Institutions for Mental Diseases (IMD) Waiver for Serious Mental Illness/Substance Abuse Disorder §1115(a) Demonstration 11-W-00363/6

INTERIM EVALUATION
DEMONSTRATION YEARS 1 – 3 (CY 2020 – CY 2023)

Prepared by the Pacific Health Policy Group for:

State of Oklahoma
Oklahoma Health Care Authority

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INDEPENDENT EVALUATION

The independent evaluation of the Oklahoma IMD Demonstration was conducted by The Pacific Health Policy Group (PHPG). PHPG is solely responsible for the analysis and findings presented in this report.

PHPG wishes to acknowledge the cooperation of the Oklahoma Health Care Authority and the Oklahoma Department of Mental Health and Substance Abuse Services in obtaining the necessary data for completion of the evaluation.

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COMMONLY USED ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
ABD	Aged, Blind, Disabled
ANOVA	Analysis of Variance
AOD	Alcohol and Other Drug
ASAM	American Society of Addiction Medicine
BH	Behavioral Health
BN	Budget Neutrality
CEM	Coarsened Exact Matching
CMS	Centers for Medicare and Medicaid Services
CY	Calendar Year
DY	Demonstration Year
ED	Emergency Department
eSMI	Early Serious Mental Illness
FFS	Fee-for-Service
FPL	Federal Poverty Level
HCPCS	Healthcare Common Procedure Coding System
HEDIS	Healthcare Effectiveness Data and Information Set
IET	Initiation and Engagement in Treatment
IMD	Institution for Mental Diseases
IP	Inpatient
ITS	Interrupted Time Series
LTC	Long Term Care
MAT	Medication Assisted Treatment
MCO	Managed Care Organization
MH	Mental Health
MMIS	Medicaid Management Information System
MOUD	Medications for Opioid Abuse Disorder

Acronym	Meaning
NCQA	National Committee for Quality Assurance
NPI	National Provider Identifier
ODMHSAS	Oklahoma Department of Mental Health and Substance Abuse Services
OHCA	Oklahoma Health Care Authority
OHH	Opioid Health Home
OHS	Oklahoma Human Services
OUD	Opioid Use Disorder
PCP	Primary Care Provider
PHE	Public Health Emergency
PHPG	Pacific Health Policy Group
PMPM	Per Member Per Month
Pop	Population
PSM	Propensity Score Matching
QRTP	Qualified Residential Treatment Program
SAMHSA	Substance Abuse and Mental Health Services Administration
SDOH	Social Determinants of Health
SED	Serious Emotional Disturbance
SFY	State Fiscal Year
SMI	Serious Mental Illness
STC	Special Terms and Conditions
SUD	Substance Use Disorder

A. EXECUTIVE SUMMARY

The Oklahoma Institutions for Mental Diseases (IMD) Waiver for Serious Mental Illness and Substance Use Disorder Section 1115(a) Demonstration was approved on December 22, 2020 and is effective through December 31, 2025. The Centers for Medicare and Medicaid Services (CMS) concurrently approved Oklahoma's Substance Use Disorder (SUD) and Serious Mental Illness/Serious Emotional Disturbance (SMI/SED) Implementation Plans, as well as the Health IT Plan for each initiative.

The IMD Demonstration was implemented to ensure that beneficiaries have access to a full array of SUD and SMI/SED treatment services, including inpatient and residential treatment services provided by facilities that classify as IMDs. The Demonstration provides the State with authority to cover medically necessary residential treatment, facility-based crisis stabilization, and inpatient treatment services within qualified IMDs for Medicaid beneficiaries with SMI, SED, and/or SUD diagnoses. The Medicaid authority also includes coverage for Qualified Residential Treatment Programs (QRTPs) that meet the definition of an IMD for beneficiaries under age 21.

The evaluation design was approved by CMS on June 10, 2022. This interim evaluation reports uses results for Calendar Years (CY) 2017 – 2020 to establish the baseline trends for assessing change during the Demonstration period. An Interrupted Time Series (ITS) analysis was used for the majority of measures. 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 in 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 proportions was employed to assess the significance of change from the baseline year.

The Demonstration period overlapped with Oklahoma's implementation of the Certified Community Behavioral Health Clinic (CCBHC) model. The impact of the transition was evaluated using a comparison group strategy based on Coarsened Exact Matching (CEM). Specifically, members receiving CCBHC services were matched to a comparison group of members eligible for, but not receiving CCBHC services. The interim evaluation examines outcomes for these measures during CY 2021 – CY 2023.

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: The structure of the program did not allow for the identification, and exclusion, of eligible beneficiaries to serve as a true control group. However, the evaluation employs a comparison method (CEM) that matches participants to non-participants with similar characteristics, to measure the effect of the CCBHC initiative. The use of an ITS design to examine trends over time also helps to mitigate the limitation.

- Use of Administrative Data: The evaluation may be limited by its reliance on payment files, claims, and diagnostic codes to identify members with an 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 varies year-to-year based on changes to eligibility. For example, someone may be attributed to a study cohort in year one, disenroll in year two and reenroll in year three. The use of ITS is intended to mitigate this limitation.

- Pre-Existing IMD services: SUD and SMI IMD treatment facilities are located statewide and were delivering care to Medicaid beneficiaries prior to implementation of the Demonstration. The Demonstration allows the State to continue services that had 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.

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. Results will be updated in the summative evaluation report.

A summary of findings for the SUD- and SMI-related authorities is presented below by each evaluation question. 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 coarsened exact matching or an alternative approach (e.g., logistic regression and proportional tests), hypotheses were deemed supported when the majority of the years studied showed no change (performance was maintained across years) or a statistically significant improvement in performance.

1. SUD-IMD Findings

The SUD portion of the evaluation included six questions, each with related hypotheses and measures. The evaluation also contained an exploratory expenditure analysis. The questions/hypotheses and interim findings are summarized below.

(Note: evaluation question four – "Does the Demonstration contain or reduce overdose deaths?" – was suspended. Data on opioid-related deaths was not available and overdose death data has a considerable lag. The OHCA will continue to report overdose deaths as part of its monitoring reports to CMS.)

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 emergency department (ED) visit for alcohol or other drug dependence.
4. The Demonstration will maintain or increase initiation and engagement in treatment.

The four hypotheses were tested through evaluation of 12 discrete measures. Of the 12, seven maintained performance and five improved, providing support for the evaluation question studied.

The percentage of Medicaid members engaging in any type of SUD treatment has been increasing over time. During the Demonstration period there was a statistically significant increase in utilization trends for withdrawal management/detox services and Medication Assisted Treatment (MAT).

The total number of SUD treatment providers enrolled in Medicaid increased by eight percent. Those qualified to deliver MAT increased by 16 percent. There was a statistically significant increase in the percentage of members who had follow-up within seven days after an ED visit for SUD. There were no changes associated with the Demonstration for initiating and engaging in SUD treatment. However, the general trend showed an increase in initiation over time.

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

The Demonstration was associated with maintaining trends (i.e., no statistically significant sustained effect) in the percentage of members with continuity of pharmacotherapy (i.e., having 180 days of continuous Medication Assisted Treatment for Opioid Use Disorder (OUD)).

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

The percentage of members receiving opioids at a high dosage showed significantly improved performance. There was a 50 percent decrease in the percentage receiving opioids at high dose by 2023 (lower numbers are preferred).

Evaluation Question Five - Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with an 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 an SUD.
2. The Demonstration will contain or reduce inpatient admissions.

There were no significant changes in the rate of ED visits or inpatient stays associated with the Demonstration period.

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

There were no significant changes in the percentage of readmissions to the same or higher level care associated with the Demonstration period.

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

There was a statistically significant increase in the percentage of members who had ambulatory and preventive care visits associated with the Demonstration period.

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 long term care also were assessed.

There were statistically significant increases in the per member per month (PMPM) trend for total cost, as well as breakouts for SUD-related, SUD-IMD, SUD-Other and physical health care associated with start of the Demonstration. The expansion population was associated with increases in all breakouts, apart from the PMPM related to physical health care.

The generalized linear model showed that older members and women were associated with fewer expenditures in every category. Members residing in rural counties also were associated with fewer expenditures in every category, apart from physical health care.

There were no statistically significant sustained changes in trend related to expenditures for any cost driver (outpatient, inpatient, ED, pharmacy and long term care services) during the Demonstration period. When expansion members were removed from the analysis there was a significant reduction in PMPM for all cost drivers, with the exception of long term care, which showed a very slight increase.

The relationship between the use of community-based SUD treatment services (i.e., outpatient, intensive outpatient/partial hospitalization, and MAT services) was also examined. Each unit of community-based service received was associated with lower ED and inpatient costs. The ED PMPM decreased by $1.79 per unit and inpatient PMPM decreased by $19.47 per unit.

Overall SUD IMD Findings

The evaluation found that the Demonstration maintained or improved performance across all areas (hypotheses) studied. Eleven of the 18 measures (61 percent) maintained pre-Demonstration trends, while seven (39 percent) showed improvements. Maintaining pre-Demonstration levels of performance related to SUD treatment during the pandemic should be considered a success under the Demonstration.

No statistically significant declines in performance were documented. Inclusion of the remaining Demonstration period will offer valuable information for understanding utilization and engagement, absent the effects of the PHE. A summary of findings by evaluation question and hypothesis is provided on the following page.

Summary of Interim Findings - SUD			
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**	**2**	
Hypothesis 2. The Demonstration will maintain or increase SUD provider availability.		**2**	
Hypothesis 3. The Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug dependence.	**1**	**1**	
Hypothesis 4. The Demonstration will maintain or increase initiation and engagement in treatment.	**1**	**1**	
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	**1**		
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.		**1**	
Evaluation Question 4. Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with an SUD?			
Hypothesis 1. The Demonstration will contain or reduce the rate of ED visits for individuals with an SUD.	**1**		
Hypothesis 2. The Demonstration will contain or reduce inpatient admissions.	**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	**1**		
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	**1**		

2. SMI/SED-IMD Findings

The SMI/SED IMD portion of the evaluation examined eight questions, each with related hypotheses and measures. The evaluation also contained two additional evaluation questions related to an exploratory expenditure analysis. The questions/hypotheses and interim findings are summarized below.

(Note: Analysis related to performance before and after CCBHC designation should be considered preliminary. CCBHCs continued to be designated through Demonstration Year (DY) 2 (2022) leaving only one year of complete data post-designation. Results are exploratory and will be updated in the summative report for a more balanced representation of outcomes.)

Evaluation Question 1. Does the Demonstration result in reductions in emergency department utilization among members with an SMI?

Utilization trends related to the use of the emergency department for mental health conditions declined; however, the change was not statistically significant.

Evaluation Question 2. Does the Demonstration result in reductions in preventable readmissions to acute care hospitals or residential settings for members with an SMI?

Readmission rates showed a slight decline during the Demonstration; however, the change was not statistically significant.

Evaluation Question 3. Does the Demonstration result in increased treatment for comorbid SUD and physical health conditions after IMD discharge?

There was a slight improvement in access to SUD treatment or physical health care post SUD-IMD discharge; however, the change was not statistically significant.

Evaluation Question 4. Does the Demonstration result in improved availability of crisis outreach and response services?

The number of crisis call centers maintained baseline levels, while the number of crisis response teams increased by seven percent. However, the number of members identified with an SMI/SED also rose. Thus, the ratio of members-to-outreach service providers did not improve during the Demonstration.

It should be noted that mobile crisis response teams have the ability to respond to several emergency calls at a given time, especially in more populated areas with larger response teams. Using a member-to-team ratio therefore is likely to undercount the availability of services. Metrics related to response time may be better suited to assessing need and availability.

Evaluation Question 5. Does the Demonstration result in improved availability of non-residential, non-hospital crisis outreach and response services?

During the Demonstration period, the State expanded the number of crisis observation/assessment centers from five to 25, and crisis stabilization units from 11 to 17. This resulted in improved ratios of members-to-providers.

Evaluation Question 6. Does the Demonstration result in improved availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED?

Two hypotheses were examined under evaluation Question 6:

1. Demonstration will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED.
2. Expanding CCBHCs statewide will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED.

The number of psychiatrists and providers authorized to prescribe increased by seven percent under the Demonstration. Ninety-nine percent of psychiatrists and providers authorized to prescribe were enrolled in the Medicaid program in DY3.

The number of licensed mental health practitioners enrolled in Medicaid fell by over 65 percent, despite an increase in licensed practitioners. However, this may be an artifact of data collection and the date of the assessment period.

The ODMHSAS staff noted that licensure data is compiled from multiple independent entities across the State, each with separate data collection processes. This may contribute to variation in results year to year.

In addition, the annual assessment period occurs during the provider reenrollment period. At the time of the count, Medicaid enrollment may not be complete, resulting in an undercounting of availability.

In examining the difference between a treatment (CCBHC) and comparison group, there were no significant differences in the use of first-line psychosocial care for youth on antipsychotics. However, CCBHC members did show improved performance over the comparison group with respect to medication continuation for adults discharged from psychiatric inpatient care.

In a preliminary analysis of performance before and after CCBHC designation, the overall rate for continuation of medications improved in the time period following CCBHC designation.

Evaluation Question 7. Does the Demonstration improve the integration of primary and behavioral health care to address the chronic mental health care needs of members with SMI/SED?

In examining the difference between a treatment (CCBHC) and comparison group, there were no significant differences in metabolic monitoring for youth on antipsychotics. Thus, performance did not improve post CCBHC designation.

However, CCBHC members did show improved performance over the comparison group with respect to accessing ambulatory/preventive care during the measurement period. In a preliminary analysis of performance before and after CCBHC designation, ambulatory/preventive care improved in the time period following CCBHC designation.

Evaluation Question 8. Does the Demonstration result in improved care coordination for members with SMI/SED?

CCBHC members ages 6 – 16 showed improved performance over the comparison group with respect to having follow-up after hospitalization for mental health care. Follow-up within 7 and 30 days was stronger in the CCBHC group than the comparison group. In addition, in a preliminary analysis of performance before and after CCBHC designation, follow-up improved in the time period following CCBHC designation for both metrics studied.

CCBHC members ages 18 and older also outperformed the comparison group on follow-up after the use of the emergency department for mental health care. Follow-up after an ED visit within 7 and 30 days was stronger in the CCBHC group than the comparison group.

In a preliminary analysis of performance before and after CCBHC designation, follow-up rates declined in the time period following CCBHC designation, which also coincided with the novel coronavirus pandemic. It is possible that the PHE response strained emergency department resources and also limited the availability of community-based staff to gain access to clients and discharge planning during the ED visit.

Exploratory Expenditure Analysis

An exploratory analysis was performed to examine changes in expenditures over time (evaluation Question 9) and cost drivers (evaluation Question 10). There were no significant changes in the PMPM trend related to total costs of care during the Demonstration period, apart from the mental health-IMD PMPM. As expected, there was a significant increase in IMD-related PMPM cost associated with the Demonstration start and during the Demonstration period.

The expansion group was associated with an increase in the total cost of care (physical and mental health) seen in quarters three and four of Demonstration Year 1, which coincided with the start of Medicaid expansion. Expenditures in these categories then leveled off for expansion members and showed no significant differences from the aggregate analysis. However,

expansion group members were associated with higher mental health-IMD expenditures throughout the Demonstration period.

In examining cost drivers (evaluation Question 10), there were no statistically significant trends associated with outpatient, inpatient, ED or long term care expenditures. Pharmacy-related expenditures showed a statistically significant sustained increase during the Demonstration period.

When expansion group members were removed from the analysis, there was an increase in the inpatient PMPM, suggesting that the remaining members were associated with overall higher expenditures. Conversely, expansion group members were associated with an increase in outpatient expenditures in quarters three and four of DY1.

Expansion group pharmacy and ED expenditures also showed an initial increase and continued to show an increase throughout the Demonstration period. However, the expansion group was not associated with substantial changes in the long term care PMPM.

A subsidiary analysis of service utilization with respect to ED and inpatient expenditures found that each CCBHC service was associated with lower inpatient expenditures, while CCBHC services showed a weak association with a small increase in ED PMPM.

Overall SMI/SED Findings

The evaluation found that the Demonstration maintained or improved performance across six of the nine areas (hypotheses) studied. Five of the 21 measures (24 percent) maintained pre-Demonstration trends, while 11 (52 percent) showed improvements and five (24 percent) declined. Maintaining pre-Demonstration levels of performance related to psychiatric treatment during the pandemic should be considered a success under the Demonstration.

Inclusion of the remaining Demonstration period will offer valuable information for understanding access to care and outcomes, absent the effects of the PHE. A summary of findings by evaluation question and hypothesis is provided on the following page.

Summary of Interim Findings - SMI			
Evaluation Question and Hypotheses	Number of Measures		
	Maintained	Improved	Declined
Evaluation Question 1. Does the Demonstration result in reductions in emergency department utilization among members with an SMI?			
Hypothesis 1. Demonstration will contain or reduce mental health-related ED use for adults with an SMI	**1**		
Evaluation Question 2. Does the Demonstration result in reductions in preventable readmissions to acute care hospitals or residential settings for members with an SMI?			
Hypothesis 1. Demonstration will contain or reduce readmissions to acute care hospitals or residential settings for adults with an SMI	**1**		
Evaluation Question 3. Does the Demonstration result in increased treatment for comorbid SUD and physical health conditions after IMD discharge?			
Hypothesis 1. Demonstration will maintain or increase access to physical health and/or SUD treatment post-discharge for adults with an SMI	**1**		
Evaluation Question 4. Does the Demonstration result in improved availability of crisis outreach and response services?			
Hypothesis 1. Demonstration will maintain or improve the availability of crisis outreach and response services throughout the state			**1**
Evaluation Question 5. Does the Demonstration result in improved availability of non-residential, non-hospital crisis outreach and response services?			
Hypothesis 1. Demonstration maintain or improve the availability of non-residential, non-hospital crisis outreach and response services		**1**	
Evaluation Question 6. Does the Demonstration result in improved availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED?			
Hypothesis 1. Demonstration will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED			**1**
Hypothesis 2. Expanding CCBHCs statewide will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED		**2**	**1**
Evaluation Question 7. Does the Demonstration improve the integration of primary and behavioral health care to address the chronic mental health care needs of members with SMI/SED?			
Hypothesis 1. expanding CCBHCs statewide will maintain or improve the integration of primary and behavioral health care to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED	**2**	**2**	
Evaluation Question 8. Does the Demonstration result in improved care coordination for members with SMI/SED?			
Hypothesis 1. Expanding CCBHCs statewide will maintain or improve the care coordination for members with an SMI/SED		**6**	**2**

3. Conclusions and Recommendations

Maintaining pre-Demonstration utilization levels for treatment during the pandemic should be considered a success under the Demonstration. In many cases, trends analyzed as part of the Interrupted Time Series approach showed no significant change.

Overall, there were no statistically significant declines in performance for any SUD-related measure during the Demonstration period. SMI-related results maintained or improved performance in all but five of the measures studied (76 percent).

The inclusion of 2024 data under the Demonstration will be important to understand if utilization and engagement in SUD and psychiatric treatment begin to show further improvements following the end of the public health emergency.

B. GENERAL BACKGROUND

The Oklahoma Institutions for Mental Diseases (IMD) Waiver for Serious Mental Illness and Substance Use Disorder Section 1115(a) Demonstration was approved on December 22, 2020 and is effective through December 31, 2025. The Centers for Medicare and Medicaid Services (CMS) concurrently approved Oklahoma's Substance Use Disorder (SUD) and Serious Mental Illness/Serious Emotional Disturbance (SMI/SED) Implementation Plans, as well as the Health IT Plan for each initiative.

The Oklahoma Health Care Authority (OHCA) is Oklahoma's Single-State Agency for Medicaid. Medicaid is the largest health care provider in the State of Oklahoma. The OHCA and the Oklahoma Department of Mental Health and Substance Abuse Services (ODMHSAS) work collaboratively to provide a wide array of behavioral health services for Oklahomans.

Medicaid inpatient services are largely administered by the OHCA, while Medicaid outpatient behavioral health services and other state-funded supports are largely administered by the ODMHSAS. A combined payer system consolidates eligibility determinations, claims, authorizations, and outcomes data for all publicly-funded services.

