.14 (0.12)	0.07 (0.09)	0.73*** (0.19)
Constant (Standard Error)	2,658.10*** (545.47)	1,636.77*** (379.62)	7,414.56*** (1,335.05)

**p<0.05; ***p<0.01





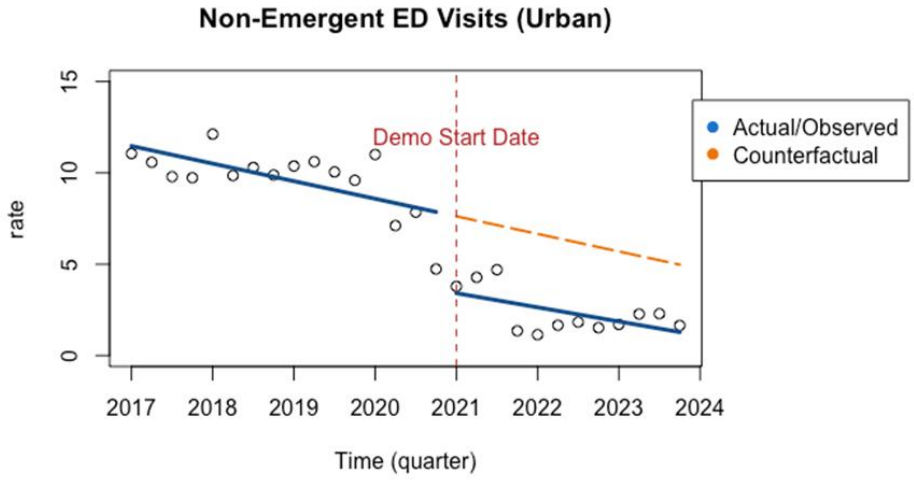


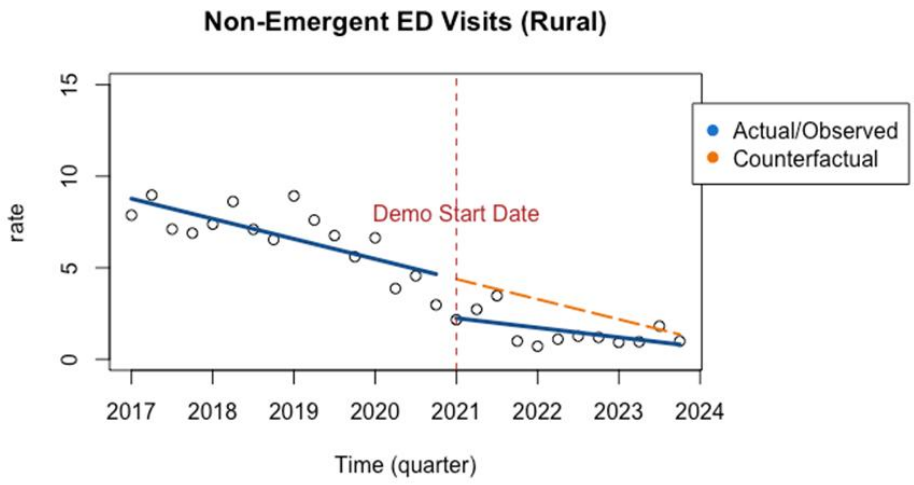
Urban/Rural

In examining general trends for urban and rural counites, all members showed a statistically significant trend for fewer non-emergent ED visits with an immediate effect of the Demonstration's start date.

Non-Emergent ED ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	-0.96*** (0.27)	-1.10*** (0.22)
Immediate Effect of Demonstration Start (Standard Error)	-4.26*** (0.98)	-2.28*** (0.79)
Sustained Effect (Standard Error)	0.05 (0.13)	0.14 (0.10)
Constant (Standard Error)	1,952.44*** (550.14)	2,224.70*** (442.36)

**p<0.05; ***p<0.01




Non-Emergent ED Visits (Rural)
rate
0
5
10
15
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

Evaluation question four, ***hypothesis two*** suggests the Demonstration will contain or reduce preventable inpatient admissions. Measures examined under this hypothesis are outlined below.

4.2.1. Total number of inpatient stays for SUD per 1,000 members
4.2.2. Prevention Quality Chronic Composite

Measure 4.2.1 Total number of inpatient stays for SUD per 1,000 members

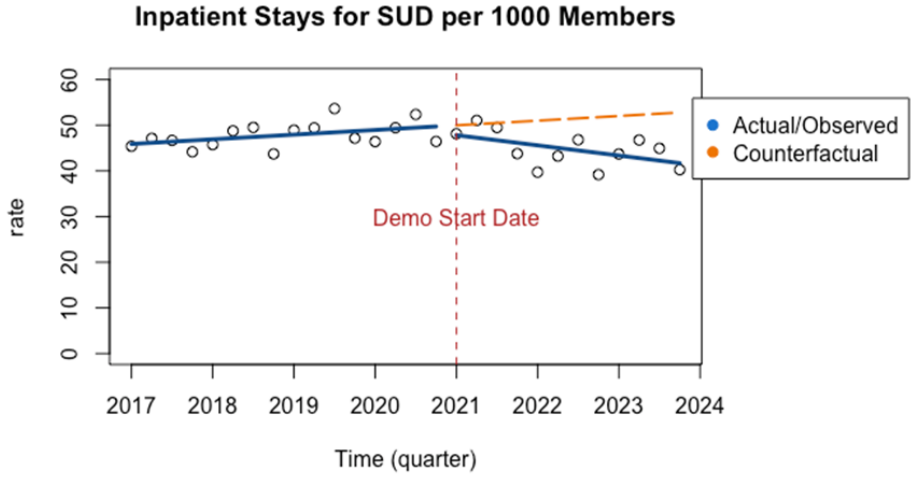
Question 4.	Does the Demonstration contain or reduce preventable ED visits and inpatient hospitalizations for individuals with a SUD?
Hypothesis 1.	The Demonstration will contain or reduce the rate of preventable inpatient admissions.

Measure Description: The denominator represents the number of members with an SUD who had an inpatient discharge during the measurement period. The numerator includes the number of inpatient discharges with a primary diagnosis code of SUD.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for members demographics.

Findings: The Demonstration period was associated with a statistically significant sustained decline in inpatient stays for SUD.



Inpatient ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	1.02	0.64	None
Immediate Effect of Demonstration Start	-1.35	2.29	None
Sustained Effect	-0.81	0.29	p<0.05
Constant	-2,012.35	1,287.52	None

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show a statistically significant sustained trend with fewer inpatient stays for SUD during the Demonstration period. Women, expansion group, non-ABD groups and members in rural counties had fewer hospitalization for SUD. Older members were associated with more inpatient stays for SUD. These temporal and demographic factors showed statistically significant explanatory power.

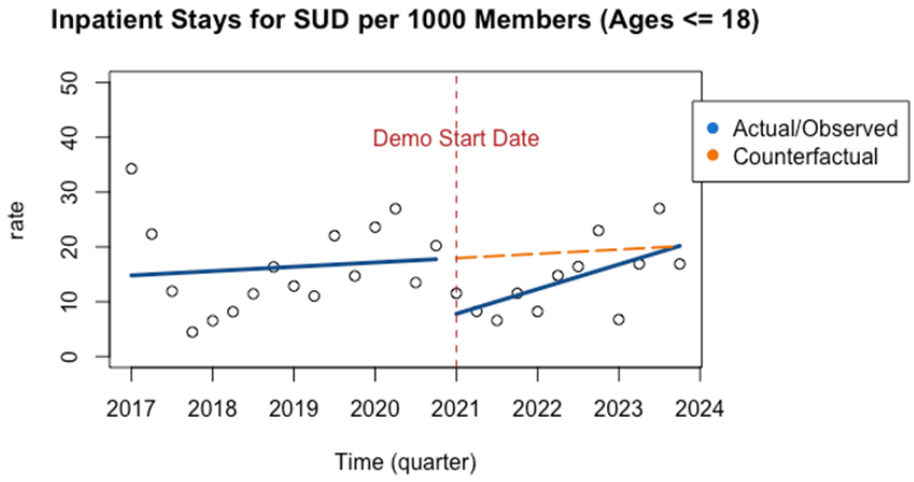
Inpatient GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.310	0.455	None
Immediate Effect of Demonstration Start	-0.156	1.427	None
Sustained Effect	-0.693	0.184	p<0.01
Age	1.857	0.030	p<0.01
Gender (Female)	-6.269	0.736	p<0.01
Expansion Group	-2.091	1.007	p<0.05
Non-ABD	-18.932	0.934	p<0.01
Rural	-16.075	0.759	p<0.01
Constant	-640.508	919.169	None

Age

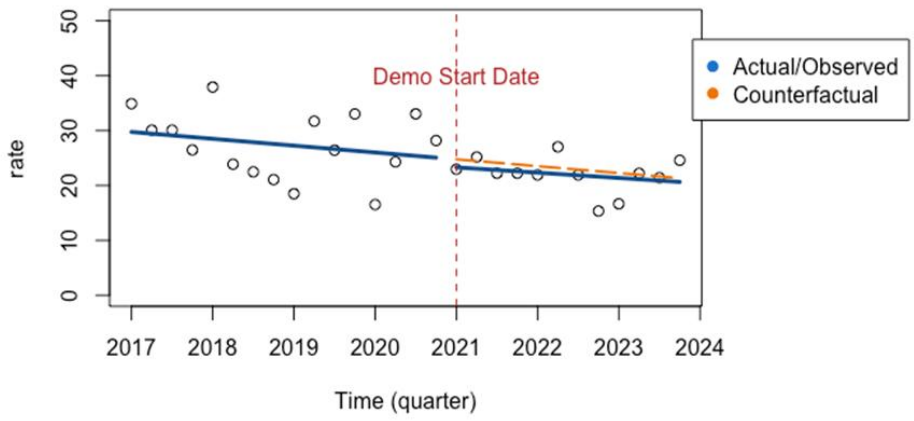
An analysis of inpatient stays for SUD showed a general trend of increased stays in the 25-64 and 65 and older age groups. There was a statistically significant sustained decline in use during the first few years of the Demonstration for members aged 25-64.

Inpatient ITS Model (Age)	Ages ≤18	Ages 19-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	0.79 (1.56)	-1.25 (1.11)	2.41*** (0.69)	-11.86*** (2.21)
Immediate Effect of Demonstration Start (Standard Error)	-11.09 (5.59)	-1.54 (3.97)	-0.66 (2.47)	3.04 (7.92)
Sustained Effect (Standard Error)	0.93 (0.72)	0.07 (0.51)	-1.09*** (0.32)	-0.13 (1.01)
Constant (Standard Error)	-1,574.79 (3,142.10)	2,544.65 (2,234.89)	-4,827.02*** (1,390.29)	24,121.44*** (4,452.46)

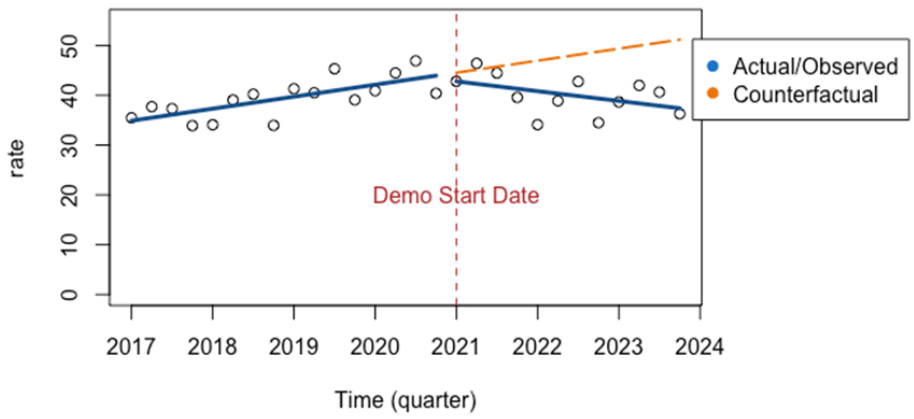
**p<0.05; ***p<0.01



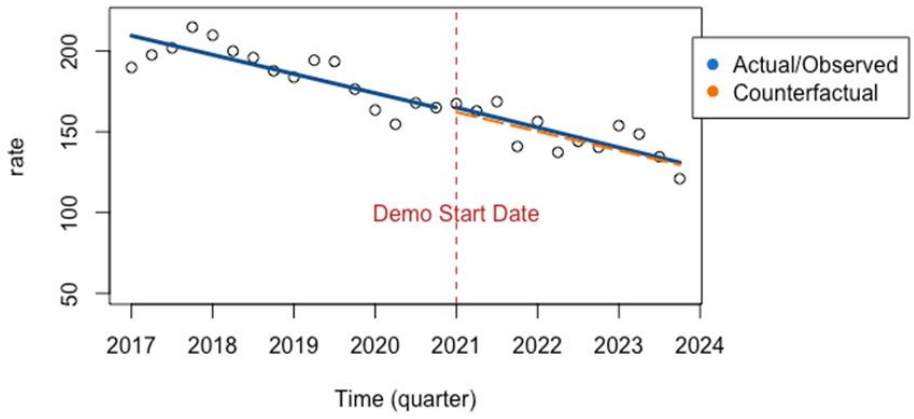
Inpatient Stays for SUD per 1000 Members (Ages 19-24)



Inpatient Stays for SUD per 1000 Members (Ages 25-64)



Inpatient Stays for SUD per 1000 Members (Ages 65+)

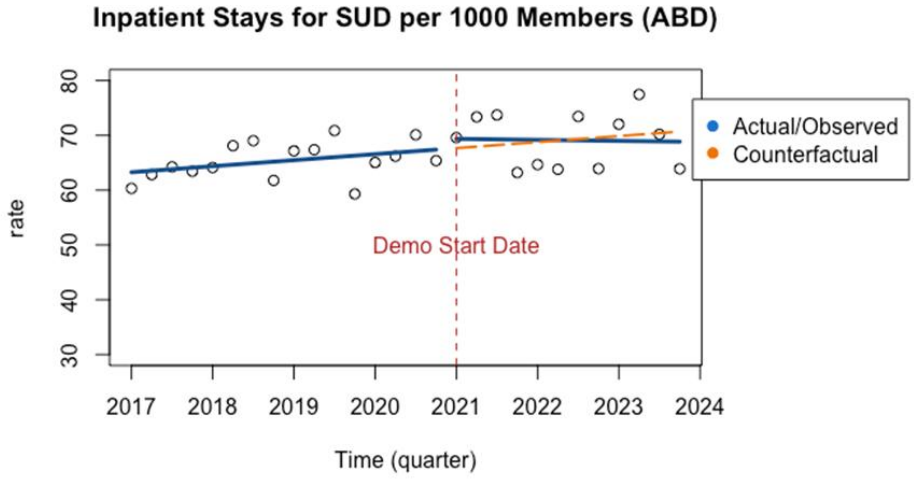


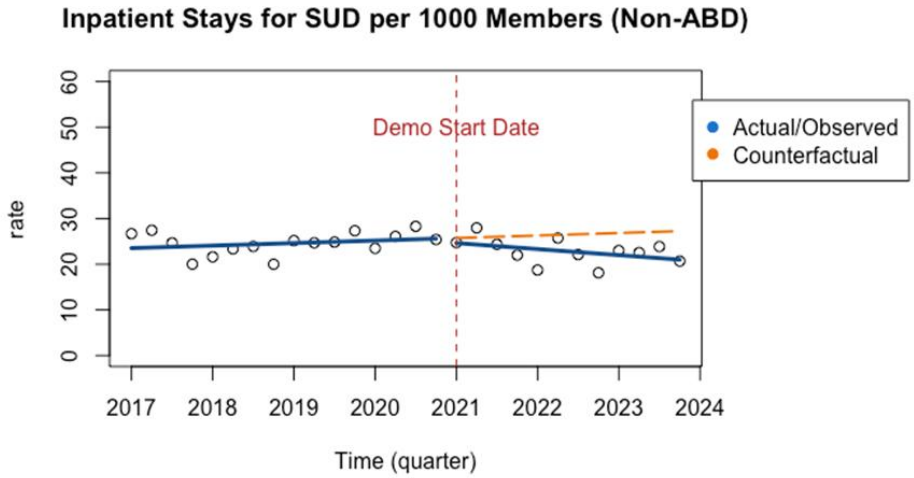
Aid Category

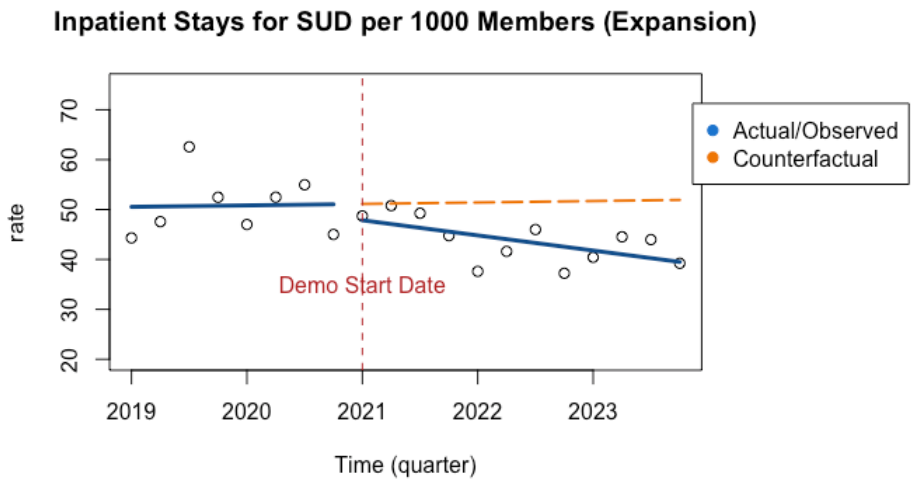
There were no statistically significant changes in trend based on Medicaid eligibility group.

Inpatient ITS Model (Aid Category)	ABD	Non-ABD	Expansion
General Trend (Time)	1.10	0.55	0.29
(Standard Error)	(0.91)	(0.55)	(3.11)
Immediate Effect of Demonstration Start	2.01	-0.63	-2.44
(Standard Error)	(3.25)	(1.98)	(4.49)
Sustained Effect	-0.32	-0.47	-0.83
(Standard Error)	(0.42)	(0.25)	(0.88)
Constant	-2,155.47	-1,090.55	-538.35
(Standard Error)	(1,828.40)	(1,115.83)	(6,281.84)

**p<0.05; ***p<0.01





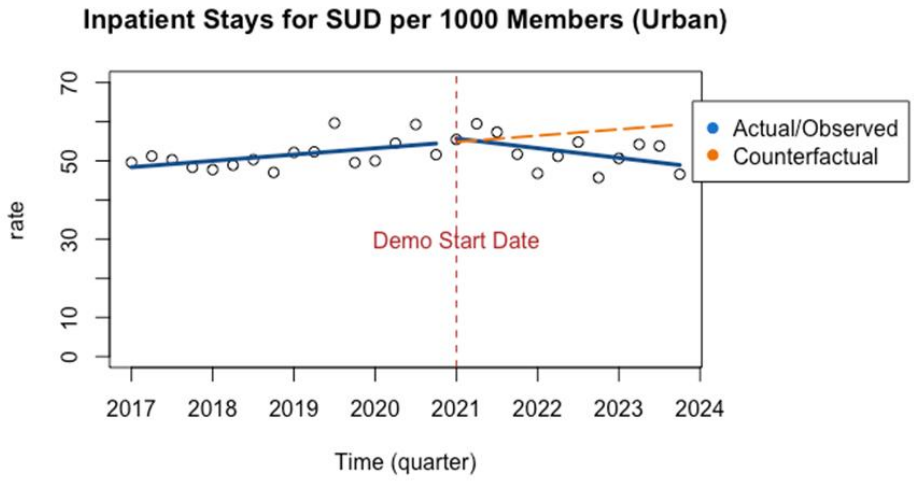


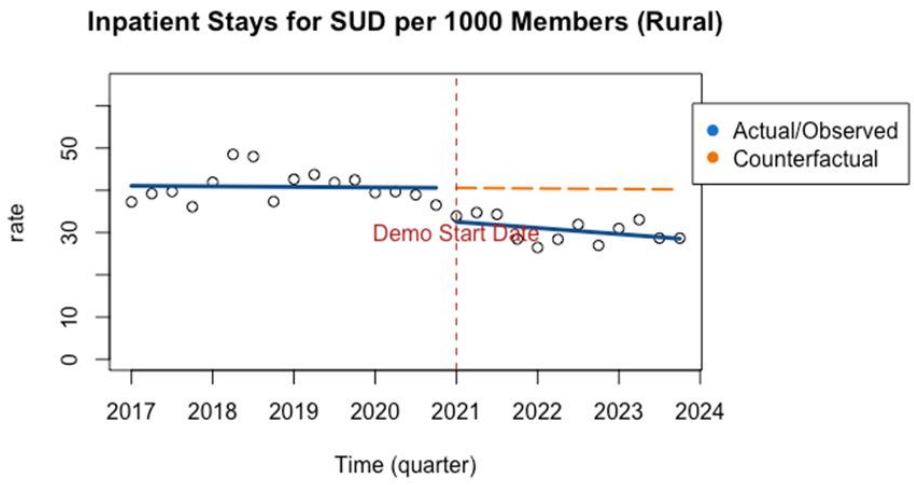
Urban/Rural

Members in urban counties showed a general trend of more inpatient stays for SUD with a sustain declined associated with the first few years of the Demonstration. Members in rural counties showed a decline in inpatient stays for SUD immediately following the start of the Demonstration.

Inpatient ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	1.61** (0.77)	-0.13 (0.74)
Immediate Effect of Demonstration Start (Standard Error)	1.87 (2.76)	-7.70*** (2.67)
Sustained Effect (Standard Error)	-1.02*** (0.35)	-0.33 (0.34)
Constant (Standard Error)	-3,199.83 (1,551.93)	297.22 (1,498.83)

**p<0.05; ***p<0.01




Inpatient Stays for SUD per 1000 Members (Rural)
rate
0
10
30
50
2017
2018
2019
2020
2021
2022
2023
2024
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

Measure 4.2.2 Prevention Quality Chronic Composite (PQI #92)

Question 4. *Does the Demonstration contain or reduce preventable ED visits and inpatient hospitalizations for individuals with a SUD?*

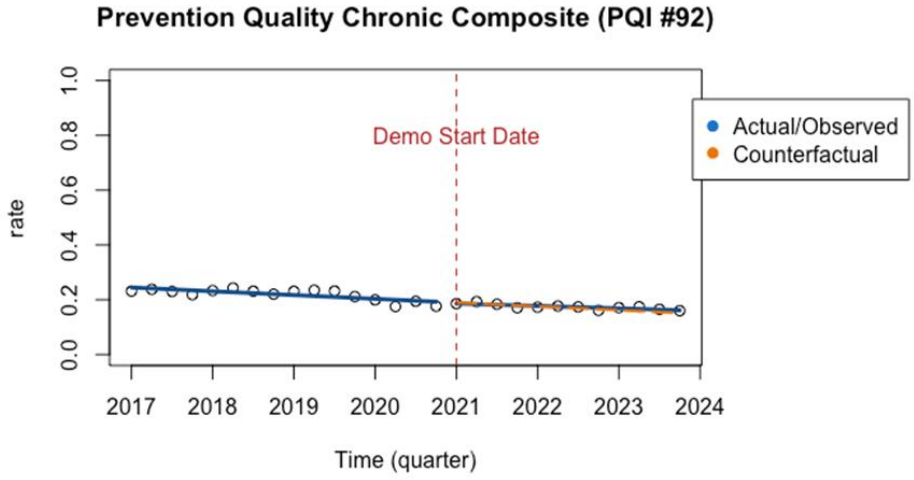
Hypothesis 1. *The Demonstration will contain or reduce the rate of preventable inpatient admissions.*

Measure Description: The denominator includes discharges for members 18 years and older with an SUD. The numerator includes discharges for one of the following conditions: diabetes with short-term complications, diabetes with long-term complications, uncontrolled diabetes without complications, diabetes with lower-extremity amputation, chronic obstructive pulmonary disease, asthma, hypertension, heart failure, or angina without a cardiac procedure.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for members demographics.

Findings: The general trend showed a statistically significant decline in discharges for the chronic conditions studied. There were no other effects associated with the Demonstration period.



PQI #92 ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.01	(0.002)	p<0.01
Immediate Effect of Demonstration Start	-0.004	(0.01	None
Sustained Effect	0.001	(0.001)	None
Constant	28.16	(5.05)	p<0.01

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show a statistically significant decline in discharges for the chronic conditions studied in the general trend and through the Demonstration period. Women and members in the expansion and non-ABD groups tended to have fewer discharges for the chronic conditions studied. There was a slight

increase immediately following the start of the Demonstration. Older members were associated with more discharges related to the chronic conditions studied. These temporal and demographic factors showed statistically significant explanatory power. There was no statistically significant change related to urban/rural characteristics.

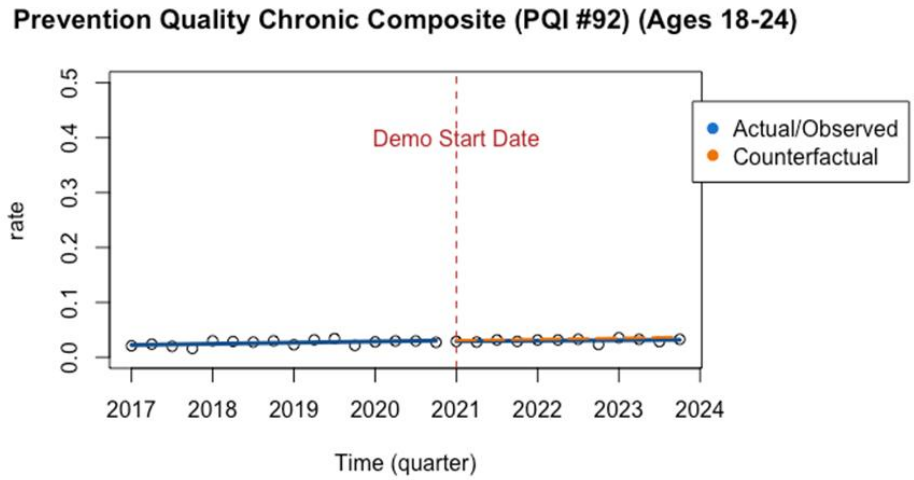
PQI #92 GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-0.009	(0.001)	p<0.01
Immediate Effect of Demonstration Start	0.011	0.002	p<0.01
Sustained Effect	-0.001	0.0002	p<0.05
Age	0.011	0.00004	p<0.01
Gender (Female)	-0.013	0.001	p<0.01
Expansion Group	-0.067	0.001	p<0.01
Non-ABD	-0.062	0.001	p<0.01
Rural	0.001	0.001	None
Constant	17.082	1.154	p<0.01

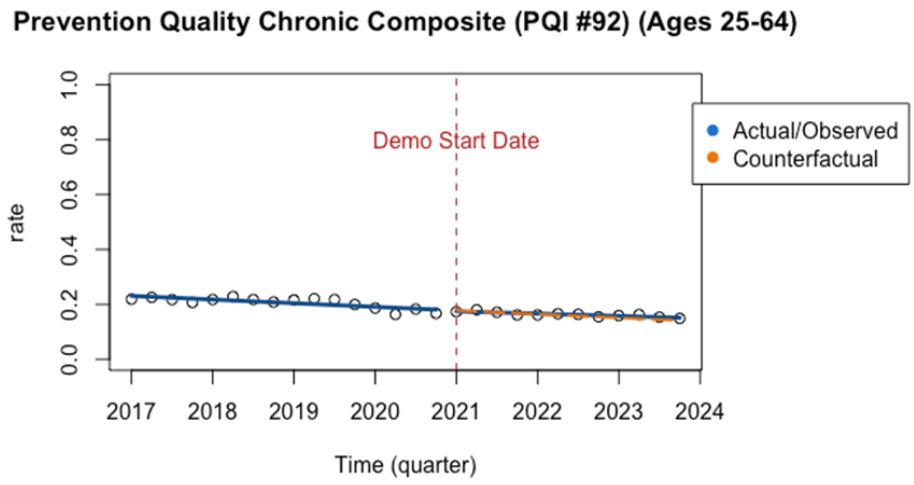
Age

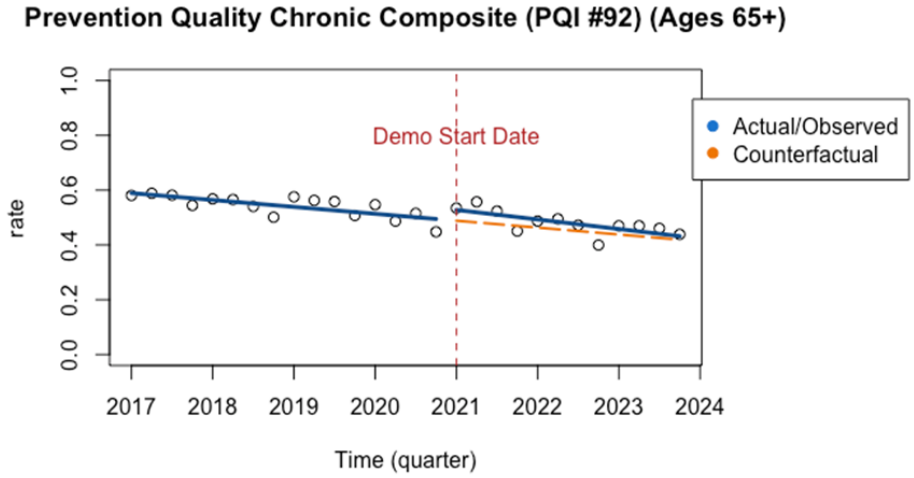
An analysis of discharges by age showed a general trend of decreased stays for members 25-64 and over age 65 and a slight increase for members in the 18-24 age group. There was no statistically significant impact on trends associated with the Demonstration period.

PQI #92 ITS Model (Age)	Ages 18-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	0.002** (0.001)	-0.01*** (0.002)	-0.03*** (0.01)
Immediate Effect of Demonstration Start (Standard Error)	-0.001 (0.003)	-0.004 (0.01)	0.04 (0.02)
Sustained Effect (Standard Error)	-0.0003 (0.0004)	0.001 (0.001)	-0.002 (0.003)
Constant (Standard Error)	-4.26** (1.75)	27.17*** (4.60)	51.38*** (12.72)

**p<0.05; ***p<0.01







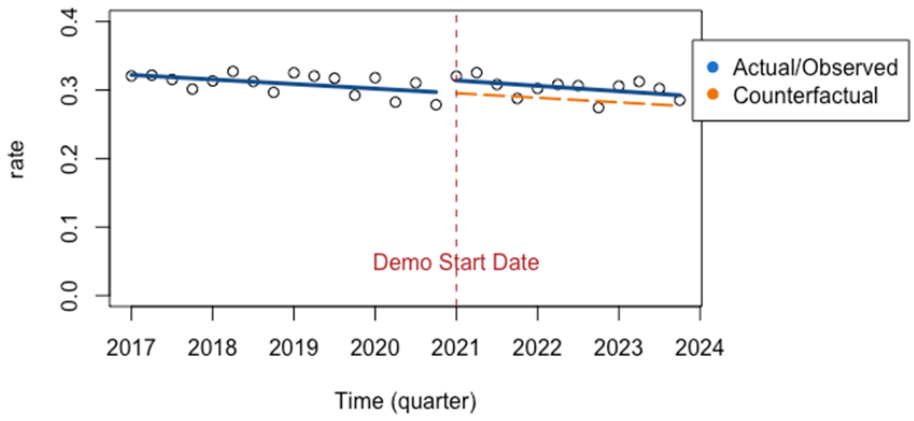
Aid Category

An analysis of discharges by eligibility group showed a statistically significant trend for fewer discharges for the chronic conditions studied in the ABD and expansion groups. During the Demonstration there a statistically significant sustained decrease in discharges within the non-ABD group and a slight increase in discharges within the expansion group.