Behavioral health services and supports are available statewide through a network of private and government-operated programs. This includes 13 Certified Community Behavioral Health Clinics (CCBHCs). The CCBHC model seeks to improve community-based mental health and SUD services by:

- Advancing the integration of behavioral health with physical health care;
- Assimilating and utilizing evidence-based practices on a more consistent basis; and
- Promoting improved access to high-quality care.

Care coordination underpins all aspects of behavioral health in the CCBHC model. CCBHCs are expected to provide a broad array of services and care coordination across settings and providers, and to address a full spectrum of acute, chronic, and behavioral health needs. The CCBHC model also requires integrating mental health, substance use disorder, and physical health services at one location.

Oklahoma supports the delivery of residential and outpatient substance abuse treatment services, such as medically supervised withdrawal management, residential treatment, sober living, DUI school, drug court, criminal justice diversion treatment services, and other outpatient services. All SUD treatment organizations must be certified by ODMHSAS, except for tribal entities located on land not subject to State jurisdiction.

Approximately 70 SUD treatment providers work with ODMHSAS, including Certified Community Addiction Recovery Centers (CCARCs). SUD treatment facilities can be certified as a basic alcohol

and drug treatment program providing a specific service set; as an opioid treatment program; or as a CCARC providing a full continuum of care, including intensive outpatient services. Currently, nine CCARCs operate 21 site locations across 10 counties. Twenty-one opioid treatment program locations cover 13 counties in the State. (Oklahoma has 77 counties in total.)

ODMHSAS supports 13 Community Based Structured Crisis Centers (CBSCCs) located throughout the State, including three operated by the State (two serving adults and one serving children and adolescents). Ten of these CBSCCs also operate behavioral health urgent recovery clinics (URCs) that provide 23-hour respite and observation to help prevent psychiatric emergencies and admission to inpatient or crisis beds; another 11 stand-alone URCs operate across the State. These facilities also address substance abuse emergencies.

In addition, there are two Recovery After an Initial Schizophrenia Episode (RA1SE) NAVIGATE programs to assist individuals who are experiencing their first episode of psychosis (FEP), along with one early serious mental illness (eSMI) crisis care program, and 13 statewide eSMI outreach programs provided through CMHCs. These programs develop and maintain collaborative partnerships with local higher education institutions and local hospitals to increase exposure to young adults within the age range that is most at risk for eSMI.

Oklahoma Human Services (OHS) operates congregate care facilities for children in State custody. The State plans to transition these facilities and their care model to serve as Qualified Residential Treatment Programs (QRTPs). As QRTPs are implemented, the Demonstration provides the State with the authority for Medicaid reimbursement of stays of 60 days or less in facilities that the State determines are IMDs.

1. Issues Addressed Through the Demonstration

Preliminary results on prevalence from the Substance Abuse and Mental Health Services Administration (SAMHSA) 2021 National Survey on Drug Use and Health show that Oklahoma has among the highest rates nationally for mental illness and SUD. An estimated 25.4 – 28.5 percent of Oklahomans ages 18 and older experience mental illness and 6.1 – 6.5 percent have a serious mental illness.

An estimated 18.1 – 19.7 percent of Oklahomans in the 18 and older age group have had an SUD. ODMHSAS estimated in the Demonstration application that 16.0 – 17.5 percent of individuals 18 years old and older who needed it did not receive SUD treatment at a specialized.[1]

[1] SAMHSA 2021 National Survey on Drug Use and Health retrieved from https://www.samhsa.gov/data/report/2021-nsduh-state-prevalence-estimates

At the time of its request for an IMD Demonstration, Oklahoma had a waiting list for SUD residential treatment. The list included 158 women, with an average wait time of 29 days, and 415 men, with an average wait time of 208 days.

In State Fiscal Year (SFY) 2019, over 5,300 children under age 21 and 2,078 adults ages 21 – 64 received inpatient psychiatric treatment. Prior to the July 2021 Medicaid expansion, the Kaiser Family Foundation projected that the expansion would lead to a further demand for Medicaid-covered services[2].

In 2019, the State Legislature appropriated additional funds to support residential treatment. The IMD Demonstration was sought to expand residential treatment services and complement the State's efforts to increase access.

The Demonstration seeks to ensure that beneficiaries have access to a full array of SUD and SMI/SED treatment services by providing the State with authority to offer high-quality, clinically appropriate treatment for beneficiaries with an SUD or SMI/SED while they are short-term residents in residential and inpatient treatment settings that qualify as IMDs. This includes medically necessary residential treatment, facility-based crisis stabilization, and inpatient treatment services. The Medicaid authority also includes coverage for QRTPs that meet the definition of an IMD for beneficiaries under age 21.

2. Demonstration Goals

The State seeks to support the overall health and long-term success of individuals with SMI/SED and SUD. Through its partnership with ODMHSAS, the OHCA ensures access to a full continuum of services such that individuals receive the least restrictive, most effective array of services, to meet their clinical needs. The specific goals for SUD and SMI/SED IMD authorities are outlined below.

Substance Use Disorder Demonstration Goals

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;

[2] Kaiser Family Foundation. The Effects of Medicaid Expansion under the ACA: Updated Findings from a Literature Review; M. Guth, R. Garfield, and R. Rudowitz. Published: Mar 17, 2020, retrieved from https://www.kff.org/report-section/the-effects-of-medicaid-expansion-under-the-aca-updated-findings-from-a-literature-review-report/

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.

Serious Mental Illness/Serious Emotional Disturbance Demonstration Goals

1. Reduced utilization and lengths of stay in emergency departments among Medicaid beneficiaries with SMI or SED while awaiting mental health treatment in specialized settings;
2. Reduced preventable readmissions to acute care hospitals and residential settings;
3. Improved availability of crisis stabilization services, including services made available through call centers and mobile crisis units and intensive outpatient services, as well as services provided during acute short-term stays in residential crisis stabilization programs, psychiatric hospitals, and residential treatment settings throughout the State;
4. Improved access to community-based services to address the chronic mental health care needs of beneficiaries with SMI, including through increased integration of primary and behavioral health care; and
5. Improved care coordination, especially continuity of care in the community following episodes of acute care in hospitals and residential treatment facilities.

3. Populations Affected by the Demonstration

All beneficiaries eligible under the State Plan for full Medicaid coverage, and between the ages of 21 – 64, are eligible for services under the Demonstration. Additionally, Medicaid enrollees under the age of 21 may qualify for services under the Demonstration when receiving residential SUD treatment or QRTP services.

Substance Abuse Disorder Treatment Benefits

Members have access to the full range of otherwise covered Medicaid services. This includes high-quality, evidence-based OUD/SUD treatment and recovery services across a comprehensive continuum of care, ranging from residential and inpatient treatment to ongoing treatment in community-based settings. Benefits include short-term stays in residential and inpatient SUD treatment settings that qualify as an IMD.

Serious Mental Illness and Emotional Disturbance Treatment Benefits

Members have access to the full range of otherwise covered Medicaid services. Treatment services for individuals with SMI/SED range in intensity from early intervention, short-term crisis stabilization, and acute care in an inpatient or residential setting, to ongoing treatment in

community-based settings. Benefits include short-term stays in residential and inpatient SMI/SED treatment settings that qualify as an IMD.

4. Promotion of Title XIX Objectives

One objective of Title XIX is to enable states to "furnish…medical assistance" to certain vulnerable populations (i.e., payment for certain healthcare services defined in section 1905 of the Act, the services themselves, or both). CMS has determined that the Oklahoma Demonstration promotes Medicaid's objective by expanding coverage to health care services that would otherwise not be available.

In addition, the provision of this coverage may lower program costs through improved beneficiary health, making it possible for the State to expand services with the dollars saved. This further promotes the coverage objective of the Medicaid statute.

CMS has determined that approval of the IMD Waiver for Serious Mental Illness/Substance Use Disorder Demonstration is likely to promote the objectives of the Medicaid program by:

- Increasing the identification, initiation, and engagement of Medicaid beneficiaries diagnosed with SUD and SMI/SED;
- Increasing adherence to, and retention in, SUD and SMI/SED treatment programs; and
- Reducing inappropriate or preventable utilization of emergency departments and inpatient hospital settings through improved access to a continuum of care services.

The evaluation methodology presented in Section C is designed to measure the Demonstration's performance in achieving these and other Demonstration goals.

5. Organization of the Interim Evaluation Report

The evaluation applied multiple common design elements to both the SUD and SMI/SED populations, in conjunction with population-specific evaluation questions and hypotheses. The report offers an overview of those design elements that are shared across populations in Sections A – D and G – H), along with unique findings for the SUD population in Section E and for the SMI/SED population in Section F.

An overview of each remaining section is outlined in the table on the following page.

Section	Brief Description
C. Evaluation Methodology	Evaluation design, period, data sources, analytics, and target group information as applicable to both populations
D. Methodological Limitations	Data, design, and special methodological considerations applicable to both populations
E. SUD Evaluation Questions, Hypothesis and Findings	SUD-specific logic model and quantifiable targets, evaluation questions and hypotheses, SUD-specific details related to the methods and analytics, results, and conclusions
F. SMI/SED Evaluation Questions, Hypothesis and Findings	SMI/SED-specific logic model and quantifiable targets, evaluation questions and hypotheses, SUD-specific details related to the methods and analytics, results, and conclusions
G. Interpretations, Policy Implications, and Interactions with other State Initiatives	A discussion of the demonstration in the context of other aspects of the State's Medicaid program and other activities affecting service delivery, outcomes, and cost, as well as implications at the State and national levels for both populations
H. Lessons Learned, Recommendations	Opportunities for future or revised activities and recommendations to other states/policy makers for both populations

C. EVALUATION METHODOLOGY

The SUD and SMI/SED-related Demonstration activities include expanded access to services and quality enhancements. Quality enhancements include further alignment of SUD assessments and treatment planning with American Society of Addiction Medicine (ASAM) guidelines, and for both populations the promotion of integrated physical and behavioral health care and improved transitions of care.

This evaluation is designed to measure the Demonstration's performance in achieving SUD and SMI/SED program goals, while also providing actionable information for improving the program in the future. The methodology applicable to both SUD and SMI/SED aspects of the Demonstration is outlined below.

SUD and SMI/SED-specific evaluation measures and analytics are provided in Sections E and F, respectively.

1. Evaluation Design

The evaluation employs quasi-experimental techniques to measure change over time and differential statistics to describe the population and findings. The evaluation uses both time series and comparison group approaches.

All SUD-related and four SMI/SED-related hypotheses rely on an interrupted time series (ITS) analysis to evaluate the impact of Demonstration enhancements. Three SMI/SED-related hypotheses are evaluated longitudinally using descriptive statistics to examine statewide and regional change over time. The remaining hypotheses are evaluated using a within-subjects time series and/or a coarsened exact matching (CEM) comparison strategy.

2. Target and Comparison Populations

The evaluation did not employ random, representative, or other sampling methods. All Demonstration enrollees who meet the criteria for a particular hypothesis and measure under study are included in the evaluation. Definitions of each group are outlined on the following page.

Substance Use Disorder

All full benefit Medicaid beneficiaries with an SUD are eligible for the Demonstration. Enrollees are defined as having an SUD if they have one or more of the diagnoses listed in any of the following HEDIS® value sets:

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

Serious Mental Illness

CMHC providers are responsible for comprehensive assessment and designation of members as SMI. Oklahoma defines SMI as:

> *A condition experienced by persons ages 18 and over that demonstrates:*
>
> *The condition has persisted for six months and is expected to persist for a year or longer; AND*
>
> *The condition or serious mental illness is defined by the most recently published version of the DSM or the International Classification of Disease (ICD) equivalent with the exception of DSM "V" codes, substance abuse, and developmental disorders which are excluded unless they co-occur with another diagnosable serious mental illness; AND*
>
> *(3) The adult must exhibit either (A) or (B) below:*
>
> *(A) Psychotic symptoms of a serious mental illness (e.g., Schizophrenia characterized by defective or lost contact with reality, often hallucinations or delusions); OR*
>
> *(B) Experience difficulties that substantially interfere with or limit an adult from achieving or maintaining one or more developmentally appropriate social, behavioral, cognitive, communicative, or adaptive skills. This is defined as a functional impairment in at least two of the following capacities (compared with expected developmental level):*
>
> *(i) Impairment in self-care is manifested by a person's consistent inability to take care of personal grooming, hygiene, clothes, and meeting of nutritional needs.*
>
> *(ii) Impairment in community function is manifested by a consistent lack of appropriate behavioral controls, decision-making, judgment, and value systems which result in potential involvement or involvement with the criminal justice system.*
>
> *(iii) Impairment of social relationships manifested by the consistent inability to develop and maintain satisfactory relationships with peers.*

(iv) Impairment in family function manifested by a pattern of disruptive behavior exemplified by repeated and/or unprovoked violence, disregard for safety and welfare of self or others (e.g., fire setting, serious and chronic destructiveness, inability to conform to reasonable limitations and expectations.

(v) Impairment in functioning at school or work is manifested by the inability to pursue educational or career goals.

Serious Emotional Disturbance

CMHC providers are responsible for comprehensive assessment and designation of members as SED. Oklahoma defines SED as:

Children and Adolescents (Under 18 years of age) "Serious Emotional Disturbance" (SED) means a condition experienced by persons from birth to 18 that show evidence of each of the following criteria:

The disability must have persisted for six months and be expected to persist for a year or longer; AND

(1) A condition or serious emotional disturbance as defined by the most recently published version of the DSM or the International Classification of Disease (ICD) equivalent with the exception of DSM "V" codes, substance abuse, and developmental disorders which are excluded, unless they co-occur with another diagnosable serious emotional disturbance; AND

(2) The child must exhibit one of the following:

(A) Psychotic symptoms of a serious mental illness (e.g., schizophrenia characterized by defective or lost contact with reality, often hallucinations or delusions); OR

(B) Experience difficulties that substantially interfere with or limit a child or adolescent from achieving or maintaining one or more developmentally appropriate social, behavioral, cognitive, communicative, or adaptive skills. There is functional impairment in at least two of the following capacities (compared with expected developmental level):

(i) Impairment in self-care manifested by a person's consistent inability to take care of personal grooming, hygiene, clothes, and meeting of nutritional needs.

(ii) Impairment in community function manifested by a consistent lack of age-appropriate behavioral controls, decision-making, judgment, and value systems which result in potential involvement or involvement with the juvenile justice system.

(iii) Impairment of social relationships manifested by the consistent inability to develop and maintain satisfactory relationships with peers and adults.

(iv) Impairment in family function manifested by a pattern of disruptive behavior exemplified by repeated and/or unprovoked violence to siblings and/or parents, disregard for safety and welfare or self or others (e.g., fire setting, serious and chronic destructiveness, inability to conform to reasonable limitations and expectations which may result in removal from the family or its equivalent).

(v) Impairment in functioning at school manifested by the inability to pursue educational goals in a normal time frame (e.g., consistently failing grades, repeated truancy, expulsion, property damage or violence toward others).

Comparison Group

An in-State comparison group of beneficiaries with an SMI or SED not receiving services from a CCBHC is used for evaluating certain utilization and health outcomes. The comparison group includes beneficiaries who have been assessed and designated SMI or SED by a CMHC or CCBHC provider using the State's criteria, as well as individuals outside the CMHC system who meet the NCQA definition of serious mental illness. The NCQA criteria include:

(1) *At least one acute inpatient claim/encounter with any diagnosis of schizophrenia, schizoaffective disorder, bipolar disorder, or major depression; OR*

(2) At least two visits in an outpatient, IOP, community mental health center visit, electroconvulsive therapy, observation, ED, nonacute inpatient, or telehealth setting, on different dates of service with a diagnosis of schizophrenia or schizoaffective disorder; OR

(3) At least two visits in an outpatient, IOP, community mental health center visit, electroconvulsive therapy, observation, ED, nonacute inpatient, or telehealth setting on different dates of service with a diagnosis of bipolar disorder.

3. Evaluation Period

The Demonstration approval period runs from December 22, 2020 through December 31, 2025. The pre-intervention period is defined as CY 2017 – 2020. Pre-intervention results ultimately will be evaluated against the full Demonstration period; this interim report examines data for through CY2023.

4. Data Sources

The evaluation findings rely on administrative data collected by the OHCA and ODMHSAS. The primary data source is the Medicaid Management Information System (MMIS), including Medicaid Eligibility and Enrollment files. Data was augmented, as described in each findings section, by information from the State of Oklahoma Public Health Vital Statistics database and

information provided by the OHCA to CMS annually on the availability of mental health service providers.

PHPG analysts were granted access to the OHCA MMIS and extracted eligibility and paid claims data for calculation of evaluation results, utilization trends, and PMPM health expenditures. PHPG has worked within the OHCA MMIS for over two decades and performs routine quality checks to validate the completeness of the claims data, including comparison of month-to-month variance in expenditures by category-of-service, to identify and research potential data gaps. PHPG uses data smoothing and similar techniques to close gaps, if necessary.

5. Analytic Methods

The evaluation data analysis consists of both exploratory and descriptive strategies and incorporates univariate, bi-variate, and multi-variate techniques. The analysis applied statistical and/or logical techniques to describe, summarize, and compare data within the State and across time.

Descriptive statistics are used to illustrate the basic features of the data and what they depict, and to provide simple summaries about the sample and the measures. They also are used to provide summaries about members and their outcomes. Data is expressed as rates, proportions, frequencies, and measures of central tendency; it also is analyzed qualitatively for themes.

As appropriate, analytic methods include t-test, Analysis of Variance (ANOVA), and CEM with weighted t-test. These methods are used for comparing sample and population proportions and means against each other, specifically where one group has received treatment/intervention, and another has not. (See Section F for additional detail on the CEM procedure.)

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

Several hypotheses include results stratified for demographic and geographic subgroups, subject to sample size limitations. The urban geographic subgroup consists of the counties comprising the greater Oklahoma City, Tulsa, and Lawton metropolitan areas; the rural subgroup includes the remainder of the State.

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

Interrupted Time Series

Evaluation measures that use an interrupted time series (ITS) design are 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 in the pre-Demonstration quarters.

Apart from one measure (Opioids at a High Dose), 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 examines 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 of the observational period (i.e., 2017 Q1, 2017 Q2, …), 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="4">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
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>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 Demonstration start)</td><td>The trend seen after the start of the Demonstration through the last observation point</td></tr>
<tr><td>Counterfactual</td><td colspan="2">This is the projected trend assuming pre-demonstration performance continued absent the Demonstration (and Medicaid expansion which began July 1,2021)</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 diagnoses, 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., youth under 17 on antipsychotic meds), sample size decreases, limiting the conclusions that may be drawn from the analysis.

However, several evaluation questions 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 the following demographic characteristics: age, gender, geography, and aid category code using the following Generalized linear model 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 impact of Demonstration. The covariates explain some of the variation in the metrics of interests 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.

Impact of the Novel Coronavirus Public Health Emergency

Given the unique circumstances of the PHE in 2020, the evaluator assessed whether CY 2020 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 the base year.

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:

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

Autocorrelation in Time Series

Autocorrelation is likely to be observed. IMD and other continuum of care services were available to enrollees prior to the Demonstration, although not cost-shared with Medicaid.

Quality improvement efforts in the behavioral health system also have been ongoing. It is likely that the distribution is stable and highly correlated to the previous year(s)'data. Due to the Medicaid expansion, it is also likely that increases in utilization because of new eligibility rules would be maintained year over year.

Part of the intent of the Demonstration is to measure shifts in these measures over time. Removing autocorrelation by removing newly-eligible members would also mean not being able to measure the effect of expansions or the true shift over time on the measures.

Identifying autocorrelation is important relative to violating assumptions of time series modeling and inference. However, autocorrelation is mostly a concern when using time series modeling for forecasting where accuracy may be impacted. The findings include a plot of the actual time series and a plot of the partial autocorrelation function (pACF) for each outcome measure.

Expenditure Analysis

Cost of Care and Cost Drivers

The evaluation includes an exploratory analysis of the impact of the Demonstration and expanded Medicaid eligibility on expenditures for beneficiaries with an SUD or SMI/SED diagnosis. Cost of care measures not associated with a hypothesis were examined for year-over-year change and utilization trends. This includes total cost and SUD, SMI/SED treatment-related cost trends. Expenditures were examined related to drivers such as ED utilization, inpatient hospitalization, and pharmacy services.

Eligibility Expansion and Treatment Related Expenditures

The evaluator employed an ITS model to analyze the cost of SUD and SMI/SED services over time, as associated with Medicaid eligibility expansion (effective July 2021) and the increased federal share of IMD expenditures (effective January 2021). The intervention period (i.e., effective date) and quarterly data was used to assess whether there was a change in total cost following the start of the Demonstration and following the Medicaid expansion.

To study cost drivers associated with SUD and SMI/SED expenditures, the evaluator analyzed quarterly and yearly data (the two should lead to similar conclusions) to regress community-based service utilization against (a) ED costs and (b) inpatient costs. The regression will follow the following parametric form, where x represents service utilization and ε is an error term.

$$Cost_{ED} = \beta_0 + \beta_1 * x + \varepsilon_{ED}$$
$$Cost_{inpatient} = \beta_2 + \beta_3 * x + \varepsilon_{ip}$$

The evaluation reports β_1 and β_3, which can be interpreted as "for each unit increase in community-based service utilization, what is the change in ED costs" and "for each unit increase in community-based service utilization, what is the change in inpatient costs?", respectively. The 95 percent confidence interval of the estimates of β_1 and β_3 is also reported. It is important to note here that if the 95 percent confidence interval includes 0 in the range, then there is not a significant correlation between cost and utilization.

Isolation from Other Initiatives

Medicaid Expansion

To account for the effects of Medicaid Expansion, the evaluator compared outcomes during the pre-expansion period (2017 – 2020) and during the Demonstration, with and without the expansion group included in the calculation. The evaluator measured the significance of the difference between the pre-expansion and demo period with and without expansion group.

A regression with the outcome of interest for members in the expansion eligibility group was performed as well as an examination of the interaction between the expansion and Demonstration using the following equation:

$$Y_{t,exp} = \beta_0 + \beta_1 T_t + \beta_2 X_t + \beta_3 D_{AGE} + \beta_4 D_{GENDER} + \beta_5 D_{URBANRURAL} + \beta_6 D_{AidCategory} + \varepsilon$$
$$\Delta_t = Y_{t,exp=1} - Y_{t,exp=0}$$

The variables are defined as:

- $Y_{t,exp=0}, Y_{t,exp=1}$ (the variable of interest for excluding and including expansion populations, respectively)
- T_t (time since beginning of data collection)

- X_t (dummy variable indicating if the current time period is pre-intervention (X_t =0) or post-intervention (X_t =1))
- D_{AGE}, D_{GENDER}, $D_{URBANRURAL}$, $D_{AidCategory}$ (demographic and geography variables)
- Δ_t (the estimate of the upper bound of the effect of Medicaid expansion on the variable of interest)

Although causal inference cannot be concluded, the evaluator estimated an upper bound on the effect of the expansion as well as any synergistic effects associated with being simultaneously enrolled in the demo and being part of the expansion population. The evaluator did not see a variation in the prevalence of different demographic variables across time. Thus, a simple regression with additive covariates (demographic and time variables) was performed with no interaction terms between time and demographic variables.

The evaluator cannot disentangle all interaction effects between the expansion and other factors (demographic and otherwise) because there is not sufficient variation in the data for all covariates across all affected measures to estimate all such interaction effects. However, a difference between the effects on the traditional (non-expansion, for which both pre- and post-demonstration start date data exists) and expansion eligible groups (for which there is only post-demonstration start date data) should yield a conservative upper bound on the effects of the expansion on the outcomes of interest.

Sensitivity Analysis

The Evaluation Design does not rely on sampling methods. Measures are constructed using CMS-recognized, reliable, and valid measure sets, and include all members who meet the criteria for the outcome being studied (e.g., diagnostic, age, gender). All eligible members are included in the design. Thus, there are limited evaluation design elements that may skew findings.

The evaluator tested the robustness of results derived from the interrupted time series and/or coarsened exact matching with t-test analysis. The evaluator tested the stationarity of time series data and compared annualized results with quarterly findings to determine if the analysis either lost meaningful variation or introduced artificial variation by increasing the frequency of measurement.

D. 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 is not appropriate when describing results.

The IMD evaluation has been designed to yield accurate and actionable findings but does have methodological limitations, most of which are inherent to Section 1115 demonstrations. Data and design limitations are outlined below.

1. Data Limitations

The evaluation may be limited by its reliance on 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 patient does not present as inebriated, the ED provider has not ascertained causation, or the patient fails to disclose the cause.

Additionally, due to the nature of some measures, sufficient variability to estimate the effect of covariates (demographic and geography) on the outcome of interest is not observed and thus cannot be estimated. This means some interaction effects or effects due to covariates cannot be controlled and cannot be estimated.

2. Design Limitations

Lack of True Experimental Control Groups

Many IMD facilities serve residents from across the State. Thus, regional control or comparison groups for IMD service recipients are not available.

In addition, residential placement decisions are made based on nationally recognized mental health and ASAM level of care guidelines. Thus, individuals admitted to a residential SUD program, or a psychiatric facility 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 Demonstration enrollees who receive services versus those who did not.

Lastly, all Medicaid beneficiaries who meet SUD and SMI/SED criteria are eligible for the Demonstration. The design employs coarsened exact matching and interrupted time series techniques to mitigate the impact of these limitations.

Comparison Group Limitations

The evaluation employs a comparison strategy to study delivery system transformation of CMHC programs to CCBHCs. However, because CCBHC expansion was completed in DY 2, the likelihood of a balanced comparison sample is expected to decrease over time. (The design allows for logistic regression and/or proportions tests techniques to be applied if a balanced matching group cannot be found.)

Medicaid Enrollment and Disenrollment

Medicaid enrollment varies year-to-year based on changes to eligibility. For example, someone may be attributed to a study cohort in year one, disenroll in year two and reenroll in year three. The design's use of interrupted time series is intended to mitigate this limitation.

3. Special Methodological Considerations

SUD and SMI IMD treatment facilities are located statewide and were delivering care to Medicaid beneficiaries prior to implementation of the Demonstration. The Demonstration allows the State to continue services that had 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.

E. SUD EVALUATION QUESTIONS, HYPOTHESES AND FINDINGS

The State's SUD Implementation Plan includes quality enhancements and additions to the Medicaid State Plan for ASAM-aligned SUD services. The Demonstration goals, Implementation Plan and related activities provide the context for the SUD evaluation measures and design. This section provides an overview of:

1. SUD logic model and quantifiable targets
2. SUD-related evaluation questions and hypotheses
3. SUD-related modifications to the general analytics presented in Section C
4. SUD-related evaluation measures and interim findings
5. Summary and conclusions related to the SUD-related evaluation components

1. SUD Logic Model and Quantifiable Targets

Prior to the Demonstration, ODMHSAS supported members who required MAT and/or treatment under the following ASAM levels of care:

- 3.1 Clinically Managed Low-Intensity Residential Services;
- 3.3. Clinically Managed Population- Specific High-Intensity Residential Programs;
- 3.5 Clinically Managed Residential Services; and
- 3.7 Medically Monitored Inpatient Programs.

These treatment services were reimbursed through State general funds and/or the use of other non-Medicaid federal funds. Coverage included crisis stabilization, residential treatment, and inpatient hospital services provided in facilities classified as an IMD.

Under the Demonstration, the Medicaid State Plan was amended in early 2021 to include coverage for MAT and ASAM level 3.1, 3.3, 3.5, 3.7, and adolescent residential care services. Residential treatment providers are also required to offer (or arrange for) MAT services.

It is expected that authorization of Federal Financial Participation (FFP) for IMD services will serve as an incentive for some providers to expand program capacity. These State Plan enhancements are expected to increase access to care, including MAT services; increase SUD provider availability; and increase follow-up after discharge from ED, inpatient, and residential settings.

The Demonstration also promotes quality enhancements to support alignment of Utilization Management (UM) processes with ASAM levels of care. This includes use of ASAM assessment protocols and tools and the creation of an automated level of care assessment for providers to employ, at their discretion. The enhancements are expected to increase identification, initiation,

and engagement in treatment (Goal 1) and increase adherence to and retention in treatment (Goal 2).

ODMHSAS-contracted providers must adhere to comprehensive standards are care, including attention to the holistic needs of members receiving treatment. The OHCA adopted these standards for all residential providers enrolled in the Medicaid program.

Residential provider requirements also include accreditation by a nationally recognized accreditation entity. These enhancements are expected to improve the comprehensiveness of assessments and result in increased access to physical health care for enrollees (Goal 6).

Lastly, the State continues to support the integration of the Electronic Health Record (EHR) with the Prescription Drug Monitoring Program (PDMP) and supports providers in adopting workflows that include PDMP inquiries. These activities are expected to support the containment and reduction of opioid prescribing at high doses.

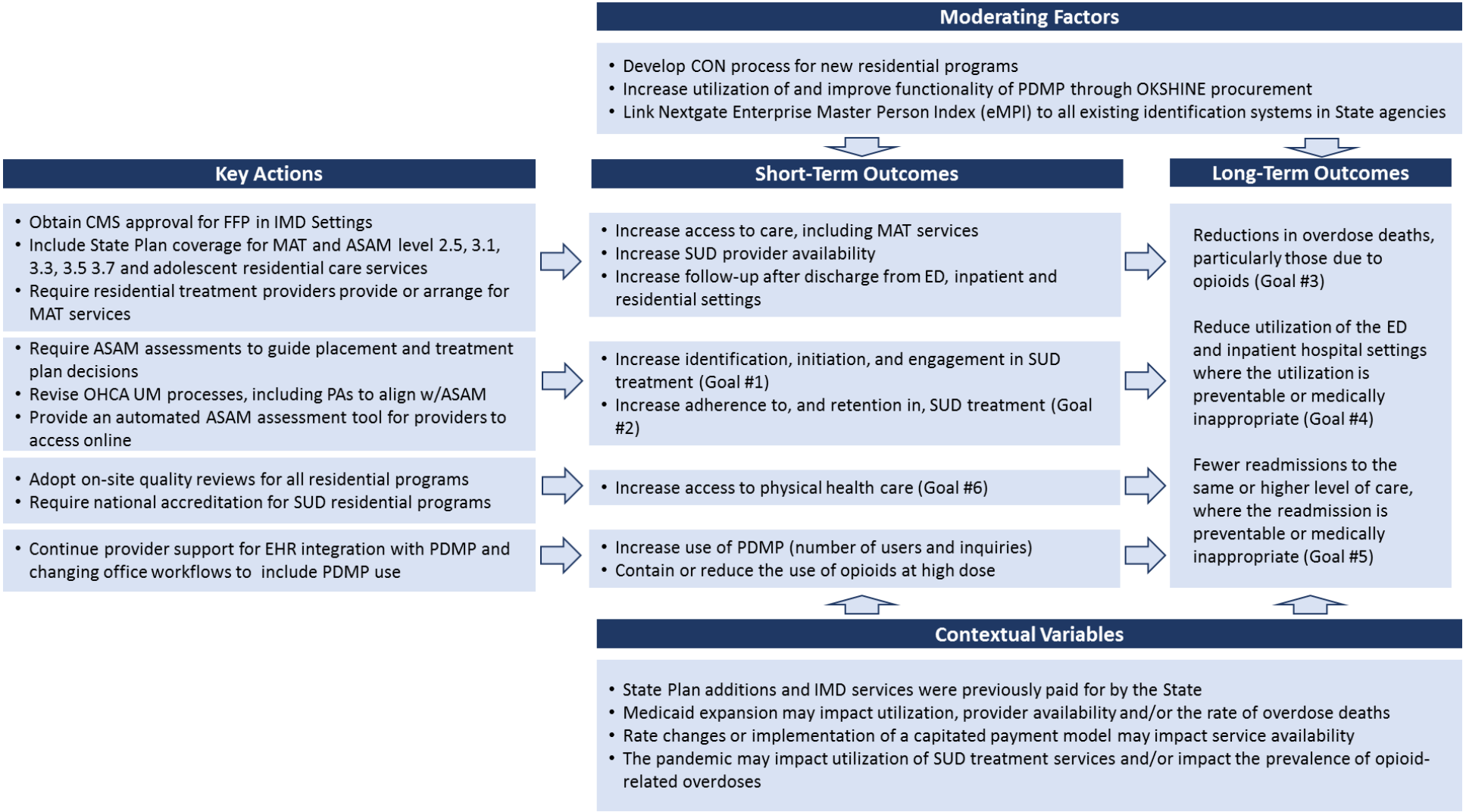
Expanded access, increased initiation, and adherence to treatment, integration of physical health care, and improved opioid prescribing are expected to reduce overdose deaths (Goal 3), reduce utilization of the ED and hospital settings where preventable (Goal 4), and reduce readmissions to the same or higher levels of care (Goal 5).

Moderating factors contributing to the success of the SUD activities include: development of a Certification of Need (CON) process for residential treatment providers; updating and improving the State's Health Information Exchange; offering provider support for modifying office workflows to include PDMP inquires; and linking the Nextgate Enterprise Master Person Index across State agencies.

The evaluation considers several contextual factors, including recognition that services added to the Medicaid State Plan were previously funded through non-Medicaid sources; the potential impact of the novel coronavirus pandemic; the impact of Medicaid eligibility expansion beginning July 1, 2021 and the enrollment of non-disabled/non-Medicare/Medicaid beneficiaries into managed care entities (MCEs) during the final 18 months of the Demonstration.

A visual depiction of the Demonstration impact for SUD-related goals and objectives is provided on the following page.

SUD Demonstration Logic Model



2. SUD Evaluation Questions and Hypotheses

The interim evaluation consists of nine primary evaluation questions, with eight subsidiary questions related to SUD services. Evaluation questions include:

1. Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?
    a. How does service utilization vary by member characteristics (e.g., age, aid category code)?
    b. How does service utilization vary by geographic areas (e.g., urban versus rural)?
2. Does the Demonstration maintain or increase adherence to and retention in treatment for alcohol or other drug use?
3. Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?
4. Does the Demonstration contain or reduce overdose deaths?
5. Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with an SUD?
    a. How does utilization vary by age and aid category code?
    b. How does utilization vary by geographic area (e.g., urban versus rural)?
6. Does the Demonstration contain or reduce readmissions to the same or higher levels of care?
7. Does the Demonstration maintain or improve access to care for physical health conditions?
8. How does the cost of care change over time?
    a. How does the Medicaid eligibility expansion impact cost over time?
    b. Does increased federal share for IMD services have an association with increased State investments in behavioral health services?
9. What are the cost drivers?
    a. Does increased community-based service utilization have an association with lower ED costs?
    b. Does increased community-based service utilization have an association with lower inpatient costs?

An overview of each evaluation question, hypothesis, and measure is outlined in Section E-4 (SUD Results). Evaluation question four was suspended due to data availability and lags in reporting. The lag in receiving cause of death data from vital statistics is over two years. In addition, overdose death detail received at the OHCA does not include detail on causation attributed to opioid related substances. The OHCA is collaborating with the State Department of Health to determine if data detail is available. The OHCA and its evaluator are also discussing options to modify the measure by looking at the sub-group of members who had an OUD diagnosis and/or were receiving MAT during the year of their death. If the team determines that the opioid stratification can be completed in a manner that is reliable and meaningful, the measure will be included in the summative report.

One measure associated with evaluation question 1, hypothesis 2 (the Demonstration will maintain or increase SUD provider availability) was modified. Specifically, annual counts of the number of licensed SUD providers statewide were not available at the time of the interim analysis. The evaluator instead assessed the change in the number of Medicaid enrolled providers over time versus the percentage of licensed providers who enrolled in Medicaid annually. Licensing data and the original measure will be included in the final summative report.

See Attachment 1 for a complete listing of measures from the approved evaluation design by evaluation question and hypothesis, including any changes made during the implementation of the evaluation due to issues related to data availability or integrity.

3. SUD-Specific Methods and Analytics

Evaluation questions are examined using an interrupted time series design. ITS methods are described in Section C. As mentioned in Section C-5, many evaluation measures by nature include participants with attributes that are highly correlated. For example, many measures focus on specific diagnoses, 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, the sample size and variation decreases.

However, several SUD evaluation questions focus on broader population trends. As part of the SUD-related interrupted time series analysis for the measures below, the evaluator controlled for member demographic characteristics (i.e., age, gender, and aid category code) using a generalized linear model. In addition, Attachment 2 includes a plot of the actual time series and a plot of the partial autocorrelation function (pACF) for each outcome measure.

GLM - Controlled for Member Characteristics
Evaluation Question 1. Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?
• Percentage of members receiving any SUD treatment • Percentage of members receiving SUD outpatient treatment • Percentage of members receiving intensive outpatient treatment and partial hospitalization • Percentage of members receiving residential and inpatient treatment services • Percentage of members receiving withdrawal management services • Percentage of members receiving medication-assisted treatment • Percentage of ED visits for alcohol and other drug (AOD) abuse or dependence for which the member received follow-up within 7-days and 30-days of discharge • Percentage of members ages 18 and older with a new episode of AOD abuse or dependence who initiate and engage in SUD treatment
Evaluation Question 5. Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with an SUD?
• Total number of ED visits per 1,000 members • Total number of inpatient stays per 1,000 members
Evaluation Question 7. Does the Demonstration maintain or improve access to care for physical health conditions?
• Percentage of members with an SUD who had an ambulatory or preventive health care visit
Evaluation Question 8. How does the cost of care change over time?
• PMPM Medicaid cost for individuals who have an SUD • PMPM cost of SUD-Related treatment for individuals who have an SUD • PMPM cost of physical health care for individuals who have an SUD
Evaluation Questions 9. What are the cost drivers?
• PMPM cost of outpatient (non-ED) for individuals who have an SUD • PMPM cost of pharmacy for individuals who have an SUD • PMPM cost of outpatient ED for individuals who have an SUD • PMPM cost of inpatient care for individuals who have an SUD • PMPM cost of Long-term care for individuals who have an SUD

4. SUD Results

Results for each hypothesis and measure are presented by evaluation question. Measure description, analytics and statistical details are provided with each finding.

To account for the effects of Medicaid Expansion, the evaluator compared outcomes during the pre-expansion period (2017 – 2020) and during the Demonstration, both with and without the expansion group included in the ITS. Significant differences found, if there are any, are summarized in the findings by evaluation question with coefficient estimates provided in Attachment 3.

Results for measures examined using the ITS approach were assessed using the variables shown 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	The projected trend assuming pre-demonstration performance continued absent the Demonstration (and Medicaid expansion, which began in July 2021)

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

Evaluation Question 1 includes the following two subsidiary questions:

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

b. How does service utilization vary by geographic areas (e.g., urban v rural)?

Hypothesis 1 of Question 1 posits that the Demonstration will maintain or increase utilization of SUD treatment services. The measures are:

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

Measure 1.1.1 – Percentage of members with an SUD diagnosis receiving any SUD treatment service

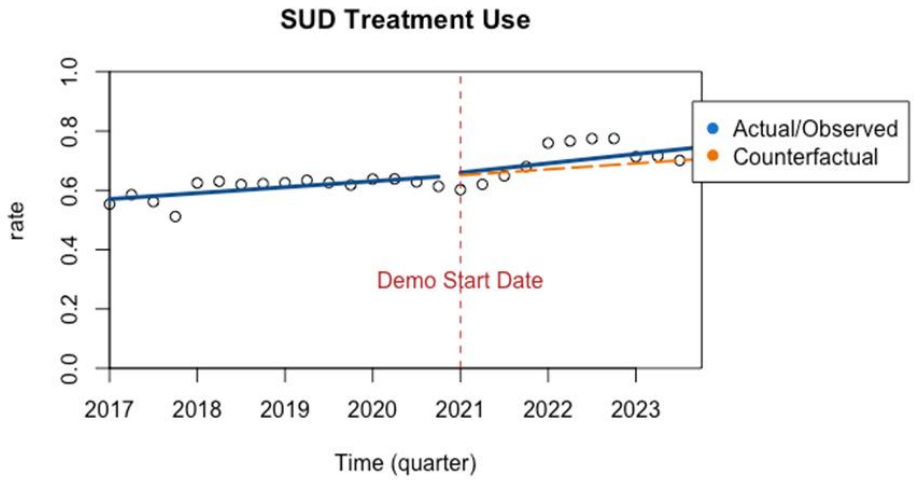
Question 1.	***Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?***
Hypothesis 1.	***The Demonstration will maintain or increase utilization of SUD treatment services.***

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

Data Source and Time Period: MMIS paid claims for 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 SUD treatment (any type) over time. There were no immediate or sustained effects associated with the Demonstration period.