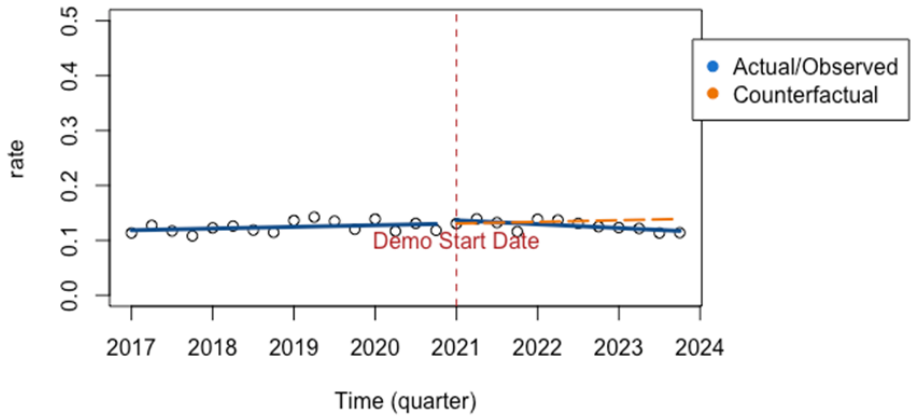
PQI #92 ITS Model (Aid Category)	ABD	Non-ABD	Expansion
General Trend (Time) (Standard Error)	-0.01** (0.003)	0.003 (0.002)	-0.03*** (0.01)
Immediate Effect of Demonstration Start (Standard Error)	0.02 (0.01)	0.01 (0.01)	0.01 (0.01)
Sustained Effect (Standard Error)	-0.0003 (0.001)	-0.003*** (0.001)	0.01*** (0.002)
Constant (Standard Error)	13.80** (5.79)	-5.99 (3.84)	52.42*** (12.95)

**p<0.05; ***p<0.01

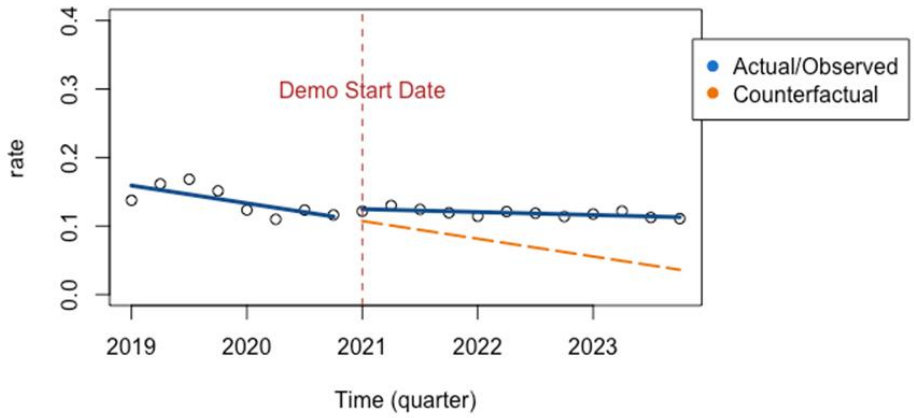
Prevention Quality Chronic Composite (PQI #92) (ABD)



Prevention Quality Chronic Composite (PQI #92) (Non-ABD)



Prevention Quality Chronic Composite (PQI #92) (Expansion)

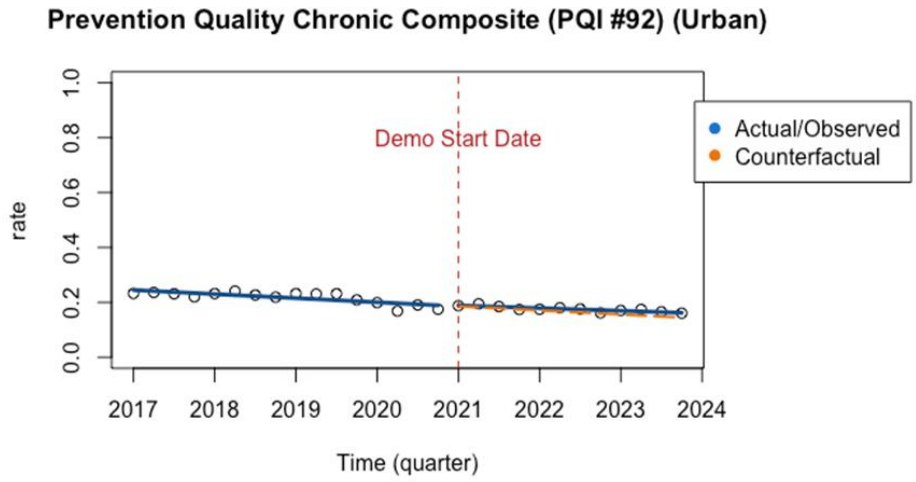


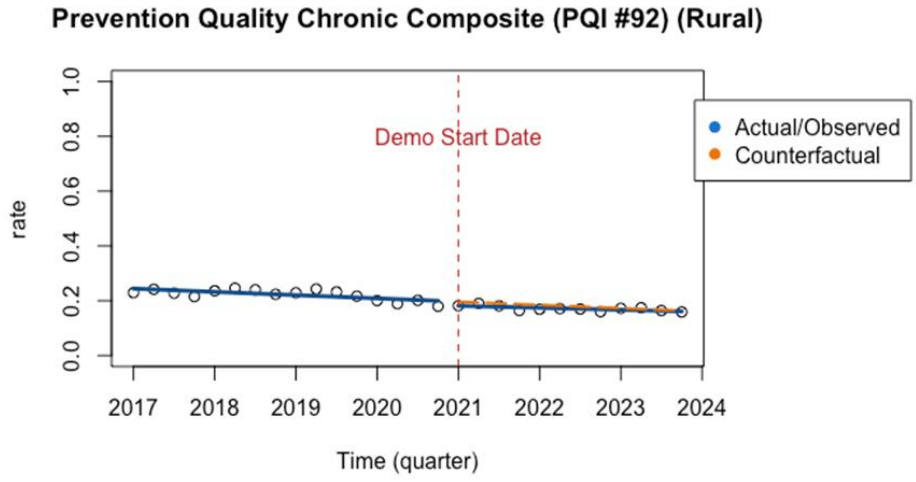
Urban/Rural

In examining general trends for members living in urban and rural counites, there was a statistically significant decrease in the general trend for discharges for chronic conditions. There were no significant changes in trend associated with the Demonstration period.

PQI #92 ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	-0.01*** (0.003)	-0.01*** (0.003)
Immediate Effect of Demonstration Start (Standard Error)	0.002 (0.01)	-0.02 (0.01)
Sustained Effect (Standard Error)	0.001 (0.001)	0.001 (0.001)
Constant (Standard Error)	30.20*** (5.08)	24.18*** (5.31)

**p<0.05; ***p<0.01





A summary of the ITS aggregate analysis trends related to evaluation question four are presented below.

Measure‡	General Trend	Immediate Effect	Sustained Effect
Hypothesis 1. The Demonstration will contain or reduce the rate of preventable ED visits for individuals with a SUD			
4.1.1. Total number of ED visits for SUD per 1,000 members	-	-	↓
4.1.2. The rate of non-emergent ED visits per 1,000 member months	↓	↓	-
Hypotheses 2. The Demonstration will contain or reduce preventable inpatient admissions			
4.2.1. Total number of inpatient stays for SUD per 1,000 members	-	-	↓
4.2.2. Prevention Quality Chronic Composite (PQI #92)	↓	-	-

Notes:
‡Fewer visits (↓) are preferred
*Logistic regression or 2-sided t-test used
- No statistically significant trend
↑Statistically significant increase in trend
↓Statistically significant decrease in trend

A summary of the Generalized Linear Model Results (i.e., how individual factors contribute to the variation in the data) related to evaluation question four, is presented below.

Measure‡	General Trend	Immediate Effect	Sustained Effect	Age (Older)	Gender (Female)	Expansion Group	Non-ABD	Rural Counties
Hypothesis 1. The Demonstration will contain or reduce the rate of preventable ED visits for individuals with a SUD								
4.1.1. ED visits for SUD	↓	↑	↓	↓	↓	↑	↓	↓
4.1.1. Non-emergent ED visits	↓	↓	↑	↓	↑	↓	↓	↓
Hypotheses 2. The Demonstration will contain or reduce preventable inpatient admissions								
4.2.1. Inpatient stays for SUD	↓	↑	↓	↑	↓	↓	↓	↓
4.2.2. PQI #92	↓	↑	↓	↑	↓	↓	↓	-

Notes:
‡Fewer visits (↓) are preferred
- No statistically significant trend
↑Statistically significant explanatory power
↓Statistically significant explanatory power

E. SUD EVALUATION QUESTION FIVE

Does the Demonstration contain or reduce readmissions to the same or higher levels of care?

Evaluation question five has one hypothesis: The Demonstration will contain or reduce readmissions to the same or higher levels of care. Measures examined are outlined below. There are no subsidiary analyses associated with evaluation question five, hypothesis one.

5.1.1. Percentage of readmissions to the same or higher level of residential care
5.1.2. The rate of adult acute inpatient and observation stays that were followed by an unplanned acute readmission for any diagnosis

Measure 5.1.1 Percentage of readmissions to the same or higher level of residential care

Question 5. Does the Demonstration contain or reduce readmissions to the same or higher levels of care?

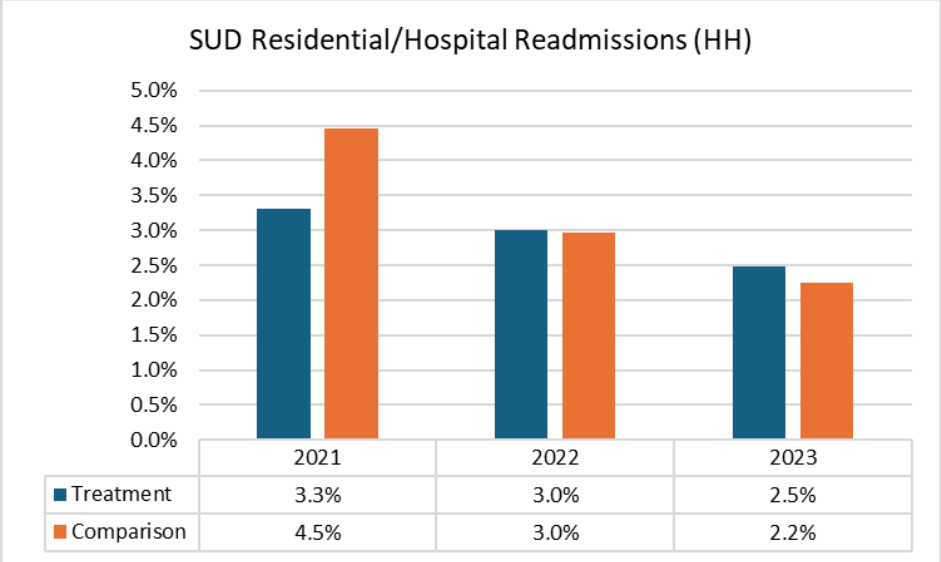
Hypothesis 1. The Demonstration will contain or reduce readmissions to the same or higher levels of care.

Measure Description: The denominator includes members receiving Health Home services who were discharged from residential or inpatient treatment for SUD. The numerator includes those members who were readmitted to SUD residential or inpatient within 30 days of discharge.

Data Source and Time Period: MMIS paid claims 2017-2023; OMS Opioid and Behavioral Health Home enrollment files.

Analytical Approach: Comparison group strategy using Coarsened Exact Matching for members not receiving Opioid or Behavioral Health Home services.

Findings: Members receiving Opioid and Behavioral Health Home services had fewer readmissions for SUD treatment than the control group. However, the differences were not statistically significant in any year of the Demonstration.



	2021	2022	2023
Treatment	3.3%	3.0%	2.5%
Comparison	4.5%	3.0%	2.2%

Measure 5.1.2 The rate of adult acute inpatient and observation stays that were followed by an unplanned acute readmission for any diagnosis

Question 5. Does the Demonstration contain or reduce readmissions to the same or higher levels of care?

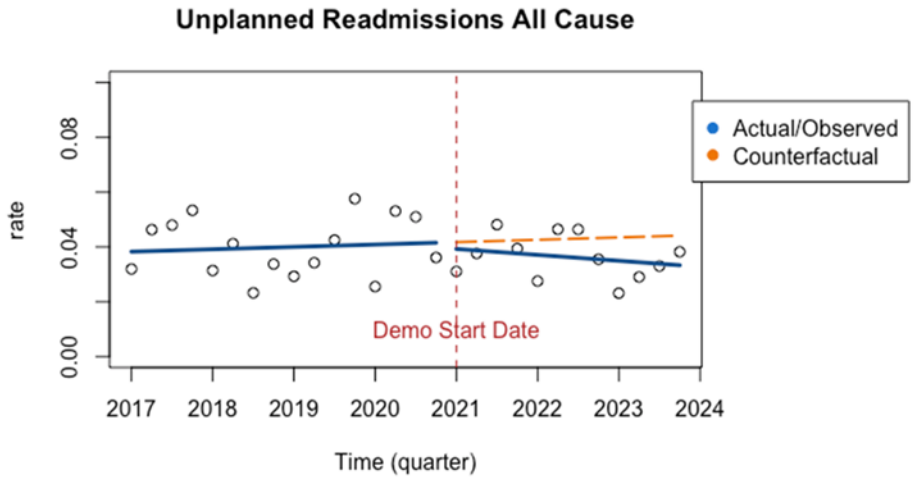
Hypothesis 1. The Demonstration will contain or reduce readmissions to the same or higher levels of care.

Measure Description: The denominator includes the number of inpatient dischargers for members with an SUD. The numerator includes the number of unplanned acute readmission for any diagnosis within 30 days after discharge.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: An interrupted time series showed no statistically significant effect of time or the Demonstration period on the trend.



Readmissions ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.001	(0.002)	None
Immediate Effect of Demonstration Start	-0.002	0.01	None
Sustained Effect	-0.001	0.001	None
Constant	-1.71	4.35	None

A generalized linear model (GLM) was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show a statistically significant increase in unplanned readmissions for older members and fewer readmissions for members in non-ABD groups. No other temporal or demographic variable had a statistically significant explanatory effect on the trend.

Readmissions GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.0004	0.002	None
Immediate Effect of Demonstration Start	-0.001	0.004	None
Sustained Effect	-0.001	0.001	None
Age	0.001	0.0001	p<0.01
Gender (Female)	-0.0004	0.002	None
Expansion Group	0.003	0.003	None
Non-ABD	-0.007	0.003	p<0.05
Rural	-0.0001	0.003	None
Constant	-0.826	3.090	None

A summary of the ITS aggregate analysis trends related to evaluation question five are presented below.

Measure	General Trend	Immediate Effect	Sustained Effect
Hypothesis 1. The Demonstration will contain or reduce readmissions to the same or higher levels of care.			
5.1.2. The rate of adult acute inpatient and observation stays that were followed by an unplanned acute readmission for any diagnosis*	-	-	-

Notes:
*Lower rates are preferred
- No statistically significant trend
↑Statistically significant increase in trend
↓Statistically significant decrease in trend

A summary of the Generalized Linear Model Results (i.e., how individual factors contribute to the variation in the data) related to evaluation question five, is presented below.

Measure	General Trend	Immediate Effect	Sustained Effect	Age (Older)	Gender (Female)	Expansion Group	Non-ABD	Rural Counties
Hypothesis 1. The Demonstration will contain or reduce readmissions to the same or higher levels of care.								
5.1.2. The rate of adult acute inpatient and observation stays that were followed by an unplanned acute readmission for any diagnosis*	-	-	-	↑	-	-	↓	-

Notes:
*Lower rates are preferred
- No statistically significant trend
↑Statistically significant explanatory power
↓Statistically significant explanatory power

F. SUD EVALUATION QUESTION SIX

Does the Demonstration maintain or improve access to care for physical health conditions?

Evaluation question six has one hypothesis, the Demonstration will maintain or increase access to care for physical health conditions for Health Home enrollees. There are no subsidiary analyses associated with the evaluation question. The hypothesis was examined using the following measure:

1.2.1. Percentage of members with a SUD who had an ambulatory or preventive health care visit

Measure 6.1.1 Percentage of members with a SUD who had an ambulatory or preventive health care visit.

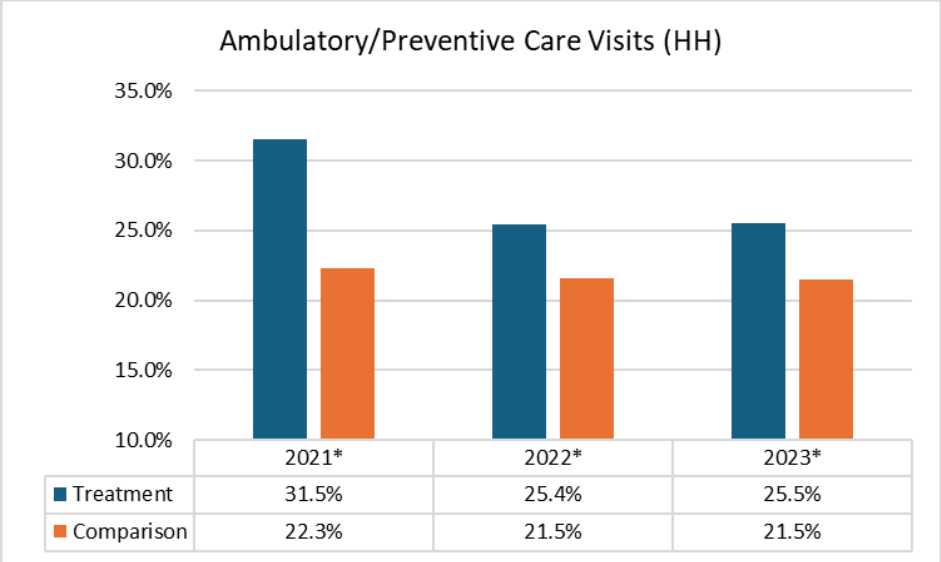
Question 6.	Does the Demonstration maintain or improve access to care for physical health conditions?
Hypothesis 1.	The Demonstration will maintain or increase access to care for physical health conditions for health home enrollees.

Measure Description: The denominator includes the number of members receiving Health Home services with an SUD diagnosis. The numerator includes the number who had one or more visits for ambulatory or preventive care during the measurement year.

Data Source and Time Period: MMIS paid claims 2017-2023; OMS Opioid and Behavioral Health Home enrollment reports.

Analytical Approach: Comparison group strategy using Coarsened Exact Matching for members not receiving Opioid or Behavioral Health Home services.

Findings: In each of the years studied, members who received Opioid and Behavioral Health Home services had more ambulatory and preventive health care visits than the comparison group. In 2021, 2022 and 2023 the treatment group had 31.5 percent, 25.4 percent, and 25.5 percent, respectively. The comparison group results were 22.3 percent in 2021 and 21.5 percent in both 2022 and 2023. Differences between the treatment and comparison group were statistically significant in each year studied.



	2021*	2022*	2023*
Treatment	31.5%	25.4%	25.5%
Comparison	22.3%	21.5%	21.5%

G. SUD EVALUATION QUESTION SEVEN

How does the cost of care change over time?