SUD Treatment ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.02	0.01	p<0.05
Immediate Effect of Demonstration Start	0.01	0.03	None
Sustained Effect (Time since demo start)	0.003	0.004	None
Constant	-39.90	18.12	p<0.05

A generalized linear model was used to control for member demographics. Coefficient estimates are presented below. GLM 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 temporal factors studied (time, Demonstration start date and period) provided some explanation for the increase in utilization. Older members, women, and expansion group members were associated with increases in SUD treatment use. Non-ABD members (adults and children) and members who resided in rural areas were associated with fewer services.

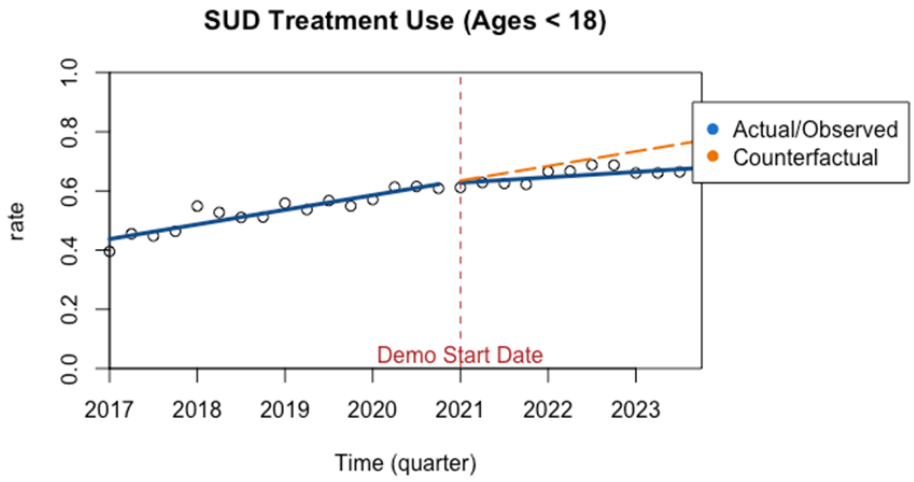
SUD Treatment GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.019	0.001	p<0.01
Immediate Effect of Demo Start	0.012	0.003	p<0.01
Sustained Effect	0.001	0.0003	p<0.05
Age	0.001	0.0001	p<0.01
Gender (Female)	0.004	0.001	p<0.01
Expansion Group	0.021	0.002	p<0.01
Non-ABD Adult	-0.022	0.002	p<0.01
Non-ABD Child	-0.039	0.004	p<0.01
Rural	-0.022	0.001	p<0.01
Constant	-38.692	1.556	p<0.01

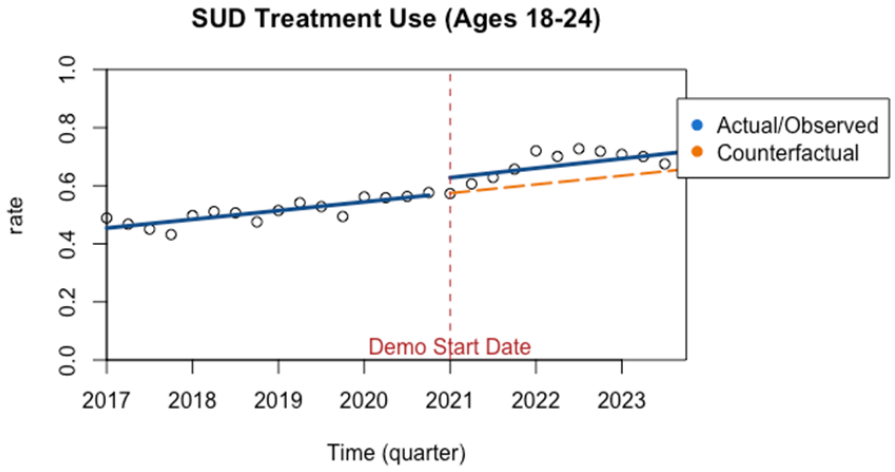
Age

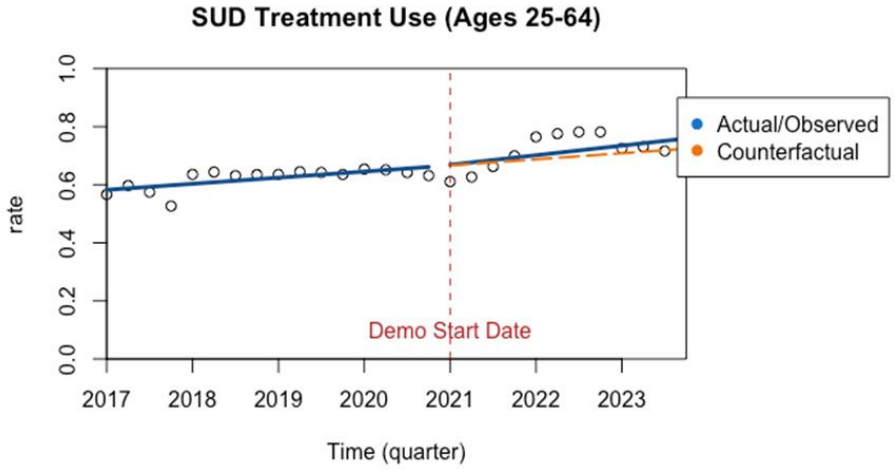
In examining age, the general trend showed a statistically significant increase in use of SUD treatment for members through age 64. The Demonstration was associated with a sustained decrease in use for members under 18 years old during the Demonstration period and an immediate increase in use for members ages 18 – 24. There were no other statistically significant effects on trend.

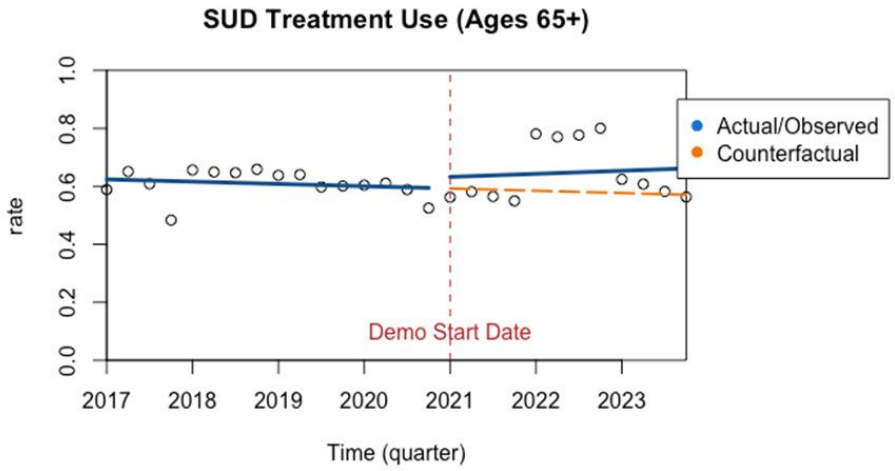
SUD Treatment ITS Model (Age)	Ages <18	Ages 18-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	0.05*** (0.01)	0.03*** (0.01)	0.02** (0.01)	-0.01 (0.02)
Immediate Effect of Demonstration Start (Standard Error)	0.001 (0.02)	0.05** (0.03)	-0.001 (0.03)	0.04 (0.06)
Sustained Effect (Standard Error)	-0.01*** (0.002)	0.001 (0.003)	0.003 (0.004)	0.005 (0.01)
Constant (Standard Error)	-99.09*** (10.14)	-60.18*** (14.19)	-41.85** (17.45)	16.48 (34.31)

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


SUD Treatment Use (Ages < 18)
rate
0.0
0.2
0.4
0.6
0.8
1.0
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


SUD Treatment Use (Ages 18-24)
rate
0.0
0.2
0.4
0.6
0.8
1.0
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


SUD Treatment Use (Ages 25-64)
rate
0.0
0.2
0.4
0.6
0.8
1.0
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

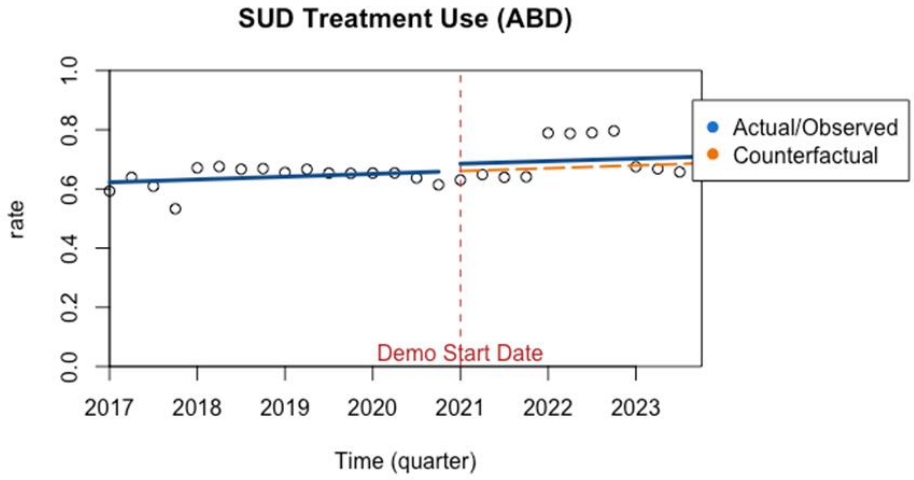


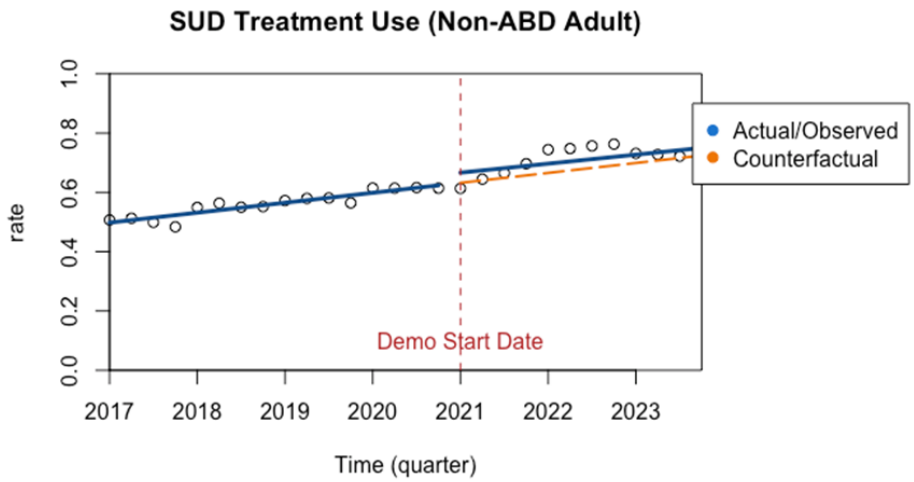
Aid Category

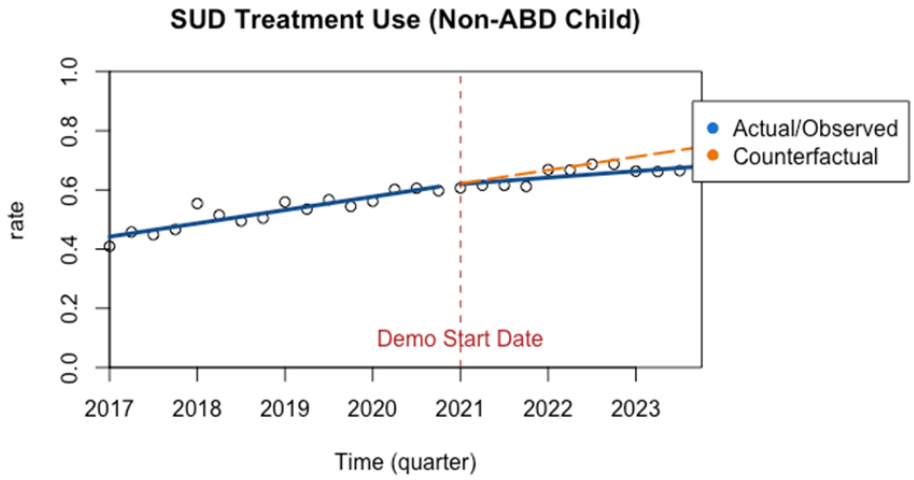
There was a statistically significant increase in the general trend for utilization of SUD treatment services for members in the non-ABD group (adults and children) over time. The Demonstration period was associated with a sustained decrease in trend (utilization) for members in the non-ABD child group. No other statistically significant changes in trend were observed.

SUD Treatment ITS Model (Aid Category)	ABD	Non-ABD Adult	Non-ABD Child
General Trend (Time) (Standard Error)	0.01 (0.01)	0.03*** (0.01)	0.04*** (0.01)
Immediate Effect of Demonstration Start (Standard Error)	0.03 (0.04)	0.04 (0.02)	0.004 (0.02)
Sustained Effect (Standard Error)	-0.0002 (0.01)	-0.001 (0.003)	-0.01** (0.002)
Constant (Standard Error)	-18.58 (24.04)	-67.13*** (12.83)	-90.30*** (10.65)

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


SUD Treatment Use (ABD)
rate
0.0
0.2
0.4
0.6
0.8
1.0
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


SUD Treatment Use (Non-ABD Adult)
rate
0.0
0.2
0.4
0.6
0.8
1.0
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

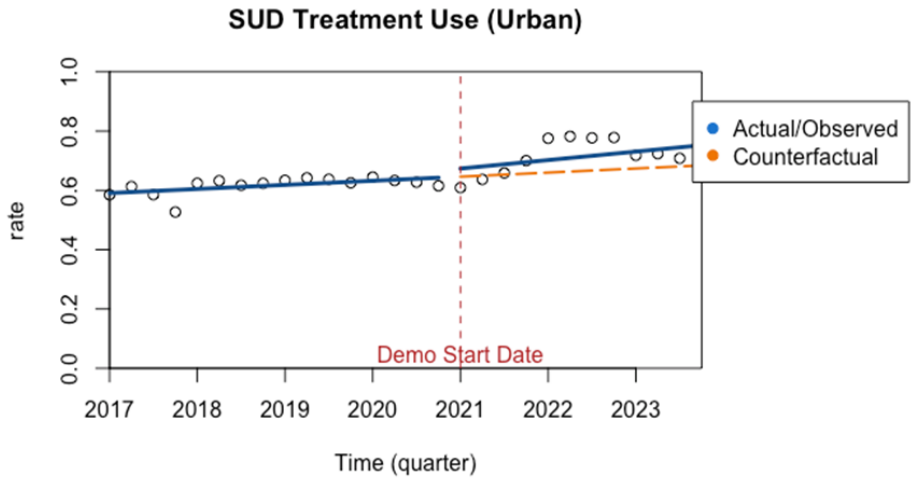

SUD Treatment Use (Non-ABD Child)
rate
0.0
0.2
0.4
0.6
0.8
1.0
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

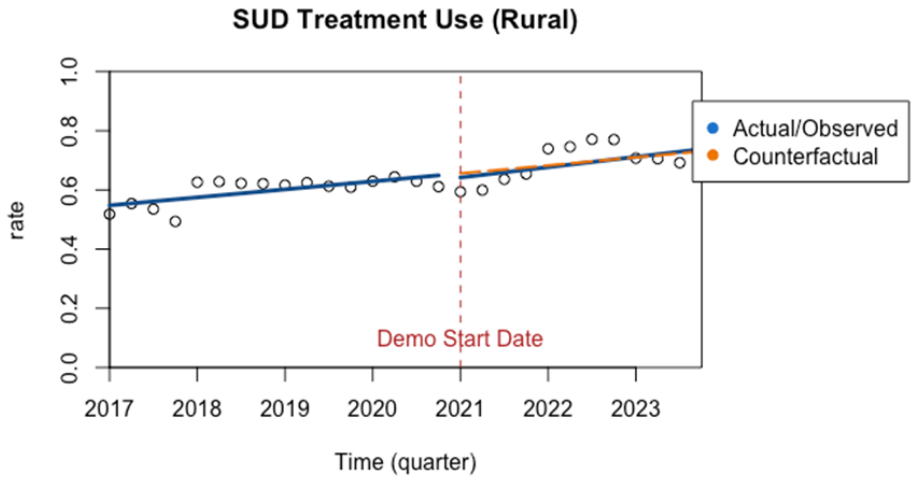
Urban/Rural

The general trend showed a statistically significant increase in utilization over time for members residing in rural counties. There were no other statistically significant trends.

SUD Treatment ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	0.01 (0.01)	0.03*** (0.01)
Immediate Effect of Demonstration Start (Standard Error)	0.02 (0.03)	-0.02 (0.03)
Sustained Effect (Standard Error)	0.004 (0.004)	0.002 (0.004)
Constant (Standard Error)	-27.31 (17.71)	-54.00*** (19.27)

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





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

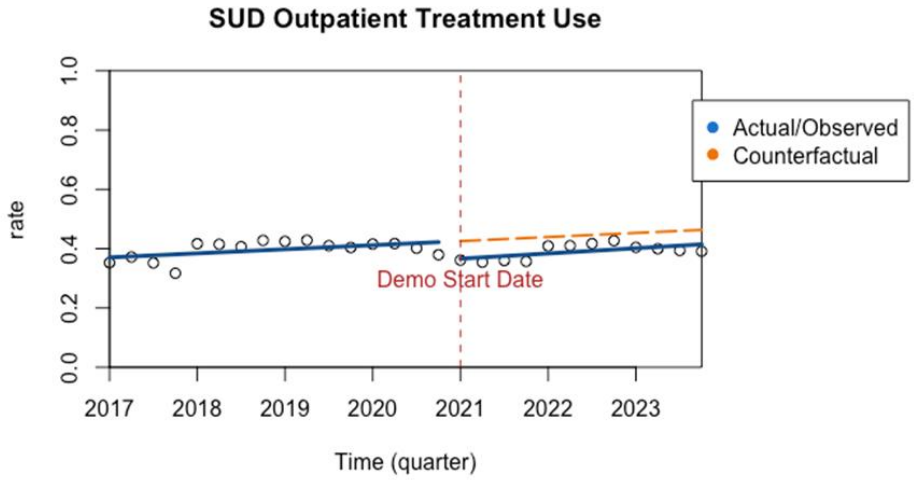
Question 1.	***Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?***
Hypothesis 1.	***The Demonstration will maintain or increase utilization of SUD treatment services.***

Measure Description: The denominator includes all members 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 for 2017 – 2023.

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

Findings: In the aggregate analyses the general trend showed a statistically significant increase in the use of SUD outpatient treatment services, although there was a decline in use associated with start date of the Demonstration.



Outpatient ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.01	0.01	p<0.05
Immediate Effect of Demonstration Start	-0.06	0.02	p<0.01
Sustained Effect (Time since demo start)	0.001	0.003	None
Constant	-27.39	11.41	p<0.05

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

There was a statistically significant increase in the use of SUD outpatient treatment services, with a decline immediately following the start date of the Demonstration. Overall, there was a sustained increase in use during the Demonstration period. Older members, women, members residing in rural counties and members in the expansion and non-ABD adult group were associated with more use. Members in the non-ABD child group were associated with lower service use.