Evaluation question seven is an exploratory analysis to examine how expenditures change over time. There are no subsidiary analyses associated with evaluation question seven. A summary of the measures examined is provided below.

7.1.1. Per member per month (PMPM) Medicaid cost for members with an SUD during the measurement year

7.1.2 Per member per month (PMPM) cost of SUD-Related treatment for members with an SUD during the measurement year

7.1.3 Per member per month (PMPM) cost of physical health care for members with an SUD during the measurement year

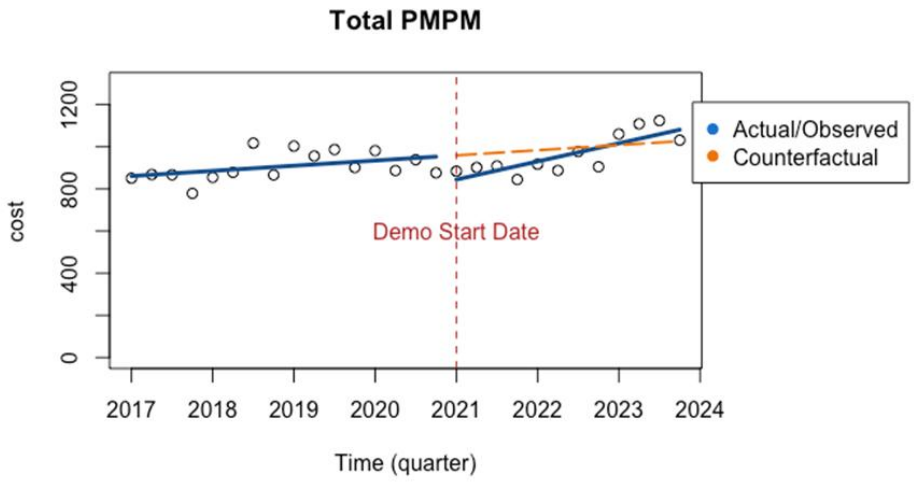
Measure 7.1.1 Per member per month (PMPM) Medicaid cost for individuals who have an SUD.
Question 7. How does the cost of care change over time?
Hypothesis 1. N/A

Measure Description: The sum of all Medicaid payments made (physical and SUD-related health care) divided the total number of member months for members with an SUD.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: The interrupted time series showed a decline in total expenditures immediately following the start date of the Demonstration. There was a statistically significant sustained increase in total expenditures during the first few years of the Demonstration.



Total $ ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	24.49	13.04	None
Immediate Effect of Demonstration Start	-130.05	46.81	p<0.05
Sustained Effect	15.37	5.99	p<0.05
Constant	-48,530.87	26,321.75	None

A generalized linear (GLM) model was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show that both temporal and individual factors have statistically significant explanatory power. The general trend over time showed an increase in total expenditures, the start date of the Demonstration was associated with a decrease, while the sustained effect showed increased Medicaid expenditures during the first years of the Demonstration. Older members, women, members in non-ABD and expansion groups, and members living in rural counties had lower expenditures.

Total $ GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	42.828	(5.410)	p<0.01
Immediate Effect of Demonstration Start	-99.622	16.956	p<0.01
Sustained Effect	13.665	2.182	p<0.01
Age	-2.916	0.351	p<0.01
Gender (Female)	-29.270	8.750	p<0.01
Expansion Group	-497.383	11.962	p<0.01
Non-ABD	-720.920	11.095	p<0.01
Rural	-260.669	9.022	p<0.01
Constant	-84,992.290	10,921.800	p<0.01

Measure 7.1.2 Per member per month (PMPM) cost of SUD-Related treatment for individuals who have an SUD.

Question 7. How does the cost of care change over time?

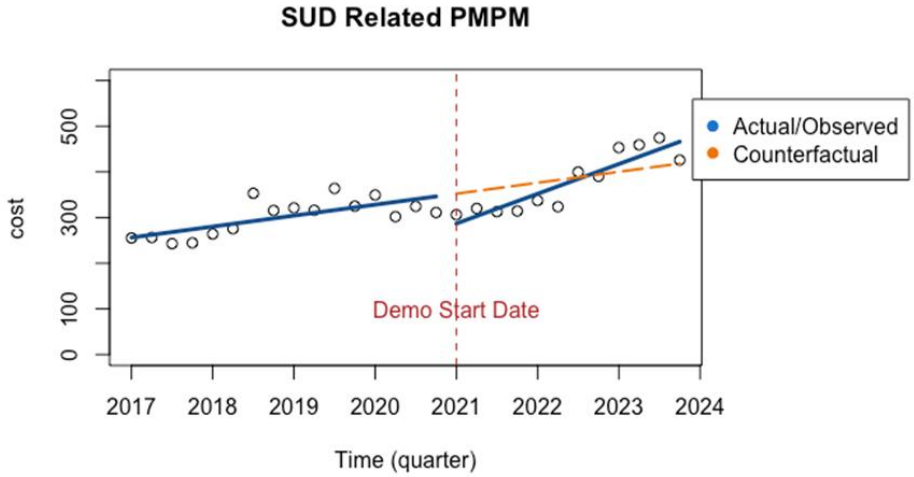
Hypothesis 1. N/A

Measure Description: The sum of all Medicaid payments made for SUD-related health care with breakouts for SUD-IMD and SUD-other treatment for members with an SUD divided the total number of member months.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: The general trend showed an increase in SUD-related expenditures over time. The immediate effect of the Demonstration was associated with a decrease in SUD-related expenditures. The sustained effect showed an increase in SUD-related expenditures in the first few years of the Demonstration.



SUD $ ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	23.99	6.17	p<0.01
Immediate Effect of Demonstration Start	-75.66	22.16	p<0.01
Sustained Effect	10.29	2.83	p<0.01
Constant	-48,134.61	12,456.91	p<0.01

A generalized linear (GLM) model was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

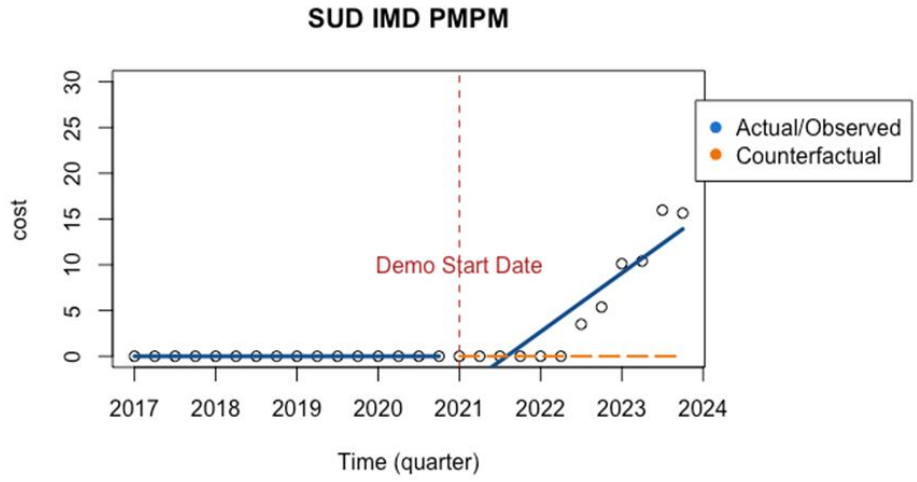
Results show that both temporal and individual factors have statistically significant explanatory power. The general trend over time showed an increase in SUD-related expenditures, the start date of the Demonstration was associated with a decrease, while the sustained effect showed an increase in SUD-related expenditures during the first years of the Demonstration. Older members, members in non-ABD

groups, and members living in rural counties had lower expenditures. Women and members in the expansion population had more SUD-related expenditures.

SUD $ GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	8.001	2.056	p<0.01
Immediate Effect of Demonstration Start	-80.882	6.445	p<0.01
Sustained Effect	14.458	0.830	p<0.01
Age	-0.471	0.133	p<0.01
Gender (Female)	10.310	3.326	p<0.01
Expansion Group	104.211	4.546	p<0.01
Non-ABD	-61.348	4.217	p<0.01
Rural	-97.294	3.429	p<0.01
Constant	-15,795.720	4,151.287	p<0.01

SUD-IMD PMPM

There were no SUD-IMD Medicaid expenditures prior to the Demonstration. The ITS showed an immediate and sustained increase in expenditures during the Demonstration period.



SUD IMD $ ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.00	0.38	None
Immediate Effect of Demonstration Start	-5.34	1.36	p<0.01
Sustained Effect	1.60	0.17	p<0.01
Constant	0.00	765.29	None

A generalized linear (GLM) model was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

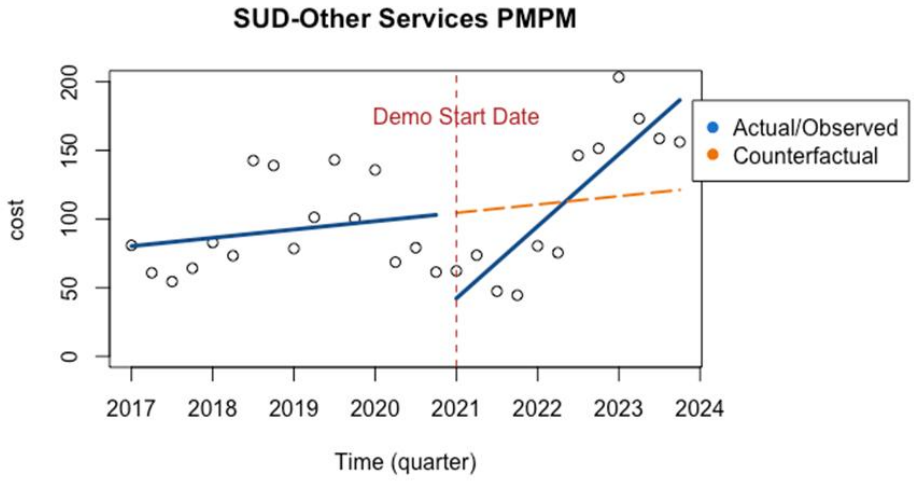
Results show both temporal and individual factors have statistically significant explanatory power. The general trend and Demonstration period showed an increase in SUD-IMD expenditures. Women and

members living in rural counties had lower SUD-IMD expenditures. Expansion group members had higher SUD-IMD expenditures.

SUD IMD $ GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-0.570	0.159	p<0.01
Immediate Effect of Demonstration Start	-5.870	0.499	p<0.01
Sustained Effect	1.751	0.064	p<0.01
Age	-0.015	0.010	None
Gender (Female)	-3.871	0.258	p<0.01
Expansion Group	4.535	0.352	p<0.01
Non-ABD	0.094	0.327	None
Rural	-2.857	0.266	p<0.01
Constant	1,153.826	321.537	p<0.01

Other SUD-Related PMPM

The PMPM for other SUD services showed a statistically significant decrease associated with the start of the Demonstration and a sustained increase over the first few years of the Demonstration.



SUD Other $ ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	6.07	6.78	None
Immediate Effect of Demonstration Start	-73.97	24.34	p<0.01
Sustained Effect	11.62	3.12	p<0.01
Constant	-12,160.88	13,687.82	None

A generalized linear (GLM) model was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results show expenditures on other SUD treatment services increasing over time. Older members, women, members of non-ABD and expansion groups, and members living in rural counties tended to have fewer SUD treatment expenditures.

SUD Other $ GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	34.827	4.877	p<0.01
Immediate Effect of Demonstration Start	-18.740	15.285	None
Sustained Effect	-0.793	1.967	None
Age	-2.446	0.316	p<0.01
Gender (Female)	-39.579	7.887	p<0.01
Expansion Group	-601.593	10.783	p<0.01
Non-ABD	-659.572	10.001	p<0.01
Rural	-163.375	8.133	p<0.01
Constant	-69,196.570	9,845.442	p<0.01

Measure 7.1.3 Per member per month (PMPM) cost of physical health care for individuals who have an SUD.

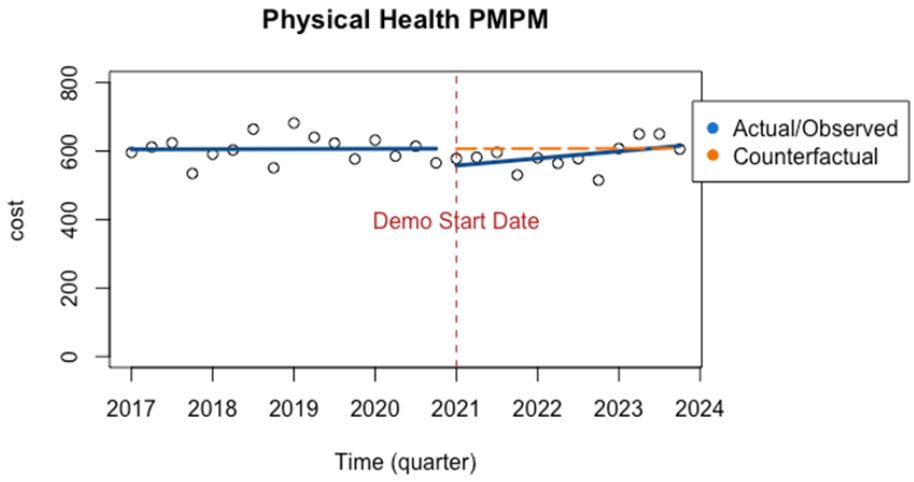
Question 7. How does the cost of care change over time?
Hypothesis 1. N/A

Measure Description: The sum of all Medicaid payments made for physical health care for members with an SUD divided the total number of member months.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: There were no statistically significant trends related to expenditures for physical health care.



Physical Health $ ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.50	8.53	None
Immediate Effect of Demonstration Start	-54.39	30.63	None
Sustained Effect	5.08	3.92	None
Constant	-396.26	17,223.35	None

A generalized linear (GLM) model was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Results showed a statistically significant increase in physical health related expenditures over time. Older members, women, expansion group, non-ABD groups and members living in rural counties all showed statistically significant explanatory power for lower physical health related expenditures.

Physical Health $ GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	34.827	4.877	p<0.01
Immediate Effect of Demonstration Start	-18.740	15.285	None
Sustained Effect	-0.793	1.967	None
Age	-2.446	0.316	p<0.01
Gender (Female)	-39.579	7.887	p<0.01
Expansion Group	-601.593	10.783	p<0.01
Non-ABD	-659.572	10.001	p<0.01
Rural	-163.375	8.133	p<0.01
Constant	-69,196.570	9,845.442	p<0.01

A summary of the ITS trends in the aggregate analyses related to evaluation question seven is provided below.

Measure	General Trend	Immediate Effect	Sustained Effect
Expenditure Analyses – Total Cost			
7.1.1. Total PMPM	-	↓	↑
7.1.2(a) SUD PMPM	↑	↓	↑
7.1.2(b) SUD IMD PMPM	-	↓	↑
7.1.2(c) SUD Other PMPM	-	↓	↑
7.1.3. Physical Health PMPM	-	-	-

Notes:
- No statistically significant trend
↑Statistically significant increase in trend
↓Statistically significant decrease in trend

A summary of the Generalized Linear Model Results (i.e., how individual factors contribute to the variation in the data) related to evaluation question seven, is presented below.

Measure	General Trend	Immediate Effect	Sustained Effect	Age (Older)	Gender (Female)	Expansion Group	Non-ABD	Rural Counties
Expenditure Analyses – Total Cost								
7.1.1. Total PMPM	↑	↓	↑	↓	↓	↓	↓	↓
7.1.2(a) SUD PMPM	↑	↓	↑	↓	↑	↑	↓	↓
7.1.2(b) SUD IMD PMPM	↓	↓	↑	-	↓	↑	-	↓
7.1.2(c) SUD Other PMPM	↑	-	-	↓	↓	↓	↓	↓
7.1.3. Physical Health PMPM	↑	-	-	↓	↓	↓	↓	↓

Notes:
- No statistically significant trend
↑Statistically significant explanatory power
↓Statistically significant explanatory power

H. SUD EVALUATION QUESTION EIGHT

What are the cost drivers?

Evaluation question eight includes an exploratory analysis to examine cost drivers for expenditures related to SUD. A summary of the measures examined under evaluation question eight is provided below.

8.1.1. Per member per month (PMPM) cost of outpatient (non-ED) for members with an SUD during the measurement year
8.1.2 Per member per month (PMPM) cost of pharmacy for members with an SUD during the measurement year
8.1.3 Per member per month (PMPM) cost of outpatient ED for members with an SUD during the measurement year
8.1.4 Per member per month (PMPM) cost of inpatient care for members with an SUD during the measurement year
8.1.5 Per member per month (PMPM) cost of Long-term care for members with an SUD during the measurement year

Measure 8.1.1 Per member per month (PMPM) cost of outpatient (non-ED) for individuals who have an SUD.

Question 8. What are the cost drivers?

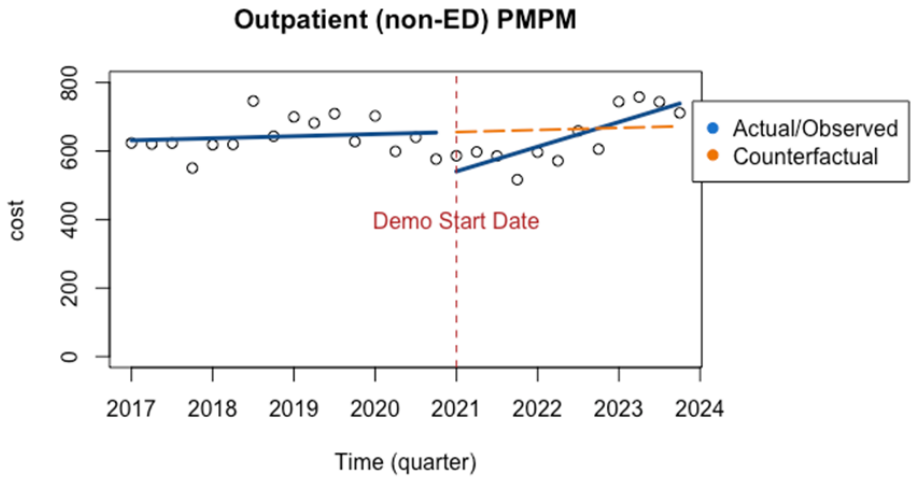
Hypothesis 1. N/A

Measure Description: The sum of all Medicaid payments made for outpatient care (non-ED) for members with an SUD divided the total number of member months.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: There was a statistically significant decrease in expenditures for outpatient services associated with the start of the Demonstration. The first few years of the Demonstration were associated with an increase in outpatient service expenditures.



Outpatient $ ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	6.07	11.32	None
Immediate Effect of Demonstration Start	-131.40	40.63	p<0.01
Sustained Effect	16.48	5.20	p<0.01
Constant	-11,620.77	22,847.17	None

A generalized linear (GLM) model was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

The generalized linear model shows a statistically significant increase in outpatient expenditures over time. Older members, women, expansion group, non-ABD groups and members living in rural counties all showed statistically significant explanatory power for fewer outpatient expenditures.

Outpatient $ GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	34.827	4.877	p<0.01
Immediate Effect of Demonstration Start	-18.740	15.285	None
Sustained Effect	-0.793	1.967	None
Age	-2.446	0.316	p<0.01
Gender (Female)	-39.579	7.887	p<0.01
Expansion Group	-601.593	10.783	p<0.01
Non-ABD	-659.572	10.001	p<0.01
Rural	-163.375	8.133	p<0.01
Constant	-69,196.570	9,845.442	p<0.01

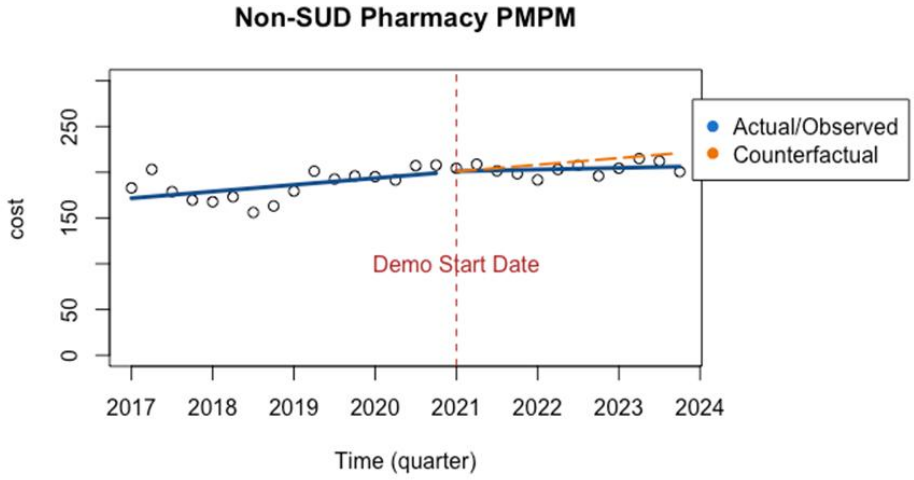
Measure 8.1.2 Per member per month (PMPM) cost of pharmacy for individuals who have an SUD.
Question 8. What are the cost drivers?
Hypothesis 1. N/A

Measure Description: The sum of all Medicaid payments made for pharmacy services for members with an SUD divided the total number of member months with breakouts for non-SUD and SUD-related pharmacy expenditures.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: Non-SUD-related pharmacy expenditures showed a statistically significant increase over time.



Non-SUD Pharmacy $ ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	7.31	2.55	p<0.01
Immediate Effect of Demonstration Start	1.60	9.16	None
Sustained Effect	-1.37	1.17	None
Constant	-14,581.49	5,150.28	p<0.01

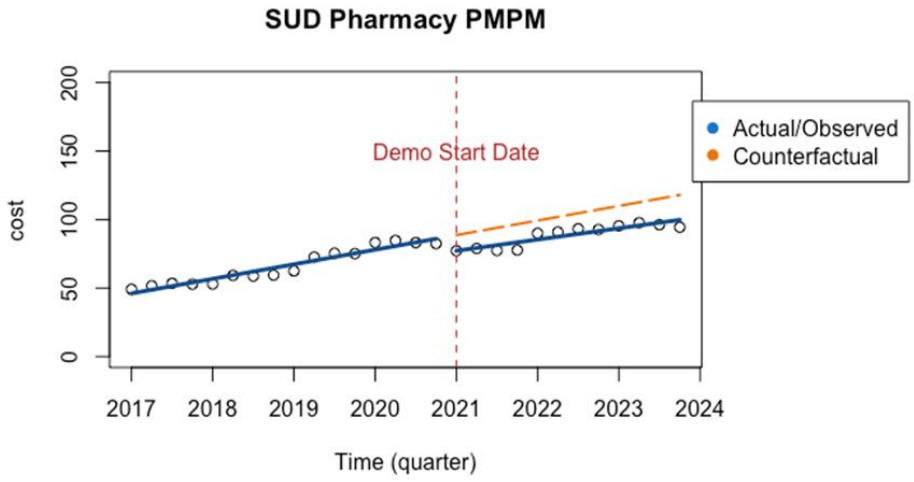
A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Non-SUD related pharmacy expenditures showed a statistically significant increase over time. Older members, members in the non-ABD, and expansion group members showed less non-SUD related pharmacy expenditures. Women and members living in rural counties had more non-SUD pharmacy expenditures.

Non-SUD Pharmacy $ GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	5.557	1.528	p<0.01
Immediate Effect of Demonstration Start	1.143	4.789	None
Sustained Effect	-0.593	0.616	None
Age	-0.319	0.099	p<0.01
Gender (Female)	40.738	2.471	p<0.01
Expansion Group	-19.154	3.378	p<0.01
Non-ABD	-101.695	3.134	p<0.01
Rural	6.118	2.548	p<0.05
Constant	-11,001.420	3,084.703	p<0.01

SUD-Related Pharmacy PMPM

SUD-related pharmacy expenditures showed a general increase in trend over time. There was a decrease in expenditures associated with the start date of the Demonstration, the sustained effect was not statistically significant.



SUD-Pharmacy $ ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	10.64	0.77	p<0.01
Immediate Effect of Demonstration Start	-10.83	2.78	p<0.01
Sustained Effect	-0.61	0.36	None
Constant	-21,414.92	1,563.52	p<0.01

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

SUD-related pharmacy expenditures showed a statistically significant increase over time. There was a decrease associated with the start date of the Demonstration and a sustained increase during the first few years of the Demonstration period. Older members had fewer SUD-related pharmacy expenditures. Women, expansion group and non-ABD group members, and members living in rural counties had more SUD-related pharmacy expenditures.

SUD-Pharmacy $ GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	6.127	0.295	p<0.01
Immediate Effect of Demonstration Start	-15.026	0.926	p<0.01
Sustained Effect	0.393	0.119	p<0.01
Age	-0.703	0.019	p<0.01
Gender (Female)	16.049	0.478	p<0.01
Expansion Group	58.817	0.653	p<0.01
Non-ABD	38.473	0.606	p<0.01
Rural	9.211	0.492	p<0.05
Constant	-12,306.390	596.155	p<0.01

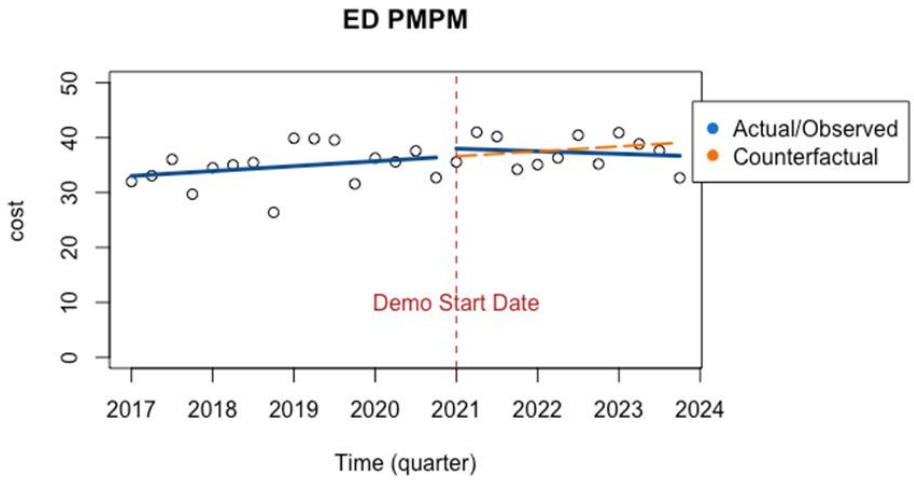
Measure 8.1.3 Per member per month (PMPM) cost of outpatient ED for individuals who have an SUD.
Question 8. What are the cost drivers?
Hypothesis 1. N/A

Measure Description: The sum of all Medicaid payments made for ED services for members with an SUD divided the total number of member months.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: There were no statistically significant trends related to expenditures on ED use.



ED $ ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.90	0.74	None
Immediate Effect of Demonstration Start	1.73	2.67	None
Sustained Effect	-0.34	0.34	None
Constant	-1,774.59	1,498.43	None

A generalized linear (GLM) model was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

Temporal factors provided no explanatory power for ED expenditures. Older members, members in the expansion and non-ABD groups, and members living in rural counties showed fewer ED expenditures. Women had more ED expenditures.

ED $ GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.065	0.281	None
Immediate Effect of Demonstration Start	1.404	0.882	None
Sustained Effect	-0.050	0.113	None
Age	-0.419	0.018	p<0.01
Gender (Female)	1.289	0.455	p<0.01
Expansion Group	-0.462	0.622	None
Non-ABD	-16.956	0.577	p<0.01
Rural	-15.537	0.469	p<0.01
Constant	-66.473	567.907	None

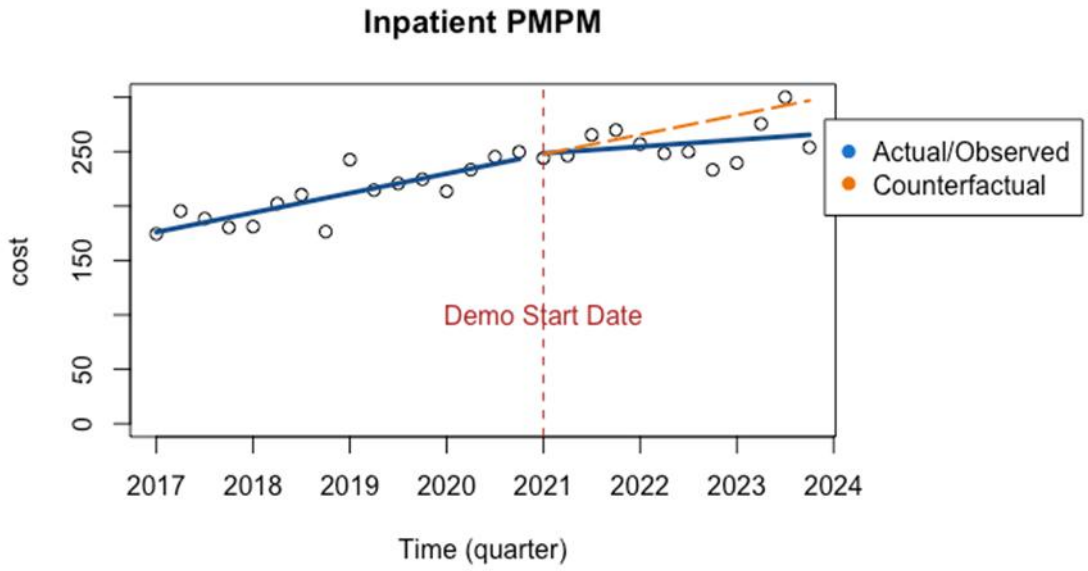
Measure 8.1.4 Per member per month (PMPM) cost of inpatient care for individuals who have an SUD.
Question 8. What are the cost drivers?
Hypothesis 1. N/A

Measure Description: The sum of all Medicaid payments made for inpatient care for members with an SUD divided the total number of member months.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: The general trend was increasing for inpatient expenditures. There was no immediate or sustained effect of the Demonstration on the trend.



Inpatient $ ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	17.92	3.48	p<0.01
Immediate Effect of Demonstration Start	3.65	12.50	None
Sustained Effect	-2.93	1.60	None
Constant	-35,973.73	7,030.49	p<0.01

A generalized linear (GLM) model was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

The general trend showed an increase in expenditures over time. There was no immediate or sustained effect of the Demonstration. Older members had explanatory power for increased inpatient expenditures. Women, non-ABD groups, and members living in rural counties were associated with fewer inpatient expenditures.

Inpatient $ GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	11.955	4.203	p<0.01
Immediate Effect of Demonstration Start	3.603	13.173	None
Sustained Effect	-1.308	1.696	None
Age	2.640	0.273	p<0.01
Gender (Female)	-23.319	6.798	p<0.01
Expansion Group	-1.600	9.293	None
Non-ABD	-123.916	8.620	p<0.01
Rural	-58.638	7.010	p<0.01
Constant	-23,959.740	8,485.375	p<0.01

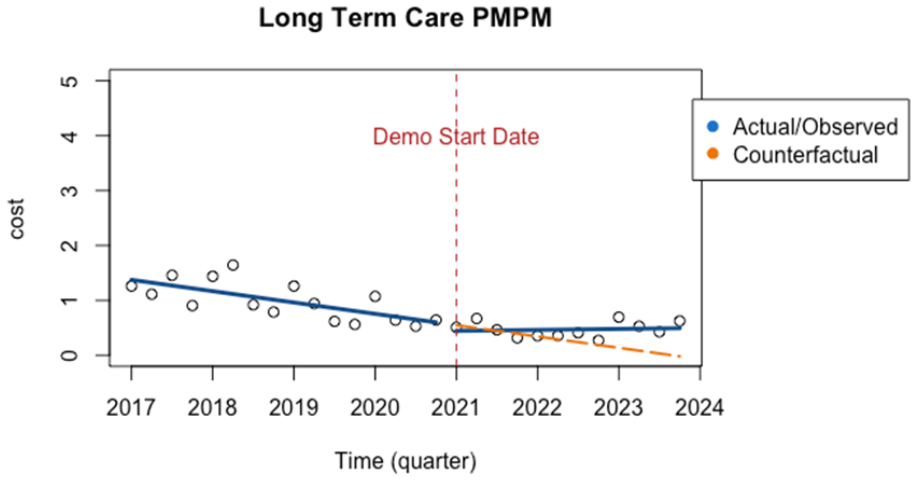
Measure 8.1.5 Per member per month (PMPM) cost of Long-term care for individuals who have an SUD.
Question 8. What are the cost drivers?
Hypothesis 1. N/A

Measure Description: The sum of all Medicaid payments made for long-term care services for members with an SUD divided by the total number of member months.

Data Source and Time Period: MMIS paid claims 2017-2023.

Analytical Approach: Interrupted Time Series; Generalized Linear Model to control for member demographics.

Findings: The general trend showed a decline in LTC expenditures. The Demonstration period showed a statistically significant sustained increase in LTC expenditures.



LTC $ ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.21	0.05	p<0.01
Immediate Effect of Demonstration Start	-0.16	0.17	None
Sustained Effect	0.06	0.02	p<0.05
Constant	417.57	96.07	p<0.01

A generalized linear (GLM) model was used to control for member demographics. Coefficient estimates are presented on the following page. The generalized linear model allows us to explain the variation in utilization attributable to individual demographic factors as well as temporal factors such as the Demonstration start date.

The general trend showed a decline in LTC expenditures. The Demonstration period showed a statistically significant and sustained increase in LTC expenditures. Older members had more LTC expenditures. Expansion and non-ABD groups and members living in rural counties had less LTC expenditures.

LTC $ GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-0.166	0.052	p<0.01
Immediate Effect of Demonstration Start	-0.098	0.164	None
Sustained Effect	0.048	0.021	p<0.05
Age	0.040	0.003	p<0.01
Gender (Female)	-0.051	0.084	None
Expansion Group	-0.749	0.115	p<0.01
Non-ABD	-0.988	0.107	p<0.01
Rural	-0.444	0.087	p<0.01
Constant	334.786	105.339	p<0.01

A summary of the ITS trends in the aggregate analyses related to evaluation question eight is presented below.