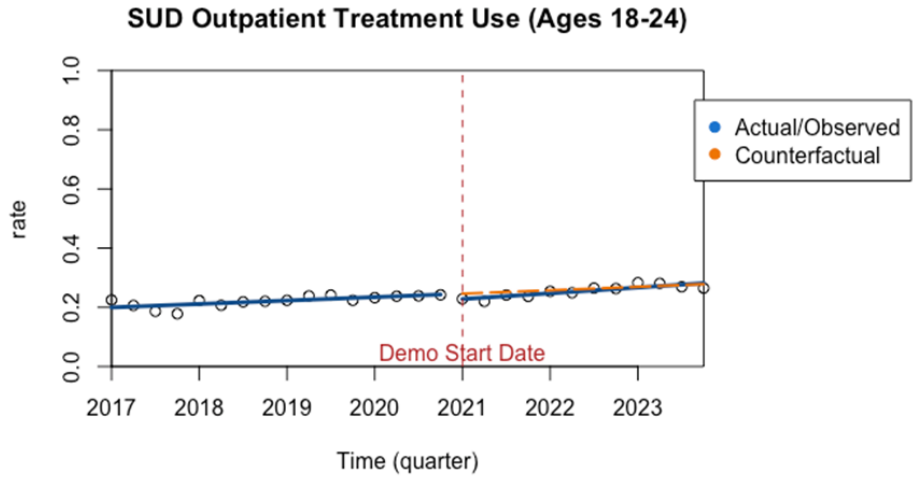
Outpatient GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.012	0.001	p<0.01
Immediate Effect of Demo Start	-0.048	0.003	p<0.01
Sustained Effect	0.001	0.0003	p<0.01
Age	0.004	0.0001	p<0.01
Gender (Female)	0.065	0.001	p<0.01
Expansion Group	0.016	0.002	p<0.01
Non-ABD Adult	0.022	0.002	p<0.01
Non-ABD Child	-0.026	0.004	p<0.01
Rural	0.032	0.001	p<0.01
Constant	-23.813	1.602	p<0.01

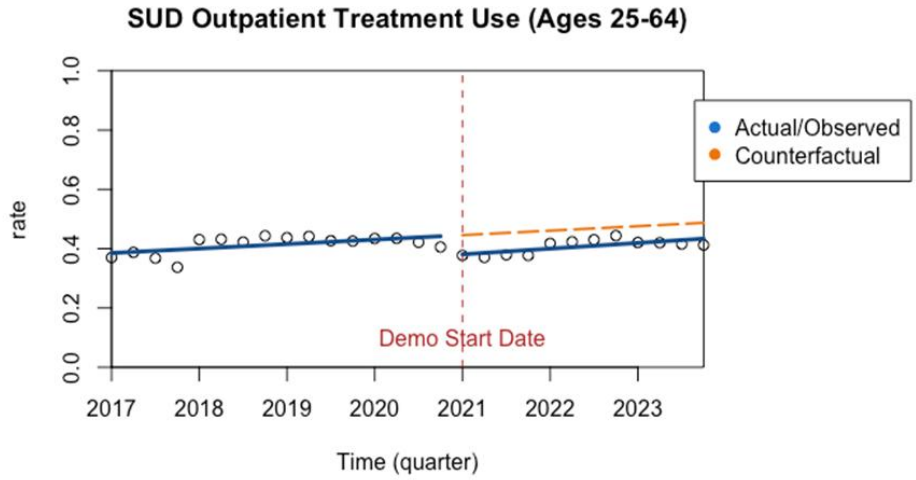
Age

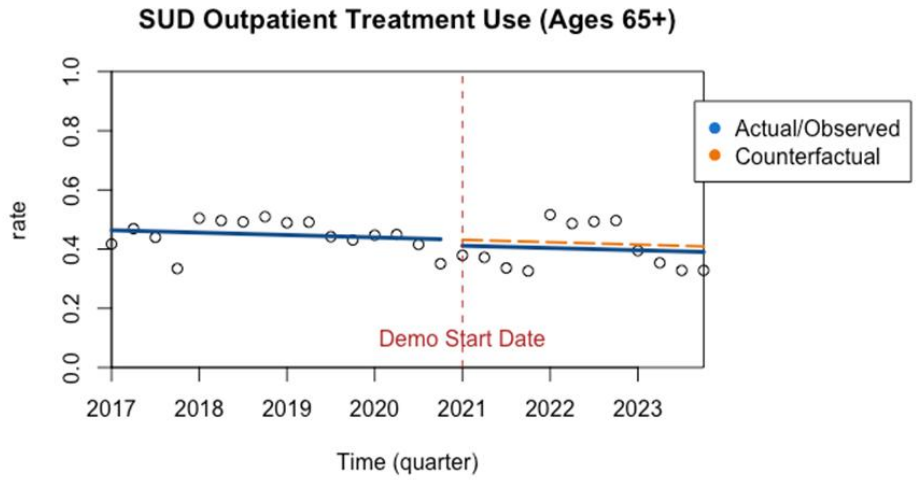
The general trend showed a statistically significant increase in outpatient treatment use for all ages groups, apart from members 65 years old and older. There was an immediate decrease associated with the Demonstration's start date for members 18 - 64 years old. There was a sustained decrease in utilization for members under 18 years old associated with the Demonstration period.

Outpatient ITS Model (Age)	Ages <18	Ages 18-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	0.02*** (0.003)	0.01*** (0.003)	0.02*** (0.01)	-0.01 (0.01)
Immediate Effect of Demonstration Start (Standard Error)	0.01 (0.01)	-0.02** (0.01)	-0.07*** (0.02)	-0.02 (0.05)
Sustained Effect (Standard Error)	-0.004** (0.002)	0.002 (0.001)	0.001 (0.002)	0.0001 (0.01)
Constant (Standard Error)	-34.84*** (7.04)	-23.22*** (5.30)	-30.04*** (10.25)	16.81 (28.32)

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


SUD Outpatient Treatment Use (Ages 18-24)
rate
0.0
0.2
0.4
0.6
0.8
1.0
Actual/Observed
Counterfactual
Demo Start Date
2017
2018
2019
2020
2021
2022
2023
Time (quarter)


SUD Outpatient Treatment Use (Ages 25-64)
rate
0.0
0.2
0.4
0.6
0.8
1.0
Actual/Observed
Counterfactual
Demo Start Date
2017
2018
2019
2020
2021
2022
2023
Time (quarter)

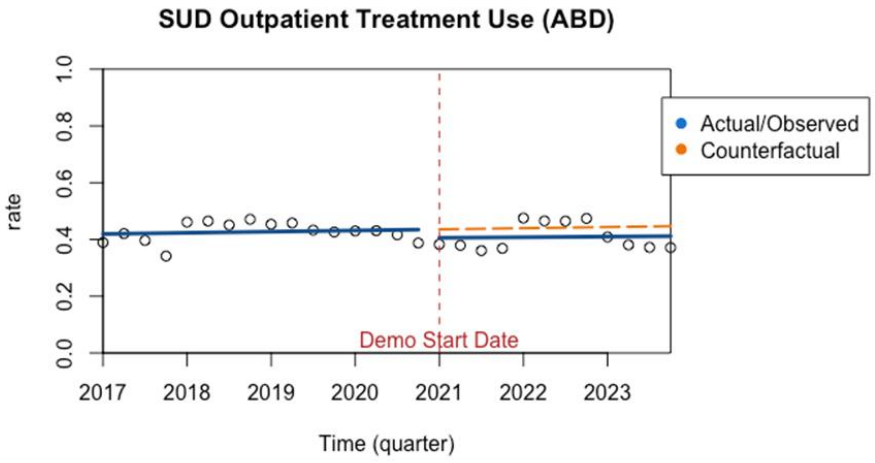

SUD Outpatient Treatment Use (Ages 65+)
rate
0.0
0.2
0.4
0.6
0.8
1.0
Actual/Observed
Counterfactual
Demo Start Date
2017
2018
2019
2020
2021
2022
2023
Time (quarter)

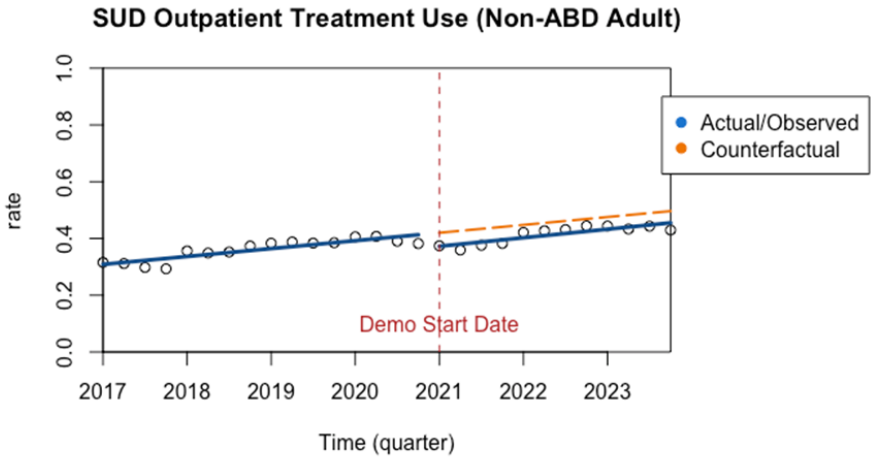
Aid Category

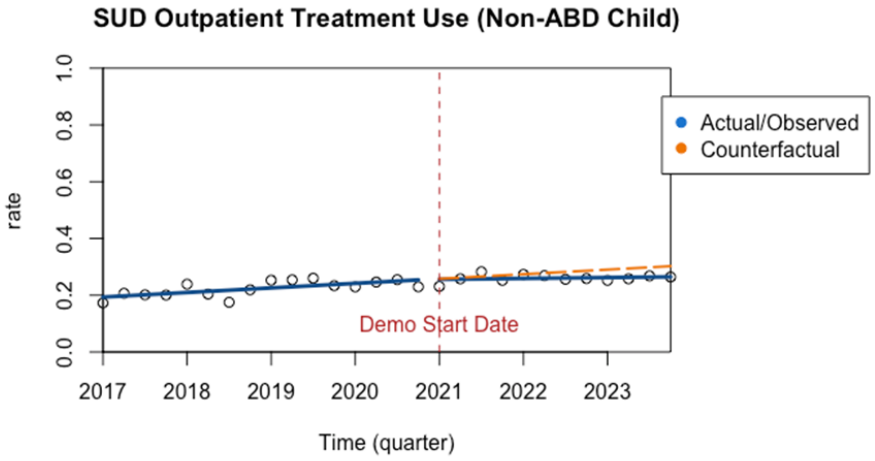
The general trend showed a statistically significant increase over time in the use of SUD outpatient treatment services for members in the non-ABD group (adults and children). There was a statistically significant decrease in use for non-ABD Adults associated with the start of the Demonstration. There were no other statistically significant changes in trend.

Outpatient ITS Model (Aid Category)	ABD	Non-ABD Adult	Non-ABD Child
General Trend (Time) (Standard Error)	0.004 (0.01)	0.03*** (0.004)	0.02*** (0.004)
Immediate Effect of Demonstration Start (Standard Error)	-0.03 (0.03)	-0.05*** (0.01)	0.001 (0.01)
Sustained Effect (Standard Error)	-0.0005 (0.004)	0.001 (0.002)	-0.003 (0.002)
Constant (Standard Error)	-7.78 (18.29)	-55.78*** (7.78)	-32.32*** (7.93)

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





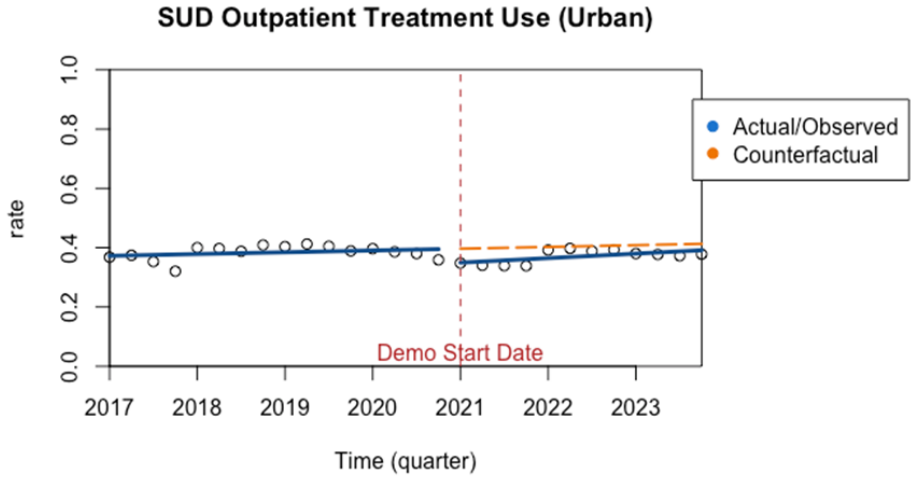


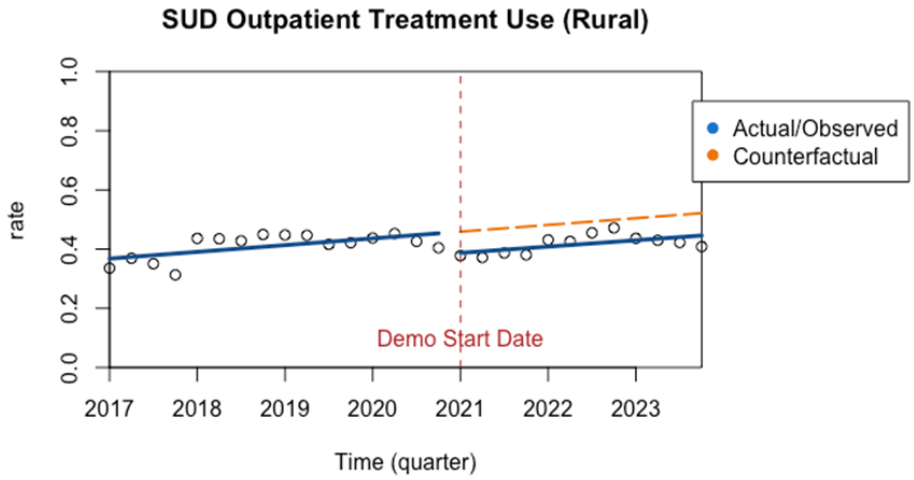
Urban/Rural

The general trend showed a statistically significant increase over time for members residing in rural areas. There was a statistically significant decline in the use of SUD outpatient treatment services for members residing in both urban and rural areas associated with the start of the Demonstration.

Outpatient ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	0.01 (0.005)	0.02*** (0.01)
Immediate Effect of Demonstration Start (Standard Error)	-0.05*** (0.02)	-0.07*** (0.03)
Sustained Effect (Standard Error)	0.002 (0.002)	-0.0004 (0.003)
Constant (Standard Error)	-11.70 (9.66)	-45.55*** (14.20)

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




SUD Outpatient Treatment Use (Rural)
rate
0.0
0.2
0.4
0.6
0.8
1.0
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

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

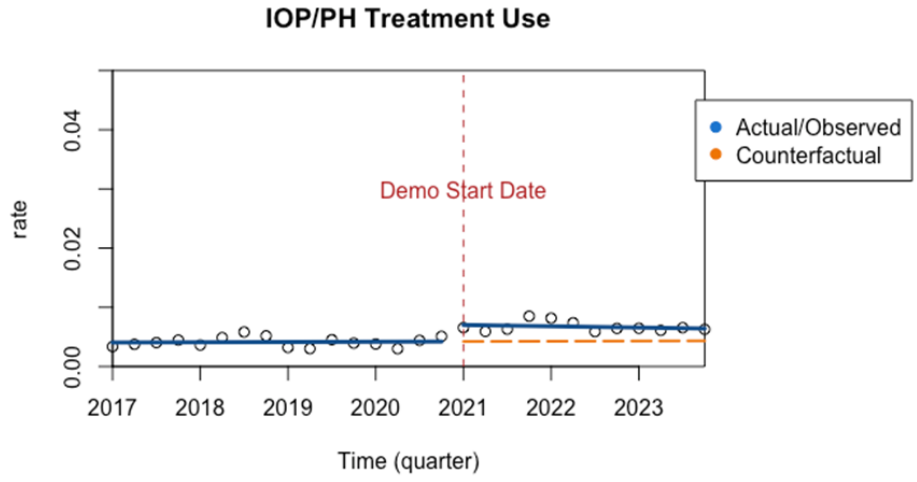
Question 1.	***Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?***
Hypothesis 1.	***The Demonstration will maintain or increase utilization of SUD treatment services.***

Measure Description: The denominator includes all members 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 for 2017 – 2023.

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

Findings: There was a statistically significant increase in utilization of IOP/PH services associated with the start date of the Demonstration. No other statistically significant changes in trend were observed.



IOP/PH ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.0000	0.0002	None
Immediate Effect of Demonstration Start	0.003	0.001	p<0.01
Sustained Effect (Time since demo start)	-0.0001	0.0001	None
Constant	-0.08	0.38	None

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

There was a statistically significant increase in IOP/PH use associated with the start date of the Demonstration, followed by a sustained decline in use associated with the Demonstration period. Older members, women, members in the non-ABD (Adult and Child) group were associated with lower of IOP/PH services.

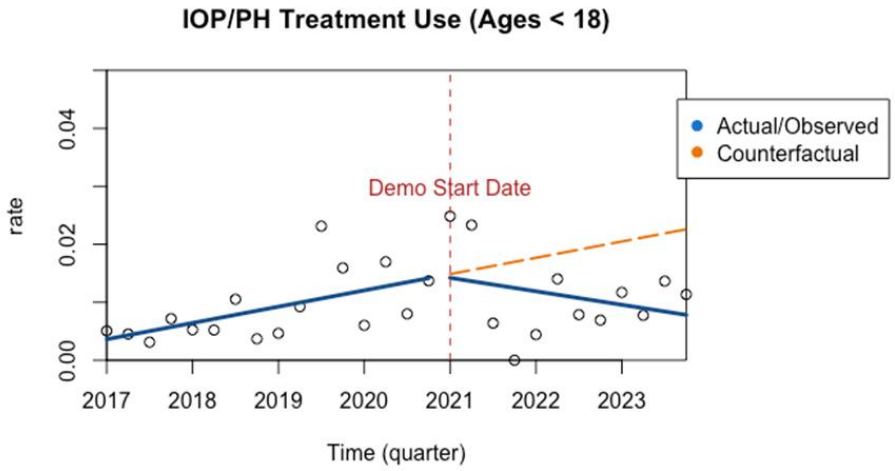
IOP/PH GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.0002	0.0001	None
Immediate Effect of Demo Start	0.002	0.0004	p<0.01
Sustained Effect	-0.0002	0.0001	p<0.01
Age	-0.0002	0.00001	p<0.01
Gender (Female)	-0.003	0.0002	p<0.01
Expansion Group	-0.0003	0.0003	None
Non-ABD Adult	-0.004	0.0003	p<0.01
Non-ABD Child	-0.004	0.001	p<0.01
Rural	0.0001	0.0002	None
Constant	-0.310	0.243	None

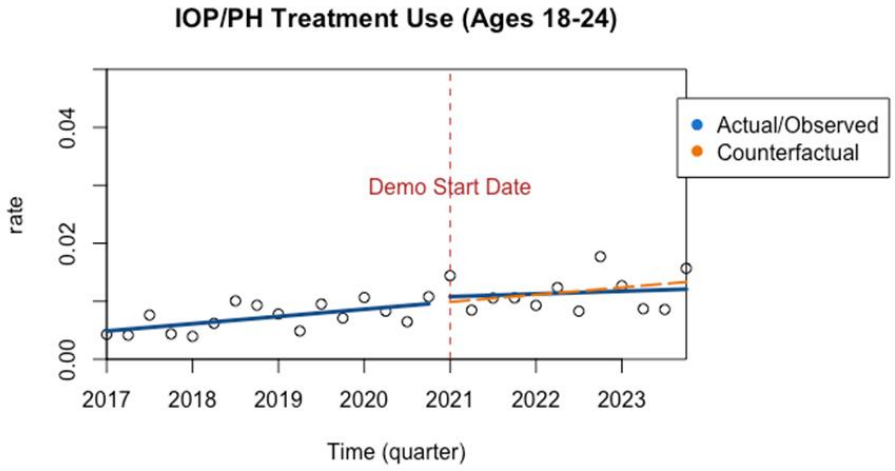
Age

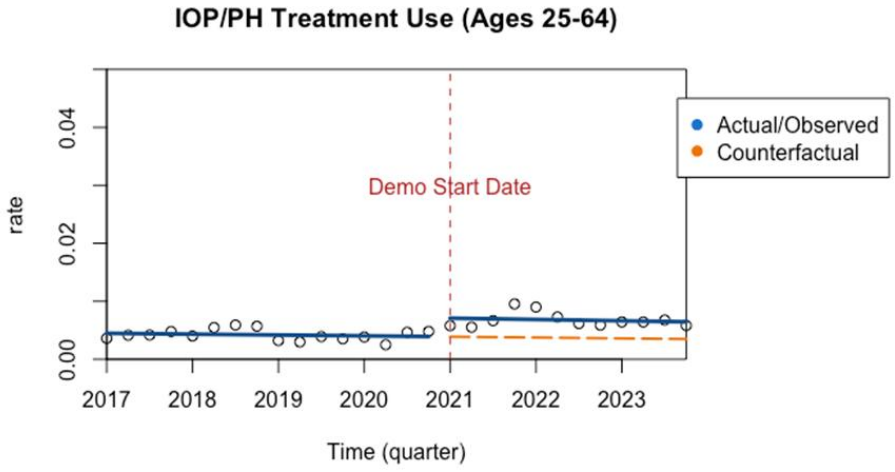
The general trend showed an increase in the use of IOP/PH services for members through age 24. Members 25 – 64 years old showed an increased in use immediately following the start of the Demonstration. There was a statistically significant decline in use of IOP/PH for members under the age of 18 during the Demonstration period.