Measure	General Trend	Immediate Effect	Sustained Effect
Expenditure Analyses –Cost Drivers			
8.1.1. Outpatient (non-ED) PMPM	-	↓	↑
8.1.2. (a)Non-SUD Pharmacy PMPM	↑	-	-
8.1.2. (b)SUD Pharmacy PMPM	↑	↓	-
8.1.3 ED PMPM	-	-	-
8.1.4 Inpatient PMPM	↑	-	-
8.1.5 LTC PMPM	↓	-	↑

Notes:
- No statistically significant trend
↑Statistically significant increase in trend
↓Statistically significant decrease in trend

A summary of the Generalized Linear Model Results (i.e., how individual factors contribute to the variation in the data) related to evaluation question eight, is presented below.

Measure	General Trend	Immediate Effect	Sustained Effect	Age (Older)	Gender (Female)	Expansion Group	Non-ABD	Rural Counties
Expenditure Analyses – Cost Drivers								
8.1.1. Outpatient (non-ED) PMPM	↑	-	-	↓	↓	↓	↓	↓
8.1.2(a) SUD Pharmacy PMPM	↑	-	-	↓	↑	↓	↓	↑
8.1.2(b) Non-SUD Pharmacy PMPM	↑	↓	↑	↓	↑	↑	↑	↑
8.1.3 ED PMPM	-	-	-	↓	↑	↓	↓	↓
8.1.4 Inpatient PMPM	↑	-	-	↑	↓	-	↓	↓
8.1.5 LTC PMPM	↓	-	↑	↑	-	↓	↓	↓

Notes:
- No statistically significant trend
↑Statistically significant explanatory power
↓Statistically significant explanatory power

CONCLUSIONS

Trends were examined for 2017-2020 as part of the pre-Demonstration period and 2021-2023 as part of the Demonstration. The interim evaluation findings should be interpreted with caution. The Demonstration start date coincided with the ongoing novel coronavirus PHE (CY2021). The base period is largely pre-PHE, while the initial Demonstration period was concurrent with the PHE. Although the analysis tested for anomalous results associated with CY2020 and adjusted baseline years as applicable, examining the full five-year Demonstration cycle may offer more insight into pre/post PHE trends. In addition, 2023 results are considered preliminary, pending a six month claims runout for the final quarter. All results will be updated in the summative evaluation report.

A summary of findings for each evaluation question is presented below. For measures studied using the aggregate ITS approach, hypotheses were deemed supported when:

- The sustained effect of the Demonstration showed no statistically significant change (performance was maintained), regardless of direction, or showed a statistically significant improvement in trend.

For measures studied using an alternative approach (e.g., logistic regression and two sample tests) hypotheses were deemed supported when:

- Preliminary 2023 results showed no change (performance was maintained across years) or showed a statistically significant improvement in performance.

Evaluation Question One

Overall, the percentage of Medicaid members receiving any type of SUD treatment has been increasing over time. The general trend for members receiving outpatient treatment was increasing prior to the Demonstration. A decline in utilization was seen during the first few years of the Demonstration (coinciding with the PHE). Trends for other service types (IOP/PH, inpatient/residential, withdrawal mgt/detox, and MAT) did not yield statistically significant change under the Demonstration. Utilization in three service categories – residential/inpatient services, withdrawal management/detox, and MAT – showed a statistically significant increase as part of the general trend; although no statistically significant change occurred during the Demonstration for these services, increases were maintained. **Hypothesis one, *The Demonstration will maintain or increase utilization of SUD treatment services,* was supported, with five of the six measures maintaining or improving.**

The overall number of Medicaid enrolled providers billing SUD treatment services declined by approximately three percent. However, providers billing MAT increased by nearly 10 percent. **Hypothesis two, *The Demonstration will maintain or increase SUD provider availability*, was partially supported, with one of two measures improving**.

Follow-up after ED visits for alcohol and other drug abuse showed a statistically significant decline during the Demonstration period for both 30 day and 7-day follow-up measures. Women and expansion group members tended to engage in follow-up more often. The evaluator is working with OMS to determine if the measure is impacted by a potential data gap resulting from the increased use of Opioid

Health Home services. **Hypothesis three, *The Demonstration will maintain or increase follow-up after ED visits for alcohol and other drug use*, was not supported by the interim results**.

There was no statistically significant change in Members initiating and engaging in treatment under the Demonstration. Women and expansion group members tended to initiate and engage in treatment more often. **Hypothesis four, *The Demonstration will maintain or increase initiation and engagement in SUD treatment,* was supported with two of two measures maintaining pre-Demonstration results.**

It is likely that the results related to the utilization of services and follow-up after the ED were impacted by the PHE. Final results for Demonstration as well as the next five-year study period will help to determine whether declines in service utilization under the PHE are reversed.

Demographic considerations examined using a generalized linear model for evaluation question one are provided below.

Demographic Variable	Preliminary Observations
Age	• Older members were associated with an increase in outpatient treatment use • Younger members were associated with the increased use of all other levels of care, follow-up care after the ED and initiation and engagement in treatment
Gender	• Women were associated with an increase in outpatient and intensive outpatient use, residential/inpatient care, MAT, follow-up care after the ED and initiation and engagement in treatment. • Men were associated with an increased use of withdrawal management services
Aid Category	• Members in the expansion group were associated with increased use of services at all levels of care as well as follow up after the ED and initiation and engagement in treatment
Urban/Rural	• Rural areas were associated with an increased use of outpatient treatment and MAT. Urbans areas were associated with an increased use of all other levels of care.

An overall summary of evaluation question one is provided below.

Hypothesis/Measure	Analytic Approach	Hypothesis Supported	Statistical Significance
Hypothesis 1. The Demonstration will maintain or increase utilization of SUD treatment services			
1.1.1. Members receiving any SUD treatment service	Logistic Regression	Yes	↑
1.1.2. Members receiving SUD outpatient treatment	ITS	No	↓
1.1.3. Members receiving IOP/PH	ITS	Yes	-
1.1.4. Members receiving residential and inpatient	ITS	Yes	-*
1.1.5. Members receiving withdrawal mgt/detox	ITS	Yes	-*
1.1.6. Members receiving MAT	ITS	Yes	-*
Hypotheses 2. The Demonstration will maintain or increase SUD provider availability			
1.2.1 Medicaid SUD treatment providers	T-test	No	↓
1.2.2 Medicaid providers billing MAT	T-test	Yes	↑
Hypothesis 3. The Demonstration will maintain or increase follow-up after ED visits for alcohol and other drug use			
1.3.1. ED visits for AOD abuse or dependence with follow-up within 7-days of discharge	ITS	No	↓

Hypothesis/Measure	Analytic Approach	Hypothesis Supported	Statistical Significance
1.3.2. ED visits for AOD abuse or dependence with follow-up within 30-days of discharge	ITS	No	↓
Hypothesis 4. The Demonstration will maintain or increase initiation and engagement in SUD treatment			
1.4.1. Members ages 18 and older who initiate in SUD treatment	ITS	Yes	-
1.4.1. Members who initiate treatment and engage in SUD treatment	ITS	Yes	-

- No statistically significant change in trend or performance (performance maintained)
-*The general trend shows a statistically significant increase in utilization
↑Statistically significant increase in sustained trend or performance
↓Statistically significant decrease in sustained trend or performance

Evaluation Question Two

In each year studied members who received services from an Opioid Health Home showed stronger performance for continuity of pharmacotherapy (180 days of continuous treatment). **Hypothesis one, *The Demonstration will maintain or increase continuity of pharmacotherapy for OUD for Opioid Health Home members*, was supported.**

Measure	Analytic Approach	Hypothesis Supported	Statistically Significant
Hypothesis 1. The Demonstration will maintain or increase continuity of pharmacotherapy for OUD for Opioid Health Home members.			
2.1.1. OHH members who have at least 180 days of continuous OUD treatment	Comparison Strategy	Yes	Yes

Evaluation Question Three

There was no statistically significant change in the percent of members receiving opioids at a high dose during the Demonstration. ***Hypothesis one, The Demonstration will contain or reduce the use of opioids at a high dosage,* was supported with the measure maintaining performance.**

In 2023, members who received Accountable Community services showed better results (i.e., lower rates) for the concurrent use of prescription opioids and benzodiazepines. **Hypothesis two, *The Demonstration will contain or reduce the use of opioids concurrent with benzodiazepines for AC-attributed members*, was supported.**

Overdose deaths in the Medicaid population began to decline in 2023 as did opioid-related overdose death. Data on the number of PMP users shows a decline over the baseline period; however, in 2023 inactive users were removed from the system and contributed to the change in total prescribers registered in the PMP. The number of inquiries under the prescription monitoring program (PMP) has been steadily increasing in each year of the Demonstration. **Hypothesis three, *The Demonstration will contain or reduce the rate of overdose deaths due to opioids in the Medicaid population* was not supported, with two of the three measures showing a decline in performance.**

Measure	Analytic Approach	Hypothesis Supported	Statistical Significance
Hypothesis 1. The Demonstration will contain or reduce the use of opioids at a high dosage.			
3.1.2. Percentage of members ages 18 and older who receive prescriptions for opioids with an average daily dose greater than or equal to 90 morphine milligram equivalents (MME) over a period of 90 days or more	Logistic Regression	Yes	-
Hypotheses 2. The Demonstration will contain or reduce the use of opioids concurrent with benzodiazepines for AC attributed members.			
3.2.2. Percentage of members ages 18 and older eligible for AC participation with concurrent use of prescription opioids and benzodiazepines	Comparison Strategy	Yes	↓*
Hypothesis 3. The Demonstration will contain or reduce the rate of overdose deaths due to opioids in the Medicaid population.			
3.3.4. The rate of opioid overdose deaths per 1,000 Medicaid members	Proportional T-Test	Yes	↓
3.3.5. The total number of PMP users during the twelve-month measurement period		No	↓**
3.3.6. The total number of PMP inquires performed during the twelve-month measurement period		Yes	↑

**Lower rates are preferred; ** Inactive users were removed in 2023*

Evaluation Question Four

The total number of ED visits for SUD showed a statistically significant decline during the Demonstration period. Non-emergent ED visits showed a statistically significant decline immediately following the start of the Demonstration; the sustained change was not significant. **Hypothesis one, *The Demonstration will contain or reduce the rate of preventable ED visits for individuals with SUD*, was supported with two of two measures maintaining or improving performance.**

The total number of inpatient stays showed a statistically significant decline during the Demonstration period. The PQI (i.e., the number of discharges for chronic conditions) showed a decline, the change was not statistically significant. **Hypothesis two, *The Demonstration will contain or reduce preventable inpatient admissions,* was supported, with both measures maintaining or improving performance.**

Continued study is warranted to ensure that the decline in ED and Inpatient use is sustained in the coming years and not due to members avoiding the ED or hospital during the PHE.

Demographic considerations examined using a generalized linear model for evaluation question four are outlined on the following page.

Demographic Variable	Preliminary Observations
Age	• Older members were associated with fewer ED visits for SUD and non-emergent conditions, and increased hospital stays and admissions for chronic conditions
Gender	• Women were associated with fewer hospital stays and admissions for chronic conditions, ED visits for SUD and more ED visits for non-emergent conditions.
Aid Category	• Members in the expansion group were associated with increased use of the ED for SUD • Members in the non-ABD group were associated with fewer hospital stays and admissions for chronic conditions
Urban/Rural	• Rural areas were associated with a decreased use of ED for SUD and non-emergent conditions and fewer inpatient stays

An overall summary of results related to evaluation question four is provided below.

Hypothesis/Measure	Analytic Approach	Hypothesis Supported	Statistical Significance
Hypothesis 1. The Demonstration will contain or reduce the rate of preventable ED visits for individuals with a SUD			
4.1.1. Total number of ED visits for SUD per 1,000 members	ITS	Yes	Yes
4.1.1. The rate of non-emergent ED visits per 1,000 member months	ITS	Yes	-*
Hypotheses 2. The Demonstration will contain or reduce preventable inpatient admissions			
4.2.1. Total number of inpatient stays for SUD per 1,000 members	ITS	Yes	Yes
4.2.2. Prevention Quality Chronic Composite (PQI #92)	ITS	Yes	-*

- No statistically significant change in trend or performance (maintained)
-*The general trend shows a statistically significant improvement in performance

Evaluation Question Five

In each year studied, members who received Health Home services showed the same or fewer readmissions for SUD treatment than the comparison group. The differences were not statistically significant in any year. The trend for unplanned readmissions for all causes did not change during the Demonstration period. Demographic variables examined using the generalized liner model showed that older members and those in the ABD aid category were associated with an increase in unplanned readmissions. **Hypothesis one, *The Demonstration will contain or reduce readmissions to the same of higher levels of care*, was supported, with two of the two measures maintaining performance.**

Hypothesis/Measure	Analytic Approach	Hypothesis Supported	Statistical Significance
Hypothesis 1. The Demonstration will contain or reduce the readmissions to the same or higher levels of care			
5.1.1. Percentage of readmission to the same or higher level of residential care	Comparison Strategy	Yes	-
5.1.2. The rate of adult acute inpatient and observation stays that were followed by an unplanned acute readmission for any diagnosis	ITS	Yes	-

Evaluation Question Six

In each year studied members who received Health Home services showed more visits for ambulatory and preventive care than those in the comparison group. **Hypothesis one, *The Demonstration will maintain or increase access to care for physical health conditions for health home enrollees*, was supported**

Hypothesis/Measure‡	Analytic Approach	Hypothesis Supported	Statistical Significance
Hypothesis 1. Demonstration will maintain or increase access to care for physical health conditions for health home enrollees			
6.1.1. Percentage of members with a SUD who had an ambulatory or preventive health care visit	Comparison Strategy	Yes	Yes

Exploratory Expenditure Analysis (Evaluation Questions 7-8)

Immediately following the start of the Demonstration there was a decline in the total cost of care and SUD-related expenditures. The sustained effect of the Demonstration period showed a statistically significant increase in all categories, apart from physical health care.

The generalized linear model showed that older members and members residing in rural counties had fewer expenditures in every category. Expansion group members showed statistically significant explanatory power for increased SUD IMD related expenditures. Women and expansion group members had statistically significant explanatory power for increased SUD-related expenditures.

There were no statistically significant sustained changes in expenditures for inpatient, ED or pharmacy services during the Demonstration period. Both outpatient care (non-ED) and LTC services did show increases in expenditures during the Demonstration period.

Demographic considerations examined using a generalized linear model for evaluation question seven (total PMPM) and eight (cost drivers) are outlined below and on the following page.

Demographic Variable	Preliminary Observations Evaluation Question Seven
Age	• Older members were associated with fewer expenditures overall (total PMPM) and SUD-related costs
Gender	• Women were associated with more SUD related expenditures, fewer total PMPM expenditures as well as fewer SUD IMD and physical health care costs
Aid Category	• Members in the expansion group were associated with higher SUD-IMD and SUD PMPM expenditures overall • Members in the non-ABD group were associated with fewer expenditures in each category (total and SUD-related PMPMs)
Urban/Rural	• Rural areas were associated with fewer expenditures in each category (total and SUD-related PMPMs)

Demographic Variable	Preliminary Observations Evaluation Question Eight
Age	• Older members were associated with fewer expenditures with the exception of the inpatient and LTC PMPMs
Gender	• Women were associated with an increase in the pharmacy related and ED PMPMs and fewer expenditures in the inpatient and outpatient PMPMs
Aid Category	• Members in the expansion group were associated with fewer expenditures with the exception of the non-SUD related pharmacy PMPM • Members in the non-ABD group were associated with fewer expenditures in each category with the exception of the non-SUD related pharmacy PMPM
Urban/Rural	• Rural areas were associated with fewer expenditures in each category with the exception of pharmacy (SUD-related and non-SUD)

Interim Conclusion

When 50 percent or more of the measures studied maintained or improved performance, the evaluation question was considered supported.

Evaluation Question	Measures Maintaining or Improving Performance	Interim Finding
Evaluation Question 1. Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?	67% (8/12)	Supported
Evaluation Question 2. Does the Demonstration maintain or increase adherence to and retention in treatment for alcohol or other drug use?	100% (1/1)	Supported
Evaluation Question 3. Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?	80% (4/5)	Supported
Evaluation Question 4. Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with a SUD?	100% (4/4)	Supported
Evaluation Question 5. Does the Demonstration contain or reduce readmissions to the same or higher levels of care?	100% (1/1)	Supported
Evaluation Question 6. Does the Demonstration maintain or improve access to care for physical health conditions?	100% (1/1)	Supported

INTERPRETATIONS, AND POLICY IMPLICATIONS AND INTERACTIONS WITH OTHER STATE INITIATIVES

In advance of its application to CMS for the SUD-IMD Demonstration authority in 2019, the State of Maine had been engaged in extensive assessment of the SUD treatment system. The DHHS sponsored both internal and independent external reviews of capacity, success and barriers to treatment. These discussions and reviews were followed by: the implementation of Medicaid expansion (effective July 1, 2018); expanded coverage of MAT, with methadone and office-based buprenorphine available in a variety of settings including in the ED; and building on the existing Behavioral Health Home model by adding the Opioid Health Home program in 2017.

Seeking authority for the reimbursement of services provided for adults in IMDs was one part of a comprehensive effort to improve the SUD service delivery system. Supporting SUD residential treatment at every level of the American Society for Addition Medicine (ASAM) continuum of care allowed the State to fill gaps in capacity that had been identified in the Medicaid delivery system.

During the first year of the Demonstration the State completed a rate study and subsequently increased rates for intensive outpatient treatment in DY2. In DY2 and DY3, the State also issued several behavioral health funding opportunities to increase residential treatment for SUD.

The first award was for $4 million to support the capital costs necessary to increase residential treatment for (SUD) capacity. The second award was for $2 million to support start-up costs. A third award of $2.5 million was made available to support both capital and start-up costs. As a result, 64 beds opened at the end of 2023 and 108 new beds are expected by the end 2024, for a cumulative total of 172 new treatment beds for SUD by the end of the Demonstration.

As part of the SUD Implementation plan, the State continued its support for MAT induction EDs (e.g., training on implementation of rapid induction, warm-hand offs to community-based treatment). At the outset of the Demonstration, 23 of Maine's EDs offered induction for MAT. By the end of DY2, the number of EDs offering induction had increased to 26 offering services MAT 24/7 and one offering MAT when prescribers are available. Five EDs do not offer MAT induction.

A treatment locator tool to assist with appropriate and timely access to SUD treatment was launched in 2023. OMS added requirements under its value-based purchasing initiative for Primary Care Health Homes to provide screening, brief intervention, and referral to treatment for SUD/OUD, effective July 1, 2023.

Nationally the PHE has been associated with a decrease in SUD treatment admissions and decreases in almost all states. Cantor, et al found that before 2020, the number of treatment admissions per 10 000 remained relatively stable. However, in 2020, the number of treatment admissions decreased from 65.9 per 10,000 in 2019 to 50.4 per 10,000 in 2020, a relative reduction of 23.5 percent. The decrease was larger for men (87.5 to 67.1 per 10 000) compared with women (45.1 to 34.5 per 10 000)[2].

[2] Cantor JH, Whaley CM, Stein BD, Powell D. Analysis of Substance Use Disorder Treatment Admissions in the US by Sex and Race and Ethnicity Before and During the COVID-19 Pandemic. JAMA Netw Open. 2022;5(9): e2232795. doi:10.1001/jamanetworkopen.2022.32795

However, the State's long-term and sustained focus on the SUD treatment needs and delivery system provided a strong foundation for improvements under the Demonstration. While increases in utilization were not immediately observed, the maintenance of performance and improvement in several areas should be seen as a success considering the overlap of the PHE during the Demonstration period.

LESSONS LEARNED AND RECOMMENDATIONS

Maintaining pre-Demonstration utilization levels for SUD treatment during the pandemic should be considered a success under the Demonstration. Statistically significant declines in performance were evident for six measures, four of which were likely impacted by provider availability during the PHE and two of which were caused by issues related systems changes (PMP counts) and the use of an all-inclusive monthly payment model (OHH).

Under evaluation question one, declines were seen in four measures related to access: utilization of outpatient treatment; the number of Medicaid enrolled SUD treatment providers; and follow-up after visiting the ED for SUD (within 7 and 30 days). The decreases in each of these areas coincide with the PHE. In addition, the evaluator is working with OMS to determine if the measure is impacted by a potential data gap resulting from the increased use of Opioid Health Home services. Modifications to the measure specifications or in the analytic approach such as controlling for OHH participation may be considered for the summative evaluation.

Under evaluation three, declines were seen in the number of PMP users. The change in the number of PMP users was caused by the removal of inactive accounts from the monitoring system. PMP inquiries continued to increase year over year. The overall death rate as well as opioid-related deaths in the Medicaid population began to decline in 2023.

Prior to and during the Demonstration period, the State of Maine made sustained and long-term investments in SUD treatment and recovery system. This focus on sustaining the full continuum of care provided a strong foundation and likely contributed to maintaining pre-Demonstration trends during the PHE. The planning and assessment activities undertaken by the State are easily transferable to other programs nationally. The timing of which can be tailored to occur prior to or during the Demonstration period. However, to the extent that they occur prior to a Demonstration, the results may be helpful in guiding the final request and refinements under the Demonstration. Planning and assessment activities undertaken by the State of Maine prior to the Demonstration included:

- Sponsoring both internal and independent external reviews of capacity, success and barriers to SUD treatment. Reviews included extensive stakeholder outreach (e.g., focus groups, surveys and public feedback sessions) in addition to a quantitative analysis of Medicaid SUD treatment claims
- Enhancing access to SUD treatment services through the expansion of Medicaid eligibility to the New Adult Group under the Affordable Care Act
- Expanding MAT coverage across multiple settings (e.g., ED, office-based and clinic)
- Development of an Opioid Health Home model for comprehensive and integrated treatment and care management services

As part of the Demonstration's SUD Implementation Plan, the State:

- Ensuring SUD residential treatment coverage in the State Plan at every level of the American Society for Addition Medicine (ASAM) continuum of care (based on gaps identified through the reviews mentioned above)
- Completing a rate study and obtaining legislative approval for subsequent rate increase, especially in intensive outpatient treatment services

- Sponsoring infrastructure and startup funding to build additional SUD residential treatment capacity in existing and new programs
- Developing a public facing treatment locator tool to assist with appropriate and timely access to SUD treatment
- Creating requirements and payment incentives for Primary Care Health Homes to provide screening, brief intervention, and referral to treatment for SUD/OUD

Finalizing 2023 results, the inclusion of 2024 data and additional years under the renewed Demonstration will be important to understand if utilization and engagement in treatment show further improvements.

ATTACHMENTS

A. EVALUATION MEASURES AND CHANGES

Original Measure Name (Steward Reference)	Data Source	Analytic Approach	Interim Report Changes
Evaluation Question 1. Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD? **a. How does service utilization vary by age and aid category code?** **b. How does utilization vary by service type?**			
Hypothesis 1. The Demonstration will maintain or increase utilization of SUD treatment services			
Percentage of members receiving any SUD treatment service (SUD MP #6 modified)	Claims	ITS; T-test	None
Percentage of members receiving SUD outpatient treatment services (SUD MP #8 modified)	Claims	ITS; T-test	None
Percentage of members receiving intensive outpatient (IOP) treatment and partial hospitalization (PH) services (SUD MP #9 modified)	Claims	ITS; T-test	None
Percentage of members receiving residential and inpatient treatment services (SUD MP #10 modified)	Claims	ITS; T-test	None
Percentage of members receiving withdrawal management services (SUD MP #11 modified)	Claims	ITS; T-test	None
Percentage of members receiving medication-assisted treatment (MAT) (SUD MP #12 modified)	Claims	ITS; T-test	None
Hypothesis 2. The Demonstration will maintain or increase SUD provider availability			
Percentage of licensed SUD providers enrolled in Medicaid	Medicaid Enrollment Files; State Licensing Records	ITS; T-test	Detailed information on the number of licensed providers statewide was not available. Data reported for SUD MP Metric 13 (Number of Medicaid providers billing SUD treatment) was used. Data collection for SUD MP #13 and 14 began in 2021, therefore there were insufficient observations for ITS; t-test was used in place of an ITS analysis
Percentage of providers enrolled in Medicaid and qualified to deliver MAT services (SUD MP #14 modified)	Medicaid Enrollment Files	ITS; T-test	Data collection for SUD MP #14 began in 2021, therefore there were insufficient observations for ITS; t-test was used in place of an ITS analysis
Hypothesis 3. The Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug (AOD) dependence			
Percentage of ED visits for AOD abuse or dependence for which the member received follow-up within 7-days of discharge (SUD MP #17(1))	Claims	ITS; T-test	None
Percentage of ED visits for AOD abuse or dependence for which the member received follow-up within 30-days of discharge (SUD MP #17(1))	Claims	ITS; T-test	None
Hypothesis 4. The Demonstration will maintain or increase initiation and engagement in treatment			
Percentage of members ages 18 and older with a new episode of AOD abuse or dependence who initiate in SUD treatment (SUD MP #15a)	Claims	ITS; T-test	None

Original Measure Name (Steward Reference)	Data Source	Analytic Approach	Interim Report Changes
Percentage of members with a new episode of alcohol and other drug abuse or dependence who engage in SUD treatment (SUD MP #15b)	Claims	ITS; T-test	None
Evaluation Question 2. Does the Demonstration maintain or increase adherence to and retention in treatment for alcohol or other drug use?			
Hypothesis 1. The Demonstration will maintain or increase continuity of pharmacotherapy for OUD for OHH enrollees			
Percentage of members ages 18 and older with pharmacotherapy for OUD who have at least 180 days of continuous treatment (SUD MP #22)	Claims	PSM/CEM w/T-test (OHH)	None
Evaluation Question 3. Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?			
Hypothesis 1. The Demonstration will contain or reduce the use of opioids at a high dosage			
Percentage of members aged 18 and older who receive prescriptions for opioids with an average daily dose greater than or equal to 90 morphine milligram equivalents (MME) over a period of 90 days or more (SUD MP #18)	Claims; PMP	ITS; T-test	Quarterly analysis does not allow for adherence to the technical specifications (e.g., the index event must occur 90 days before the end of the measurement period). ITS analysis was replaced with logistic regression for Demonstration years 2021 – 2025.
Hypothesis 2. The Demonstration will contain or reduce the use of opioids concurrent with benzodiazepines for ACO attributed members			
Percentage of members aged 18 and older with concurrent use of prescription opioids and benzodiazepines (SUD MP #21)	Claims; PMP	PSM/CEM w/T-test (ACO)	None
Hypothesis 3. The Demonstration will contain or reduce the rate of overdose deaths due to opioids in the Medicaid population			
The rate of opioid overdose deaths per 1,000 Medicaid members (SUD MP #27 OUD subgroup)	Eligibility Files; Data, Research and Vital Statistics (DVRS)	ITS; T-test	Data collection for SUD MP #27 began in 2021; test of proportionality was used in place of an ITS analysis
The total number of PMP users during the twelve-month measurement period	PMP	T-test (% change)	None
The total number of PMP inquires performed during the twelve-month measurement period	PMP	T-test (% change)	
Evaluation Question 4. Does the Demonstration contain or reduce preventable ED visits and inpatient hospitalizations for individuals with a SUD? **a. How does utilization vary by age, aid category code?** **b. How does utilization vary by geographic characteristics (e.g., rural v. urban)?** **c. How does utilization vary when MAT induction in the ED is offered?**			
Hypothesis 1. The Demonstration will contain or reduce the rate of preventable ED visits for individuals with a SUD			

Original Measure Name (Steward Reference)	Data Source	Analytic Approach	Interim Report Changes
Total number of ED visits for SUD per 1,000 members (SUD MP #23)	Claims	ITS; Pre/Post MAT; T-test test	Start dates for MAT providers in the ED were not recorded; pre/post subsidiary analysis (4c) of MAT in the ED could not be performed.
The rate of non-emergent ED visits per 1,000 member months (OMS Non-emergent ED use)	Claims	ITS; T-test	None
Hypothesis 2. The Demonstration will contain or reduce preventable inpatient admissions			
Total number of inpatient stays for SUD per 1,000 members (SUD MP #24)	Claims	ITS; T-test	None
Prevention Quality Chronic Composite (PQI #92)	Claims	ITS; T-test	None
Evaluation Question 5. Does the Demonstration contain or reduce readmissions to the same or higher levels of care?			
Hypothesis 1. The Demonstration will contain or reduce readmissions to the same or higher levels of care			
Percentage of readmission to the same or higher level of residential care (SUD MP #25 modified)	Claims	PSM/CEM w/T-test (HH)	None
The rate of adult acute inpatient and observation stays that were followed by an unplanned acute readmission for any diagnosis (HEDIS – PCR)	Claims	ITS; T-test	None
Evaluation Question 6. Does the Demonstration maintain or improve access to care for physical health conditions?			
Hypothesis 1. The Demonstration will maintain or increase access to care for physical health conditions for health home enrollees			
Percentage of members with a SUD who had an ambulatory or preventive health care visit (SUD MP #32)	Claims	PSM/CEM w/T-test (HH	None
Percentage of members with a SUD who had an ambulatory or preventive health care visit (SUD MP #32)	Claims	PSM/CEM w/T-test (TCM)	A comparison group of members who are eligible for TCM and did not receive a service was not identifiable. In addition, service use is declining as members enter the Opioid and Behavioral Health Home programs. Measure and Hypothesis 2 were removed from the study.
Evaluation Question 7. How does the cost of SUD services change over time?			
Hypothesis: N/A Exploratory			
Per member per month (PMPM) Medicaid cost for members with an SUD during the measurement year	Claims	ITS	None
Per member per month (PMPM) cost of SUD-Related treatment for members with an SUD during the measurement year	Claims	ITS	None
Per member per month (PMPM) cost of physical health care for members with an SUD during the measurement year	Claims	ITS	None
Evaluation Question 8. What are the cost drivers?			

Original Measure Name (Steward Reference)	Data Source	Analytic Approach	Interim Report Changes
Hypothesis: N/A Exploratory			
Per member per month (PMPM) cost of outpatient (non-ED) for members with an SUD during the measurement year	Claims	ITS	None
Per member per month (PMPM) cost of pharmacy for members with an SUD during the measurement year	Claims	ITS	None
Per member per month (PMPM) cost of outpatient ED for members with an SUD during the measurement year	Claims	ITS	None
Per member per month (PMPM) cost of inpatient care for members with an SUD during the measurement year	Claims	ITS	None
Per member per month (PMPM) cost of Long-term care for members with an SUD during the measurement year	Claims	ITS	None

B. NON-EMERGENT ED USE

OMS maintains the specifications for non-emergent ED use as described below.

Non-Emergent ED Use	
Denominator	Any outpatient claims with the following: CPT Code: 99281,99282,99283,99284,99285 or Revenue Code: 0450,0451,0452,0456,0459,0981 or ED Procedure CPT Code with a Place of Service of 23
Numerator	Claims with a primary diagnosis code listed in Table 1 below (non-emergent)

Table 1. Non-Emergent Diagnosis Code List	
Code	Description
B97.10	Unspecified enterovirus as the cause of diseases classified elsewhere
B97.89	Other viral agents as the cause of diseases classified elsewhere
F41.1	Generalized anxiety disorder
F41.9	Anxiety disorder, unspecified
G44.1	Vascular headache, not elsewhere classified
G93.3	Post viral fatigue syndrome
H10.30	Unspecified acute conjunctivitis, unspecified eye
H10.31	Unspecified acute conjunctivitis, right eye
H10.32	Unspecified acute conjunctivitis, left eye
H10.33	Unspecified acute conjunctivitis, bilateral
H10.9	Unspecified conjunctivitis
H60.00	Abscess of external ear, unspecified ear
H60.01	Abscess of the right external ear
H60.02	Abscess of the left external ear
H60.03	Abscess of external ear, bilateral
H60.10	Cellulitis of external ear, unspecified ear
H60.11	Cellulitis of right external ear
H60.12	Cellulitis of left external ear
H60.13	Cellulitis of external ear, bilateral
H60.311	Diffuse otitis externa, right ear
H60.312	Diffuse otitis externa, left ear
H60.313	Diffuse otitis externa, bilateral
H60.319	Diffuse otitis externa, unspecified ear
H60.321	Hemorrhagic otitis externa, right ear
H60.322	Hemorrhagic otitis externa, left ear
H60.323	Hemorrhagic otitis externa, bilateral
H60.329	Hemorrhagic otitis externa, unspecified ear
H60.391	Other infective otitis externa, right ear
H60.392	Other infective otitis externa, left ear
H60.393	Other infective otitis externa, bilateral
H60.399	Other infective otitis externa, unspecified ear
H65.00	Acute serous otitis media, unspecified ear

Table 1. Non-Emergent Diagnosis Code List	
Code	Description
H65.01	Acute serous otitis media, right ear
H65.02	Acute serous otitis media, left ear
H65.03	Acute serous otitis media, bilateral
H65.04	Acute serous otitis media, recurrent, right ear
H65.05	Acute serous otitis media, recurrent, left ear
H65.06	Acute serous otitis media, recurrent, bilateral
H65.07	Acute serous otitis media, recurrent, unspecified ear
H65.90	Unspecified nonsuppurative otitis media, unspecified ear
H65.91	Unspecified nonsuppurative otitis media, right ear
H65.92	Unspecified nonsuppurative otitis media, left ear
H65.93	Unspecified nonsuppurative otitis media, bilateral
H66.001	Acute suppurative otitis media without spontaneous rupture of ear drum, right ear
H66.002	Acute suppurative otitis media without spontaneous rupture of ear drum, left ear
H66.003	Acute suppurative otitis media without spontaneous rupture of ear drum, bilateral
H66.004	Acute suppurative otitis media without spontaneous rupture of ear drum, recurrent, right ear
H66.005	Acute suppurative otitis media without spontaneous rupture of ear drum, recurrent, left ear
H66.006	Acute suppurative otitis media without spontaneous rupture of ear drum, recurrent, bilateral
H66.007	Acute suppurative otitis media without spontaneous rupture of ear drum, recurrent, unspecified ear
H66.009	Acute suppurative otitis media without spontaneous rupture of ear drum, unspecified ear
H66.90	Otitis media, unspecified, unspecified ear
H66.91	Otitis media, unspecified, right ear
H66.92	Otitis media, unspecified, left ear
H66.93	Otitis media, unspecified, bilateral
J01.90	Acute sinusitis, unspecified
J01.91	Acute recurrent sinusitis, unspecified
J02.0	Streptococcal pharyngitis
J02.8	Acute pharyngitis due to other specified organisms
J02.9	Acute pharyngitis, unspecified
J03.00	Acute streptococcal tonsillitis, unspecified
J03.01	Acute recurrent streptococcal tonsillitis
J06.9	Acute upper respiratory infection, unspecified
J20.0	Acute bronchitis due to Mycoplasma pneumoniae
J20.1	Acute bronchitis due to Hemophilus influenzae
J20.2	Acute bronchitis due to streptococcus
J20.3	Acute bronchitis due to coxsackievirus
J20.4	Acute bronchitis due to parainfluenza virus
J20.5	Acute bronchitis due to respiratory syncytial virus
J20.6	Acute bronchitis due to rhinovirus
J20.7	Acute bronchitis due to echovirus