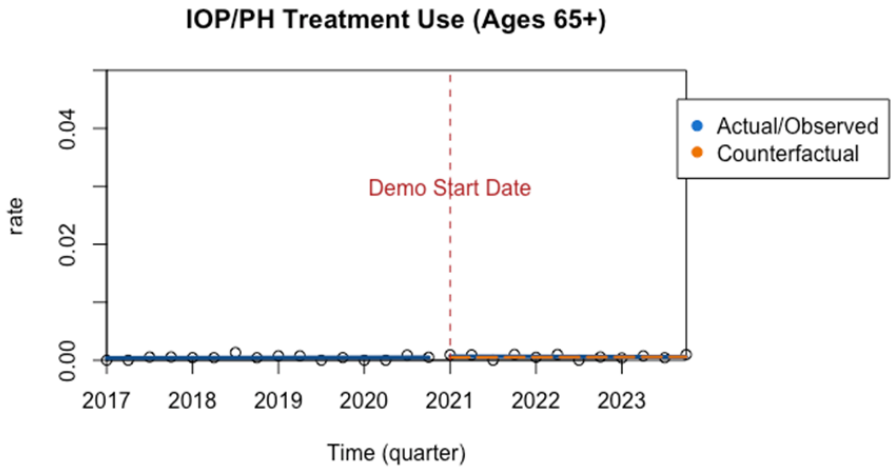
IOP/PH ITS Model (Age)	Ages <18	Ages 18-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	0.003** (0.001)	0.001** (0.001)	-0.0001 (0.0002)	0.0000 (0.0001)
Immediate Effect of Demonstration Start (Standard Error)	0.001 (0.005)	0.001 (0.002)	0.003*** (0.001)	0.0002 (0.0003)
Sustained Effect (Standard Error)	-0.001** (0.001)	-0.0002 (0.0003)	-0.0000 (0.0001)	-0.0000 (0.0000)
Constant (Standard Error)	-5.67** (2.62)	-2.52** (1.14)	0.30 (0.50)	-0.06 (0.17)

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


IOP/PH Treatment Use (Ages < 18)
Actual/Observed
Counterfactual
Demo Start Date
rate
0.00
0.02
0.04
2017
2018
2019
2020
2021
2022
2023
Time (quarter)


IOP/PH Treatment Use (Ages 18-24)
Actual/Observed
Counterfactual
Demo Start Date
rate
0.00
0.02
0.04
2017
2018
2019
2020
2021
2022
2023
Time (quarter)


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

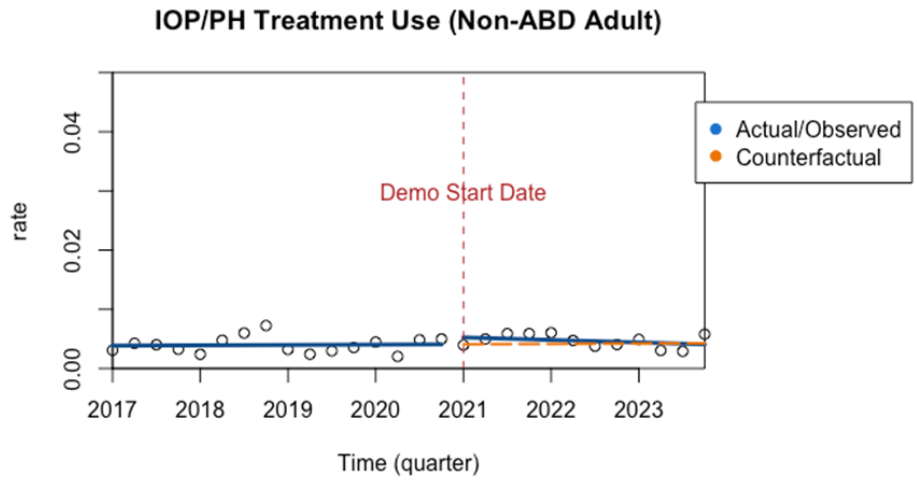


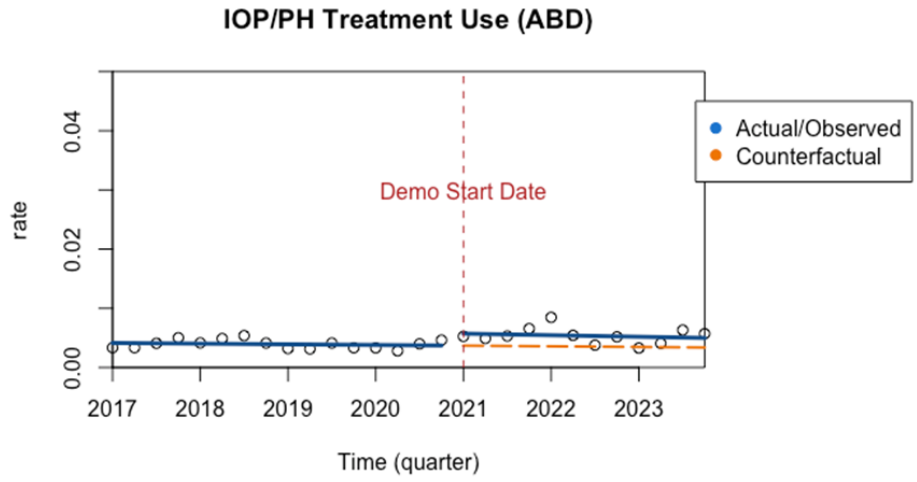
Aid Category

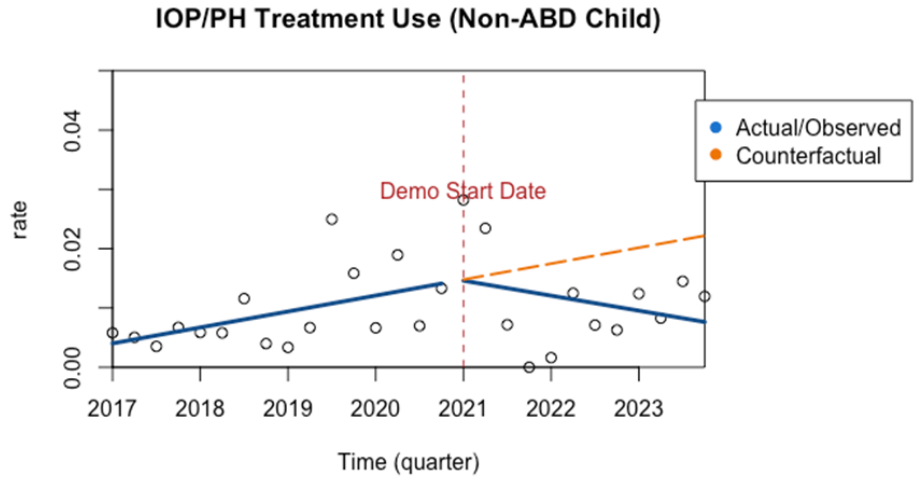
Members in the ABD group showed a statistically significant increase in use immediately following the start of the Demonstration. There were no other statistically significant trends associated with Medicaid aid categories.

IOP/PH TS Model (Aid Category)	ABD	Non-ABD Adult	Non-ABD Child
General Trend (Time) (Standard Error)	-0.0001 (0.0002)	-0.0001 (0.0003)	0.003 (0.001)
Immediate Effect of Demonstration Start (Standard Error)	0.002** (0.001)	0.001 (0.001)	0.001 (0.01)
Sustained Effect (Standard Error)	-0.0000 (0.0001)	-0.0001 (0.0001)	-0.001 (0.001)
Constant (Standard Error)	0.23 (0.48)	-0.11 (0.58)	-5.42 (2.97)

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


IOP/PH Treatment Use (Non-ABD Adult)
rate
0.00
0.02
0.04
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


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

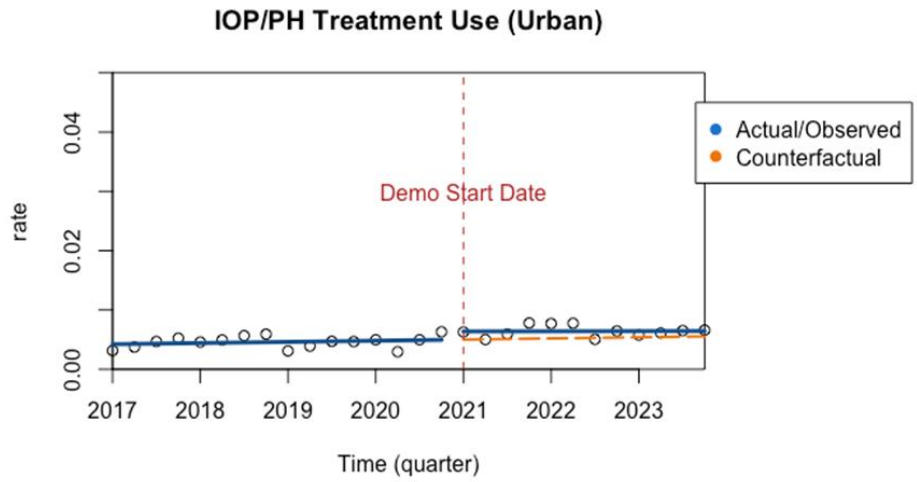

IOP/PH Treatment Use (Non-ABD Child)
rate
0.00
0.02
0.04
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

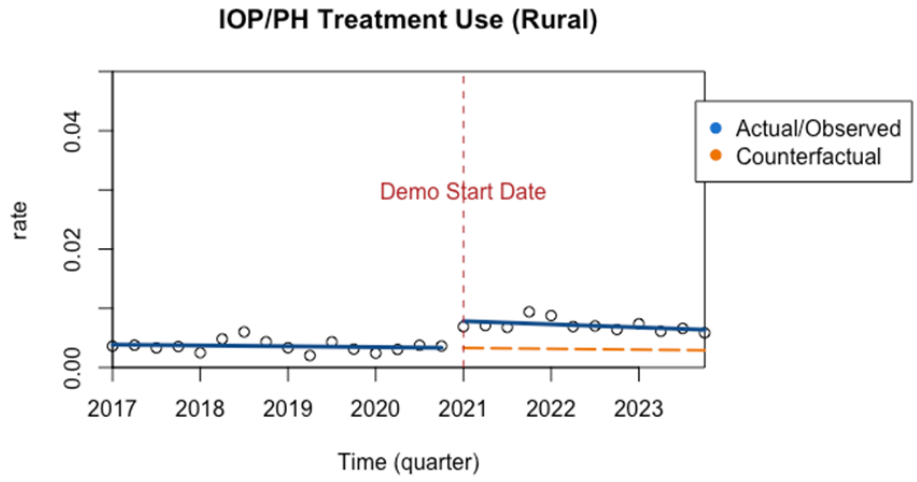
Urban/Rural

There was a statistically significant increase in the use of IOP/PH services for members residing in rural areas immediately following the start of the Demonstration. There were no other statistically significant trends associated with geography.

IOP/PH ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	0.0002 (0.0002)	-0.0001 (0.0002)
Immediate Effect of Demonstration Start (Standard Error)	0.001 (0.001)	0.005*** (0.001)
Sustained Effect (Standard Error)	-0.0000 (0.0001)	-0.0001 (0.0001)
Constant (Standard Error)	-0.39 (0.44)	0.29 (0.43)

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





Measure 1.1.4 – Percentage of members with an SUD diagnosis receiving residential and inpatient treatment services

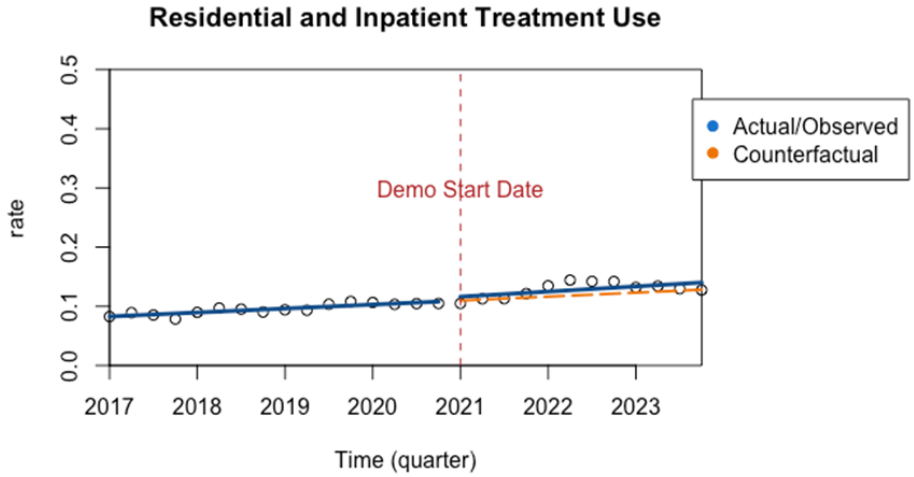
Question 1.	***Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?***
Hypothesis 1.	***The Demonstration will maintain or increase utilization of SUD treatment services.***

Measure Description: The denominator includes all members 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 for 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 residential and inpatient SUD treatment services in the aggregate analysis.



Inpatient/Residential ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.01	0.002	p<0.01
Immediate Effect of Demonstration Start	0.01	0.01	None
Sustained Effect (Time since demo start)	0.0005	0.001	None
Constant	-13.45	3.35	p<0.01

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. GLM 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 trend over time showed a statistically significant increase in the use of residential and inpatient services, although the Demonstration period was associated with a slight decline in use. Older members, women, members residing in rural areas and members in the non-ABD group (adults and children) were associated with lower use of residential and inpatient services. Members in the expansion group were associated with more use.

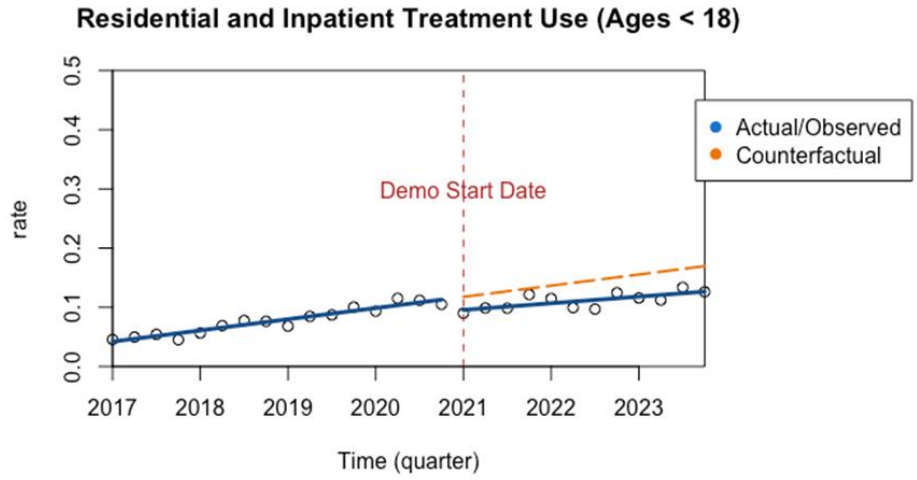
Inpatient/Residential GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.007	0.001	p<0.01
Immediate Effect of Demo Start	-0.002	0.002	None
Sustained Effect	-0.001	0.0002	p<0.01
Age	-0.001	0.00004	p<0.01
Gender (Female)	-0.046	0.001	p<0.01
Expansion Group	0.027	0.001	p<0.01
Non-ABD Adult	-0.013	0.001	p<0.01
Non-ABD Child	-0.049	0.003	p<0.01
Rural	-0.024	0.00	p<0.01
Constant	-14.065	1.039)	p<0.01

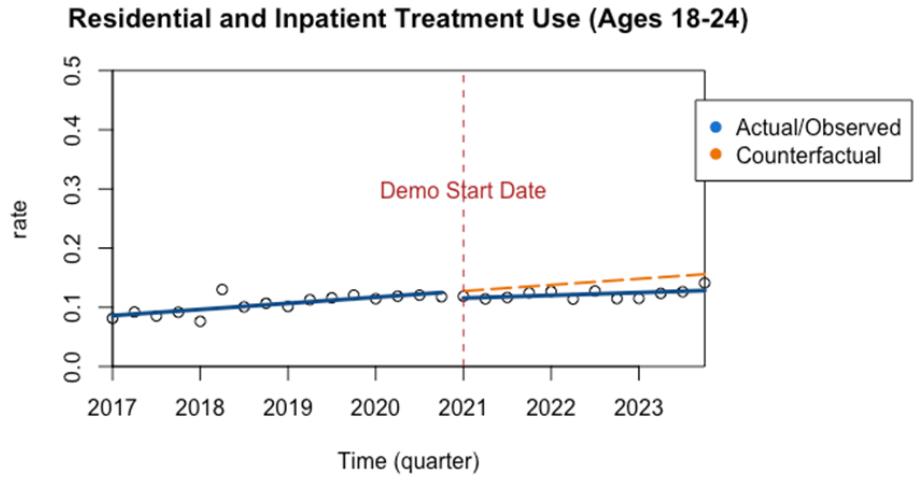
Age

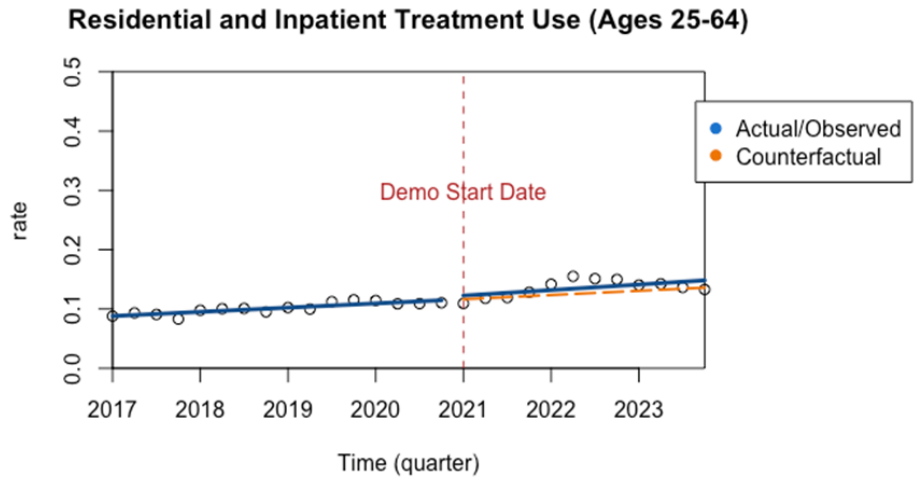
Members in all age groups, apart from those 65 years old and older, were associated with a statistically significant overall increase over time in the use of residential and inpatient services. Members 65 years old and older were associated with a statistically significant increase in use immediately following the start date of the Demonstration. Members under 18 years old were associated with a slight decline immediately following the start of the Demonstration and during the Demonstration period.