Table 1. Non-Emergent Diagnosis Code List	
Code	Description
J20.8	Acute bronchitis due to other specified organisms
J20.9	Acute bronchitis, unspecified
J32.9	Chronic sinusitis, unspecified
J40	Bronchitis, not specified as acute or chronic
J44.1	Chronic obstructive pulmonary disease with (acute) exacerbation
J44.9	Chronic obstructive pulmonary disease, unspecified
J45.20	Mild intermittent asthma, uncomplicated
J45.21	Mild intermittent asthma with (acute) exacerbation
J45.30	Mild persistent asthma, uncomplicated
J45.31	Mild persistent asthma with (acute) exacerbation
J45.40	Moderate persistent asthma, uncomplicated
J45.41	Moderate persistent asthma with (acute) exacerbation
J45.50	Severe persistent asthma, uncomplicated
J45.51	Severe persistent asthma with (acute) exacerbation
J45.901	Unspecified asthma with (acute) exacerbation
J45.909	Unspecified asthma, uncomplicated
J45.990	Exercise induced bronchospasm
J45.991	Cough variant asthma
J45.998	Other asthma
L20.0	Besnier's prurigo
L20.81	Atopic neurodermatitis
L20.82	Flexural eczema
L20.84	Intrinsic (allergic) eczema
L20.89	Other atopic dermatitis
L20.9	Atopic dermatitis, unspecified
L22	Diaper dermatitis
L23.7	Allergic contact dermatitis due to plants, except food
L23.9	Allergic contact dermatitis, unspecified cause
L24.7	Irritant contact dermatitis due to plants, except food
L24.9	Irritant contact dermatitis, unspecified cause
L25.5	Unspecified contact dermatitis due to plants, except food
L25.9	Unspecified contact dermatitis, unspecified cause
L30.0	Nummular dermatitis
L30.2	Cutaneous autosensitization
L30.8	Other specified dermatitis
L30.9	Dermatitis, unspecified
M25.50	Pain in unspecified joint
M25.512	Pain in left shoulder
M25.519	Pain in unspecified shoulder
M25.521	Pain in right elbow
M25.522	Pain in left elbow
M25.529	Pain in unspecified elbow
M25.531	Pain in right wrist
M25.532	Pain in left wrist

Table 1. Non-Emergent Diagnosis Code List	
Code	Description
M25.539	Pain in unspecified wrist
M25.551	Pain in right hip
M25.552	Pain in left hip
M25.559	Pain in unspecified hip
M25.561	Pain in right knee
M25.562	Pain in left knee
M25.569	Pain in unspecified knee
M25.571	Pain in right ankle and joints of right foot
M25.572	Pain in left ankle and joints of left foot
M25.579	Pain in unspecified ankle and joints of unspecified foot
M54.5	Low back pain
M54.89	Other dorsalgia
M54.9	Dorsalgia, unspecified
M60.80	Other myositis, unspecified site
M60.811	Other myositis, right shoulder
M60.812	Other myositis, left shoulder
M60.819	Other myositis, unspecified shoulder
M60.821	Other myositis, right upper arm
M60.822	Other myositis, left upper arm
M60.829	Other myositis, unspecified upper arm
M60.831	Other myositis, right forearm
M60.832	Other myositis, left forearm
M60.839	Other myositis, unspecified forearm
M60.841	Other myositis, right hand
M60.842	Other myositis, left hand
M60.849	Other myositis, unspecified hand
M60.851	Other myositis, right thigh
M60.852	Other myositis, left thigh
M60.859	Other myositis, unspecified thigh
M60.861	Other myositis, right lower leg
M60.862	Other myositis, left lower leg
M60.869	Other myositis, unspecified lower leg
M60.871	Other myositis, right ankle and foot
M60.872	Other myositis, left ankle and foot
M60.879	Other myositis, unspecified ankle and foot
M60.88	Other myositis, other site
M60.89	Other myositis, multiple sites
M60.9	Myositis, unspecified
M79.1	Myalgia
M79.601	Pain in right arm
M79.602	Pain in left arm
M79.603	Pain in arm, unspecified
M79.604	Pain in right leg
M79.605	Pain in left leg

Table 1. Non-Emergent Diagnosis Code List	
Code	Description
M79.606	Pain in leg, unspecified
M79.609	Pain in unspecified limb
M79.621	Pain in right upper arm
M79.622	Pain in left upper arm
M79.629	Pain in unspecified upper arm
M79.631	Pain in right forearm
M79.632	Pain in left forearm
M79.639	Pain in unspecified forearm
M79.641	Pain in right hand
M79.642	Pain in left hand
M79.643	Pain in unspecified hand
M79.644	Pain in right finger(s)
M79.645	Pain in left finger(s)
M79.646	Pain in unspecified finger(s)
M79.651	Pain in right thigh
M79.652	Pain in left thigh
M79.659	Pain in unspecified thigh
M79.661	Pain in right lower leg
M79.662	Pain in left lower leg
M79.669	Pain in unspecified lower leg
M79.671	Pain in right foot
M79.672	Pain in left foot
M79.673	Pain in unspecified foot
M79.674	Pain in right toe(s)
M79.675	Pain in left toe(s)
M79.676	Pain in unspecified toe(s)
M79.7	Fibromyalgia
R05	Cough
R21	Rash and other nonspecific skin eruption
R51	Headache
R53.0	Neoplastic (malignant) related fatigue
R53.1	Weakness
R53.81	Other malaise

C. INDEPENDENT EVALUATOR

DHHS partnered with the New England States Consortium Systems Organization (NESCSO) to conduct a procurement for this project. NESCSO issued a Request for Proposals (RFP) on October 2, 2020, on behalf of the State. One RFP was released for all evaluation activities (evaluation design development and implementation) and the production of required CMS reports. Bidders were given the option of working with a subcontractor on the design or implementation components of the procurement. The successful bidder demonstrated, at a minimum, the following qualifications:

- The extent to which the evaluator can meet the RFP's minimum requirements, including an assurance that the firm does not have a conflict of interest in designing and performing the SUD evaluation;
- The extent to which the evaluator has sufficient capacity to conduct the proposed evaluation, in terms of technical experience and the size/scale of the evaluation;
- The evaluator's prior experience with similar evaluations;
- Past references; and
- Value (i.e., the evaluator's capacity to conduct the proposed evaluation, with consideration given to those that offer higher quality at a lower cost).

Four proposals were received, and Pacific Health Policy Group has been retained by NESCSO to develop the SUD Demonstration Evaluation Design and implement the final evaluation activities in compliance with CMS requirements, including no conflict of interest.

D. COARSENED EXACT MATCHING BALANCE TABLES

After matching, the evaluator compared the two groups to determine if there were statistically significant differences in any of the demographic factors used as covariates and compare it to the demographic differences before matching.

Ideally, the evaluator should not find such differences, thereby attributing greater explanatory power to the variation in the metrics of interest to the member's association with the comparison or the treatment group.

The tables provide CEM data, both pre- and post-matching. The post-matching data presents characteristics of the beneficiaries included in the related t-test analysis. Age is shown in years (e.g., 39.5 years of age). Other variables are binary, with the results expressed as a value between 0 and 1. For example, the urban/rural variable classifies members residing in rural areas as "1" and urban areas as "0". The reported value signifies the percent of members with the characteristic designated with a "1" (e.g., an urban/rural value of 0.255 indicates that 25.5 percent of the members reside in a rural area).

Balance tables for each of the measures below, examined using the Coarsened Exact Matching, are presented on the following pages.

2.1.1 Continuity of Pharmacotherapy (Opioid Health Homes)
3.2.1 Concurrent use of Opioids and Benzodiazepines (Accountable Communities)
5.1.1 Readmissions to the same or higher level of care (Opioid and Behavioral Health Homes)
6.1.1 Ambulatory/Preventive Care Visits (Opioid and Behavioral Health Homes)

Measure 2.1.1 Continuity of Pharmacotherapy (Opioid Health Homes)

2021	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	1559	4638	-	1482	4057	-
Age	38.1039	39.2309	-0.1298	37.8900	37.8654	0.0028
Gender	0.4567	0.4838	-0.0545	0.4636	0.4636	0.0000
Geography	0.3521	0.3057	0.0972	0.3495	0.3495	0.0000
Expansion Group	0.5279	0.4728	0.1103	0.5351	0.5351	0.0000
Non-ABD	0.2425	0.2602	-0.0415	0.2422	0.2422	0.0000
ABD	0.2296	0.2669	-0.0887	0.2227	0.2227	-0.0000
Risk Score	154.6094	165.6628	-0.0486	123.234	125.0174	-0.0078

2022	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	3581	5136	-	3451	4754	-
Age	39.7325	39.5055	0.0254	39.4859	39.4752	0.0012
Gender	0.4957	0.4823	0.0268	0.4938	0.4938	0.0000
Geography	0.3943	0.3246	0.1427	0.3906	0.3906	-0.0000
Expansion Group	0.5635	0.5461	0.0351	0.5703	0.5703	-0.0000
Non-ABD	0.2477	0.2286	0.0443	0.2489	0.2489	0.0000
ABD	0.1888	0.2253	-0.0933	0.1808	0.1808	0.0000
Risk Score	124.9260	158.6515	-0.1655	102.7102	107.4858	-0.0234

2023	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	1265	3017	-	1238	2846	-
Age	40.2356	40.6410	-0.0461	40.1252	40.1142	0.0012
Gender	0.4458	0.4587	-0.0259	0.4435	0.4435	-0.0000
Geography	0.3755	0.3427	0.0677	0.3732	0.3732	0.0000
Expansion Group	0.6253	0.4846	0.2907	0.6300	0.6300	0.0000
Non-ABD	0.1874	0.2844	-0.2487	0.1898	0.1898	0.0000
ABD	0.1874	0.2310	-0.1119	0.1801	0.1801	0.0000
Risk Score	132.1731	163.2907	0.1433	114.0129	121.5099	-0.0345

Measure 3.2.1 Concurrent use of Opioids and Benzodiazepines (Accountable Communities)

2021	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	4065	145	-	1108	132	-
Age	52.8615	55.6345	-0.2442	57.0487	56.5108	0.0474
Gender	0.5279	0.4138	0.2286	0.5099	0.5099	0.0000
Geography	0.3688	0.4414	-0.1505	0.2789	0.2789	0.0000
Expansion Group	0.2197	0.1586	0.1475	0.0812	0.0812	0.0000
Non-ABD	0.1149	0.1241	-0.0290	0.0298	0.0298	0.0000
ABD	0.6654	0.7172	-0.1098	0.8890	0.8890	0.0000
Risk Score	340.2755	308.3517	0.0914	211.4720	211.0988	0.0011

2022	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	3487	89	-	523	68	-
Age	52.3100	55.7079	-0.3050	53.4092	53.8862	-0.0428
Gender	0.5202	0.4607	0.1192	0.4742	0.4742	0.0000
Geography	0.3771	0.4494	-0.1492	0.5086	0.5086	0.0000
Expansion Group	0.2690	0.2921	-0.0522	0.2467	0.2467	0.0000
Non-ABD	0.1302	0.1798	-0.1473	0.1013	0.1013	0.0000
ABD	0.6008	0.5281	0.1485	0.6520	0.6520	0.0000
Risk Score	384.9564	305.6292	0.2061	185.1128	184.7310	0.0010

2023	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	2803	60	-	227	49	-
Age	52.2590	54.5500	-0.2161	55.6828	55.9833	-0.0283
Gender	0.5105	0.5167	-0.0123	0.4361	0.4361	0.0000
Geography	0.3682	0.4333	-0.1351	0.3480	0.3480	0.0000
Expansion Group	0.2922	0.2667	0.0561	0.1145	0.1145	0.0000
Non-ABD	0.1391	0.2167	-0.2240	0.0617	0.0617	0.0000
ABD	0.5687	0.5167	0.1050	0.8238	0.8238	0.0000
Risk Score	435.2255	334.8500	0.2285	178.4185	197.4335	-0.0433

Measure 5.1.1 Readmissions to the same or higher level of care (Opioid and Behavioral Health Homes)

2021	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	1137	1634	-	959	1341	-
Age	40.7282	39.2821	0.1246	40.1376	40.0198	0.0102
Gender	0.4617	0.4920	-0.0608	0.4609	0.4609	0.0000
Geography	0.2735	0.1971	0.1715	0.2096	0.2096	0.0000
Expansion Group	0.4565	0.5000	-0.0874	0.4828	0.4828	0.0000
Non-ABD	0.1856	0.2424	-0.1460	0.1814	0.1814	0.0000
ABD	0.3580	0.2576	0.2092	0.3358	0.3358	0.0000
Risk Score	366.6130	408.5410	-0.1147	291.9896	291.6149	0.0010

2022	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	1293	1538	-	1118	1286	-
Age	41.2351	39.2965	0.1703	40.4946	40.3913	0.0091
Gender	0.4524	0.4525	-0.0002	0.4401	0.4401	0.0000
Geography	0.2560	0.2347	0.0487	0.2227	0.2227	0.0000
Expansion Group	0.5189	0.6138	-0.1898	0.5671	0.5671	0.0000
Non-ABD	0.1748	0.1632	0.0305	0.1583	0.1583	0.0000
ABD	0.3063	0.2230	0.1806	0.2746	0.2746	0.0000
Risk Score	380.1694	392.5631	-0.0298	306.0483	303.0934	0.0071

2023	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	1278	1831	-	1055	1422	-
Age	41.2778	40.2480	0.0933	40.3052	40.3918	-0.0078
Gender	0.4225	0.4315	-0.0181	0.4009	0.4009	0.0000
Geography	0.2285	0.2436	-0.0360	0.2009	0.2009	0.0000
Expansion Group	0.6025	0.5205	0.1676	0.6682	0.6682	0.0000
Non-ABD	0.1174	0.2348	-0.3650	0.1232	0.1232	0.0000
ABD	0.2801	0.2447	0.0789	0.2085	0.2085	0.0000
Risk Score	375.6909	385.1644	-0.0227	274.9583	269.4838	0.0131

Measure 6.1.1 Ambulatory/Preventive Care Visits (Opioid and Behavioral Health Homes)

2021	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	21272	43911	-	21092	43222	-
Age	40.6974	40.5553	0.0116	40.7159	40.7758	-0.0049
Gender	0.5229	0.5118	0.0223	0.5221	0.5221	0.0000
Geography	0.3437	0.3377	0.0128	0.3427	0.3427	0.0000
Expansion Group	0.3631	0.4170	-0.1121	0.3634	0.3634	0.0000
Non-ABD	0.2178	0.3010	-0.2018	0.2170	0.2170	0.0000
ABD	0.4191	0.2820	0.2780	0.4197	0.4197	0.0000
Risk Score	181.3103	145.2403	0.1562	173.1508	154.4696	0.0809

2022	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	26524	45717	-	25988	44499	-
Age	41.3980	41.1072	0.0247	41.3017	41.3046	-0.0002
Gender	0.5129	0.4898	0.0463	0.5139	0.5139	0.0000
Geography	0.3610	0.3484	0.0263	0.3586	0.3586	0.0000
Expansion Group	0.4253	0.4648	-0.0799	0.4293	0.4293	0.0000
Non-ABD	0.2229	0.2785	-0.1337	0.2239	0.2239	0.0000
ABD	0.3518	0.2567	0.1992	0.3468	0.3468	0.0000
Risk Score	173.2190	141.8617	0.1295	155.4702	150.9676	0.0186

2023	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	26560	46314	-	26276	45354	-
Age	41.8267	42.0076	-0.0155	41.7828	41.7972	-0.0012
Gender	0.4893	0.4752	0.0282	0.4882	0.4882	0.0000
Geography	0.3488	0.3611	-0.0259	0.3465	0.3465	0.0000
Expansion Group	0.4700	0.4160	0.1082	0.4708	0.4708	0.0000
Non-ABD	0.1979	0.3263	-0.3224	0.1994	0.1994	0.0000
ABD	0.3321	0.2577	0.1580	0.3297	0.3297	0.0000
Risk Score	172.5589	149.3586	0.0944	162.3649	152.2133	0.0413