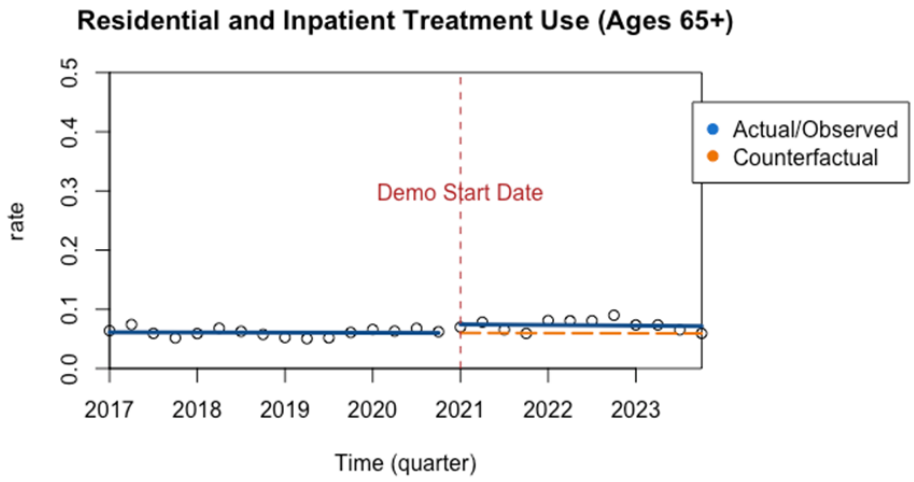
Inpatient/Residential ITS Model (Age)	Ages <18	Ages 18-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	0.02*** (0.002)	0.01*** (0.002)	0.01*** (0.002)	-0.0003 (0.002)
Immediate Effect of Demonstration Start (Standard Error)	-0.02*** (0.01)	-0.01 (0.01)	0.01 (0.01)	0.01** (0.01)
Sustained Effect (Standard Error)	-0.002** (0.001)	-0.001 (0.001)	0.001 (0.001)	-0.0002 (0.001)
Constant (Standard Error)	-38.07*** (3.67)	-20.80*** (4.12)	-14.23*** (3.84)	0.65 (3.65)

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


Residential and Inpatient Treatment Use (Ages < 18)
rate
0.0
0.1
0.2
0.3
0.4
0.5
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
Time (quarter)


Residential and Inpatient Treatment Use (Ages 18-24)
rate
0.0
0.1
0.2
0.3
0.4
0.5
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
Time (quarter)


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

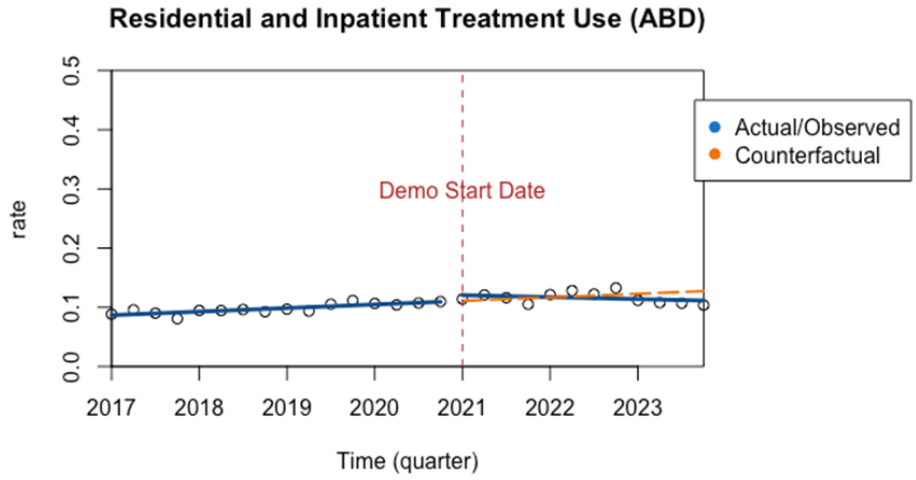


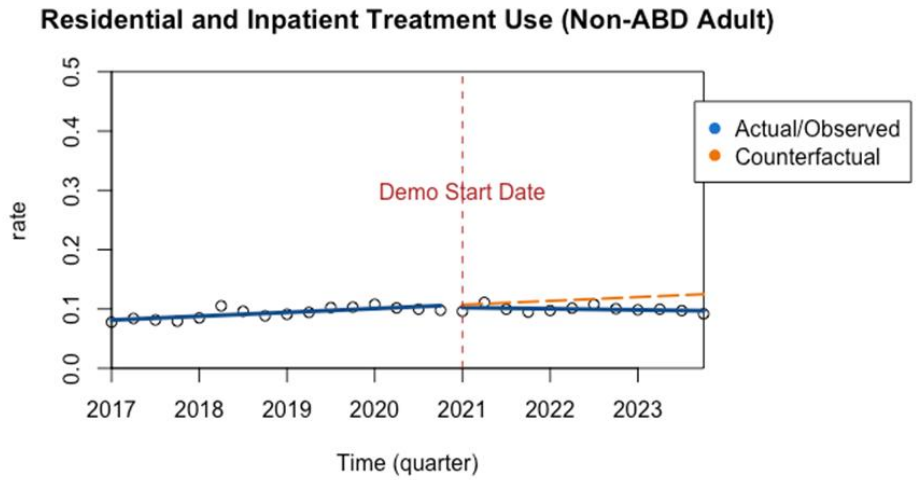
Aid Category

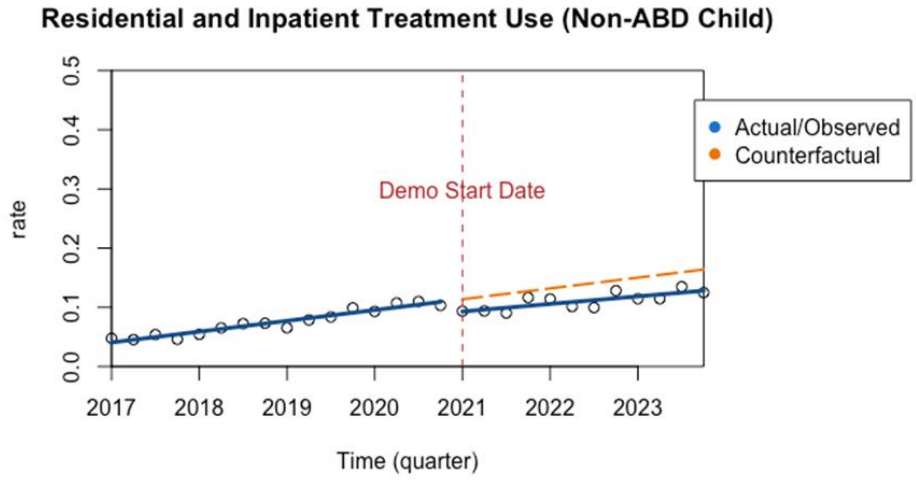
Members in all aid categories were associated with a statistically significant increase in the use of residential and inpatient treatment services over time. Members in the ABD group showed a statistically significant increase immediately following the start of the Demonstration but a decrease during the Demonstration period. Members in the non-ABD Child group showed a statistically significant decrease in use immediately following the start of the Demonstration. Members in the non-ABD Adult group showed a statistically significant sustained decrease during the Demonstration period.

Inpatient/Residential ITS Model (Aid Category)	ABD	Non-ABD Adult	Non-ABD Child
General Trend (Time) (Standard Error)	0.01*** (0.002)	0.01*** (0.001)	0.02*** (0.002)
Immediate Effect of Demonstration Start (Standard Error)	0.01** (0.01)	-0.003 (0.005)	-0.02*** (0.01)
Sustained Effect (Standard Error)	-0.002*** (0.001)	-0.002*** (0.001)	-0.001 (0.001)
Constant (Standard Error)	-12.07*** (3.10)	-12.93*** (2.58)	-36.77*** (3.39)

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


Residential and Inpatient Treatment Use (ABD)
rate
0.0
0.1
0.2
0.3
0.4
0.5
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
Time (quarter)


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

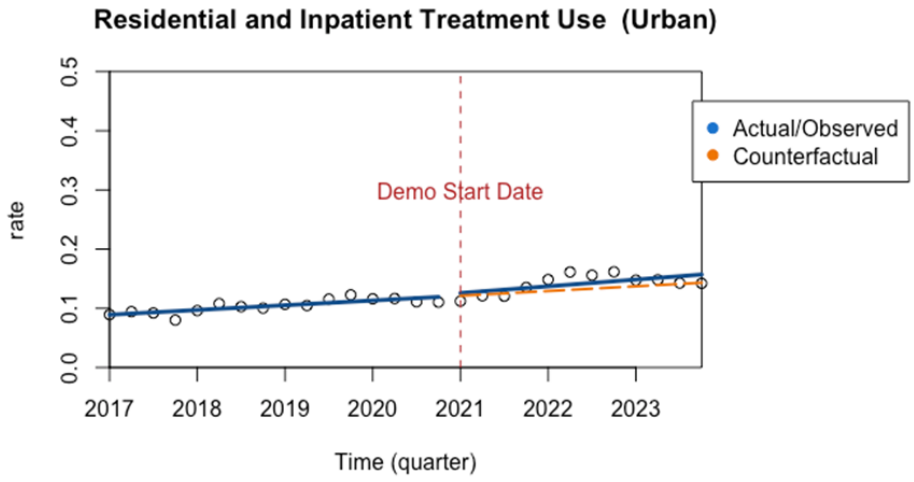

Residential and Inpatient Treatment Use (Non-ABD Child)
rate
0.0
0.1
0.2
0.3
0.4
0.5
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
Time (quarter)

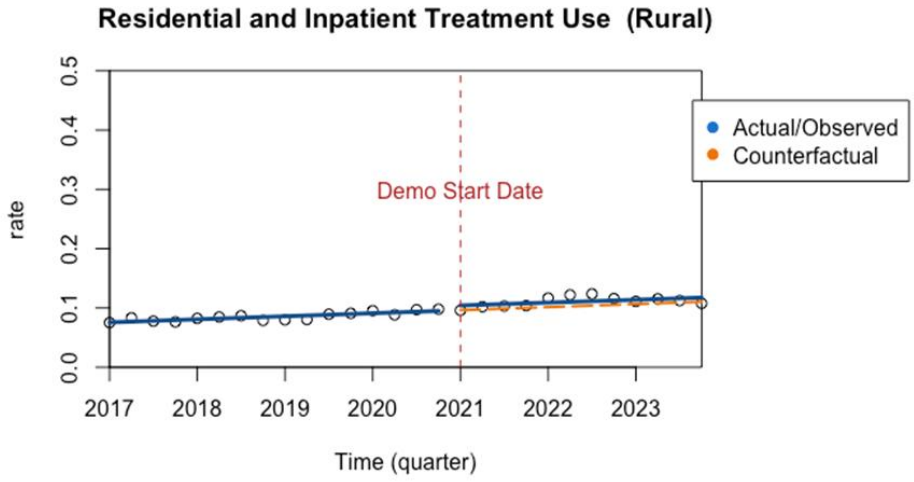
Urban/Rural

Members residing both in urban and rural areas showed a statistically significant increase in the use of residential and inpatient services over time. No other statistically significant trends were observed.

Inpatient/Residential ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	0.01*** (0.002)	0.01*** (0.001)
Immediate Effect of Demonstration Start (Standard Error)	0.004 (0.01)	0.01 (0.005)
Sustained Effect (Standard Error)	0.001 (0.001)	-0.0001 (0.001)
Constant (Standard Error)	-16.06*** (4.36)	-10.29*** (2.58)

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





Measure 1.1.5 – Percentage of members with an SUD diagnosis receiving withdrawal management services

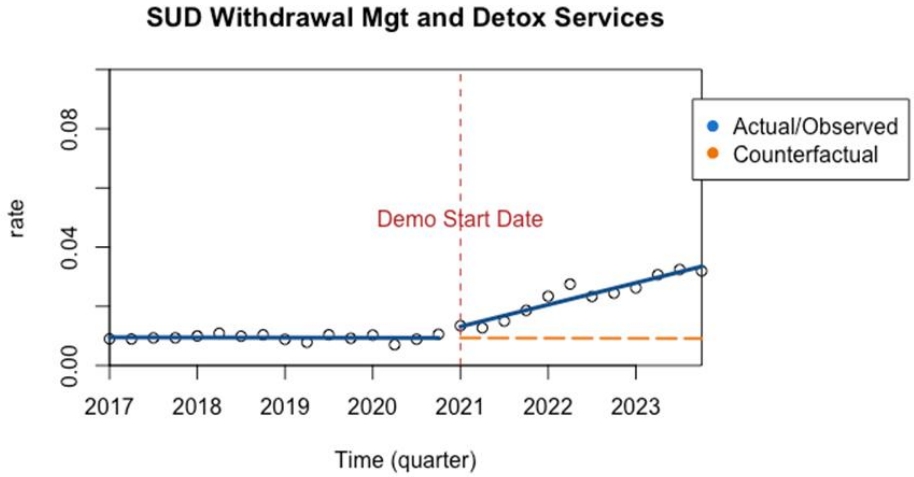
Question 1.	***Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?***
Hypothesis 1.	***The Demonstration will maintain or increase utilization of SUD treatment services.***

Measure Description: The denominator includes all members 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 for 2017 – 2023.

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

Findings: There was a statistically significant sustained increase in the use of withdrawal management and detox services during the Demonstration period.



Withdrawal Mgt/Detox ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.0001	0.0004	None
Immediate Effect of Demonstration Start	0.002	0.001	None
Sustained Effect (Time since demo start)	0.002	0.0002	p<0.01
Constant	0.12	0.74	None

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

There was a slight decline in use associated with the Demonstration's start date and a sustained increase in use during the Demonstration period. Older members, women, members residing in rural areas, and members in the non-ABD Child group were associated with lower use of withdrawal management/detox services. Members in the expansion and non-ABD Adult group were associated with greater use.

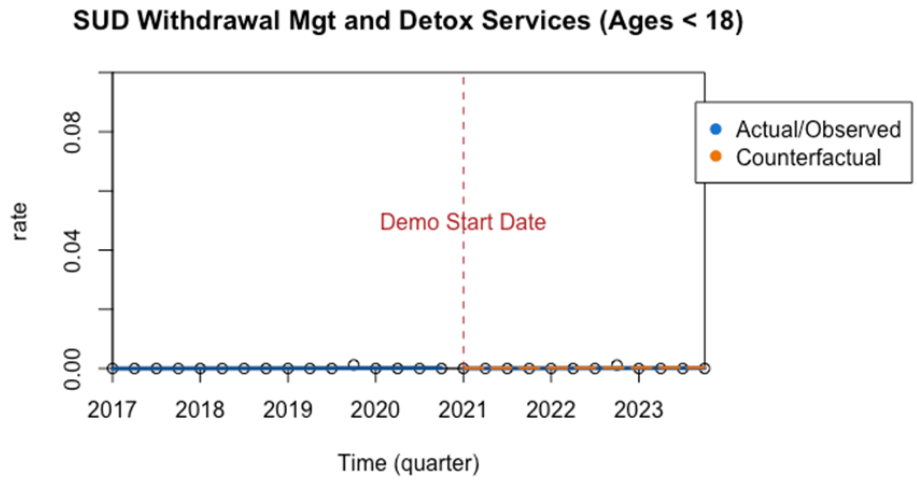
Withdrawal Mgt/Detox GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.00001	0.0002	None
Immediate Effect of Demo Start	-0.004	0.001	p<0.01
Sustained Effect	0.001	0.0001	p<0.01
Age	-0.0002	0.00001	p<0.01
Gender (Female)	-0.006	0.0004	p<0.01
Expansion Group	0.026	0.001	p<0.01
Non-ABD Adult	0.010	0.001	p<0.01
Non-ABD Child	-0.016	0.001	p<0.01
Rural	-0.012	0.0003	p<0.01
Constant	0.007	0.423	p<0.01

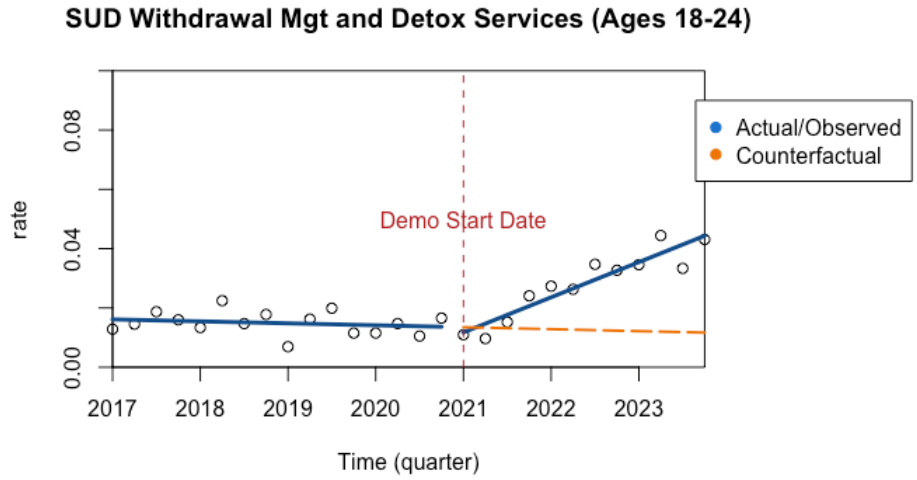
Age

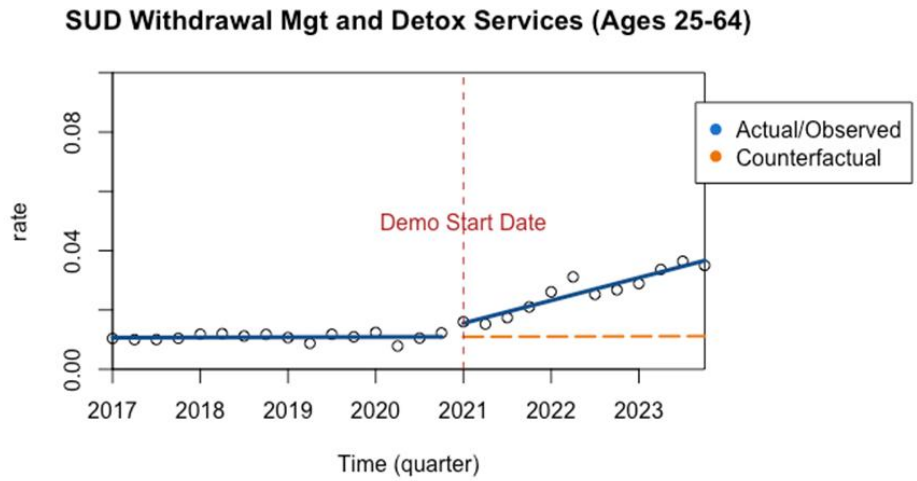
Members ages 18 – 64 were associated with a statistically significant sustained increase in the use of withdrawal management/detox services during the Demonstration period.

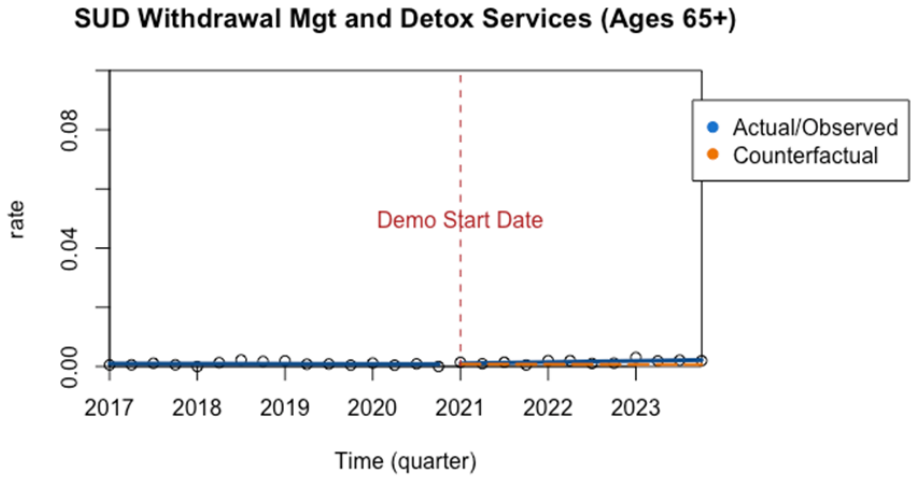
Withdrawal Mgt/Detox ITS Model (Age)	Ages <18	Ages 18-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	0.0001 (0.0001)	-0.001 (0.001)	0.0001 (0.0004)	-0.0001 (0.0001)
Immediate Effect of Demonstration Start (Standard Error)	-0.0002 (0.0003)	-0.005 (0.003)	0.003 (0.002)	0.0002 (0.0005)
Sustained Effect (Standard Error)	-0.0000 (0.0000)	0.003*** (0.0004)	0.002*** (0.0002)	0.0001 (0.0001)
Constant (Standard Error)	-0.10 (0.14)	1.35 (1.79)	-0.14 (0.87)	0.11 (0.28)

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


SUD Withdrawal Mgt and Detox Services (Ages < 18)
rate
0.00
0.04
0.08
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
Time (quarter)


SUD Withdrawal Mgt and Detox Services (Ages 18-24)
rate
0.00
0.04
0.08
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
Time (quarter)


SUD Withdrawal Mgt and Detox Services (Ages 25-64)
rate
0.00
0.04
0.08
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
Time (quarter)

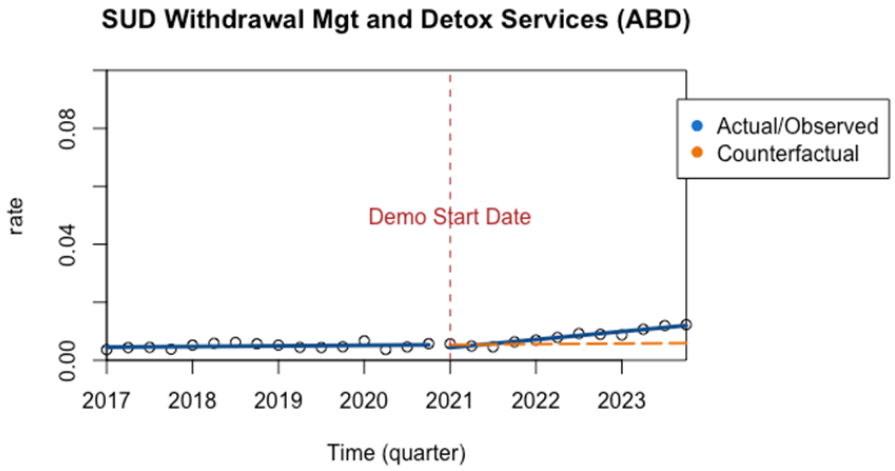


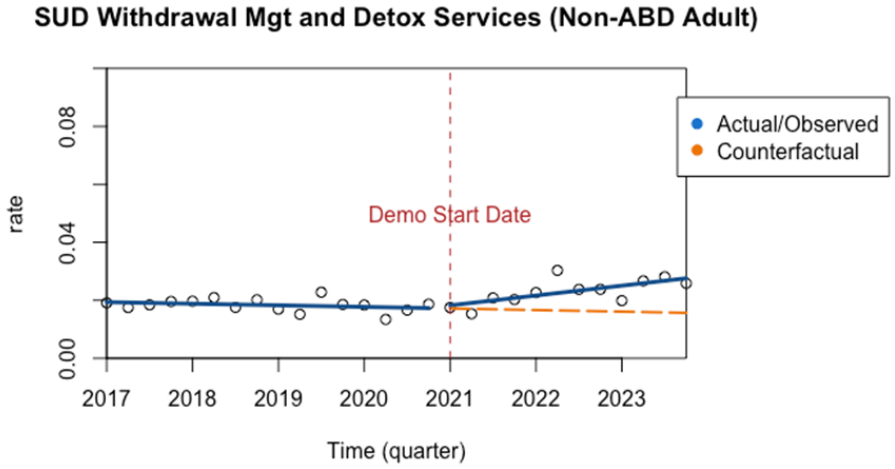
Aid Category

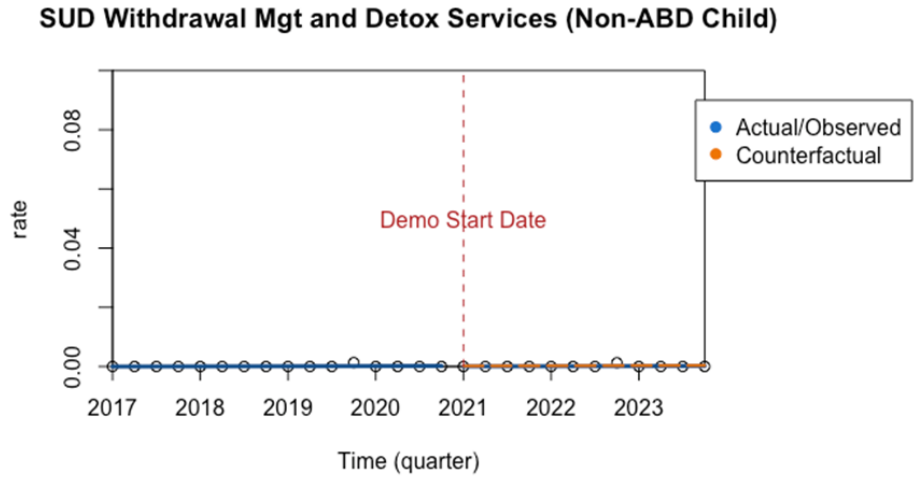
Members in the ABD group showed a statistically significant decrease in the use of withdrawal management/detox services immediately following the start of the Demonstration, countered by a sustained increase in use during the Demonstration period. Members in the non-ABD Adult group showed a sustained increase during the Demonstration period.

Withdrawal Mgt/Detox ITS Model (Aid Category)	ABD	Non-ABD Adult	Non-ABD Child
General Trend (Time) (Standard Error)	0.0002 (0.0002)	-0.001 (0.001)	0.0001 (0.0001)
Immediate Effect of Demonstration Start (Standard Error)	-0.002** (0.001)	0.0001 (0.002)	-0.0002 (0.0003)
Sustained Effect (Standard Error)	0.001*** (0.0001)	0.001*** (0.0003)	-0.0000 (0.0000)
Constant (Standard Error)	-0.41 (0.37)	1.13 (1.20)	-0.11 (0.15)

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


SUD Withdrawal Mgt and Detox Services (ABD)
rate
0.00
0.04
0.08
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


SUD Withdrawal Mgt and Detox Services (Non-ABD Adult)
rate
0.00
0.04
0.08
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

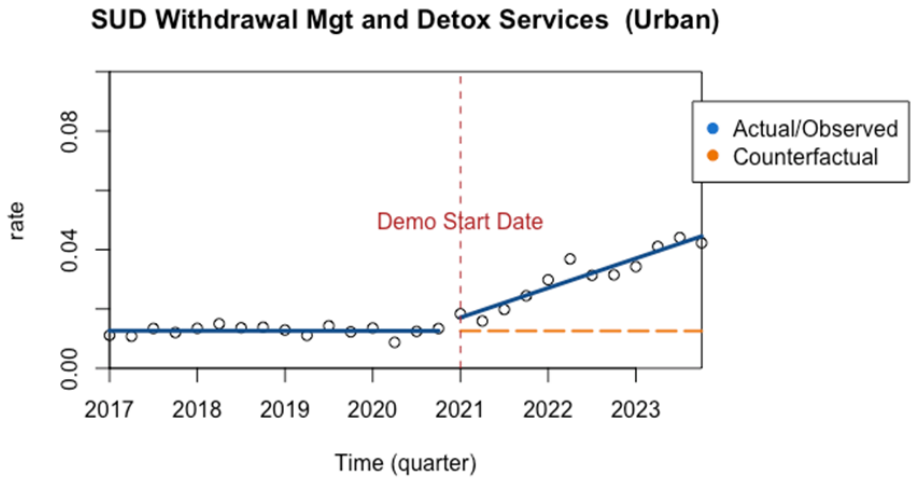

SUD Withdrawal Mgt and Detox Services (Non-ABD Child)
rate
0.00
0.04
0.08
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

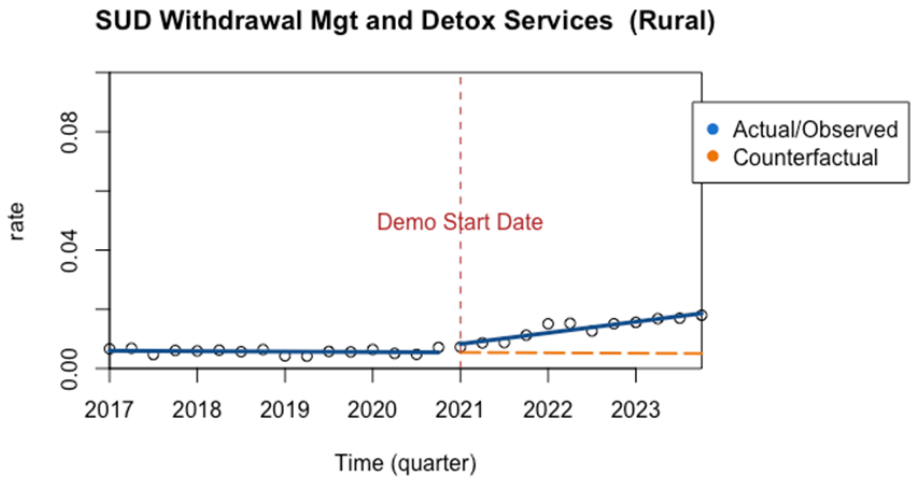
Urban/Rural

Members residing in rural areas showed a statistically significant increase in use of services immediately following the Demonstration's start date and a sustained effect during the Demonstration period. Members residing in urban areas also showed a statistically significant sustained increase in service use during the Demonstration period.

Withdrawal Mgt/Detox ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	-0.0000 (0.001)	-0.0001 (0.0003)
Immediate Effect of Demonstration Start (Standard Error)	0.002 (0.002)	0.002** (0.001)
Sustained Effect (Standard Error)	0.002*** (0.0002)	0.001*** (0.0001)
Constant (Standard Error)	0.04 (1.09)	0.29 (0.51)

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




SUD Withdrawal Mgt and Detox Services (Rural)
rate
0.00
0.04
0.08
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

Measure 1.1.6 – Percentage of members with an SUD diagnosis receiving medication-assisted treatment

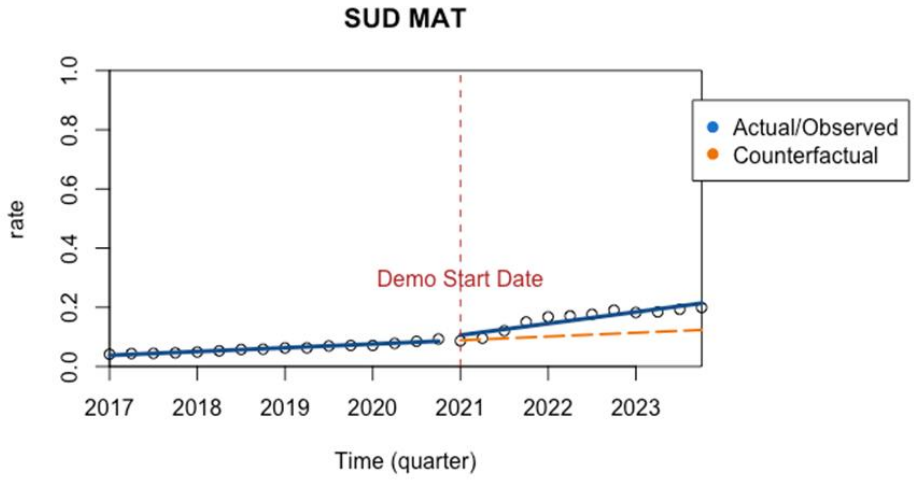
Question 1.	***Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?***
Hypothesis 1.	***The Demonstration will maintain or increase utilization of SUD treatment services.***

Measure Description: The denominator includes all members 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).

Data Source and Time Period: MMIS paid claims for 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 in the use of MAT in the aggregate analysis; a sustained increase also was observed during the Demonstration period.



MAT ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.01	0.002	p<0.01
Immediate Effect of Demonstration Start	0.01	0.01	None
Sustained Effect (Time since demo start)	0.01	0.001	p<0.01
Constant	-25.57	4.68	p<0.01

A generalized linear model was used to control for member demographics. Coefficient estimates are presented below. GLM 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 and sustained effect showed a statistically significant increase in the use of MAT during the Demonstration, although there was a decreased in use associated with the start date of the Demonstration. Older members, members residing in rural areas, and members in the non-ABD Child were associated with lower use. Women, members in the expansion and non-ABD Adult group were associated with increased use of MAT.

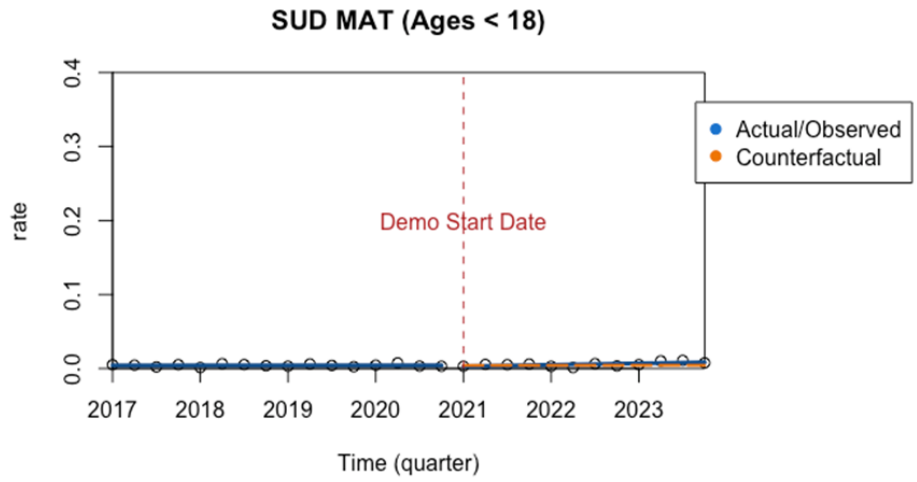
MAT GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.013	0.0005	p<0.01
Immediate Effect of Demonstration Start	-0.008	0.002	p<0.01
Sustained Effect	0.004	0.0002	p<0.01
Age	-0.0004	0.00003	p<0.01
Gender (Female)	0.026	0.001	p<0.01
Expansion Group	0.143	0.001	p<0.01
Non-ABD Adult	0.129	0.001	p<0.01
Non-ABD Child	-0.048	0.003	p<0.01
Rural	-0.021	0.001	p<0.01
Constant	-25.440	1.002	p<0.01

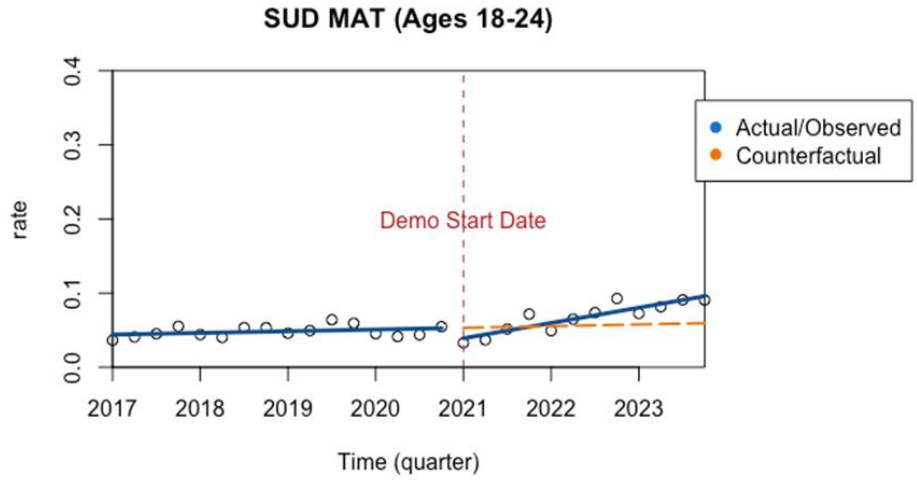
Age

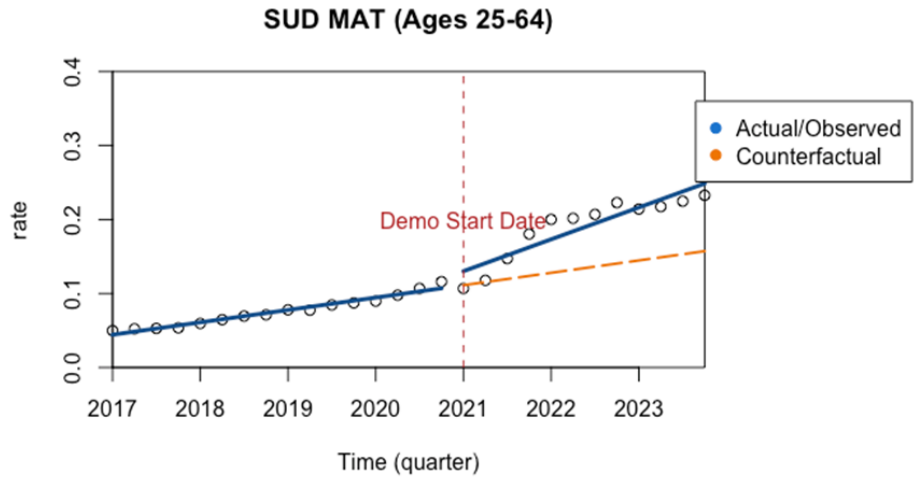
Increases in the general trend were associated with members 25 – 64 years old. Members 19 – 24 years old showed a slight decline in use associated with the start date of the Demonstration. Member 65 years old and older were associated with an increase in MAT use at the start date of the Demonstration. There was a sustained increase in the use of MAT associated with all age groups during the Demonstration period.

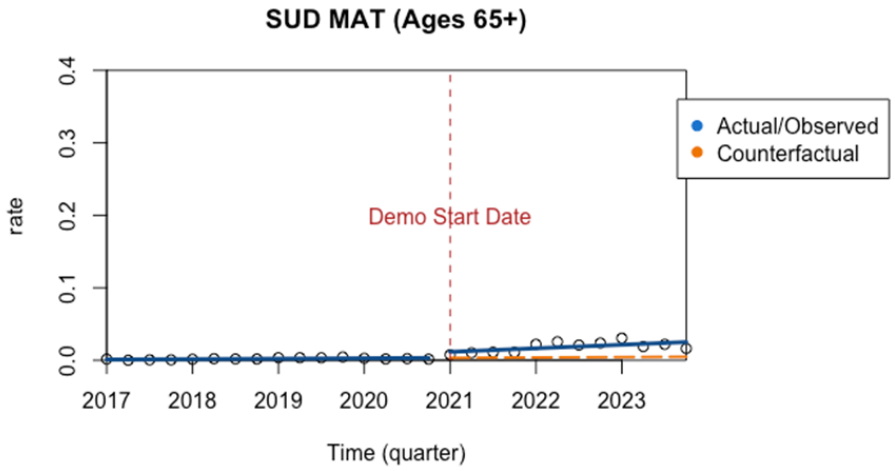
MAT ITS Model (Age)	Ages <18	Ages 18-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	0.0000 (0.0004)	0.002 (0.002)	0.02*** (0.003)	0.001 (0.001)
Immediate Effect of Demonstration Start (Standard Error)	-0.002 (0.002)	-0.02*** (0.01)	0.01 (0.01)	0.01** (0.003)
Sustained Effect (Standard Error)	0.0005** (0.0002)	0.005*** (0.001)	0.01*** (0.001)	0.001*** (0.0004)
Constant (Standard Error)	-0.05 (0.91)	-4.57 (3.69)	-33.72*** (5.40)	-1.13 (1.68)

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


SUD MAT (Ages < 18)
rate
0.0
0.1
0.2
0.3
0.4
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
Time (quarter)


SUD MAT (Ages 18-24)
rate
0.0
0.1
0.2
0.3
0.4
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
Time (quarter)


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

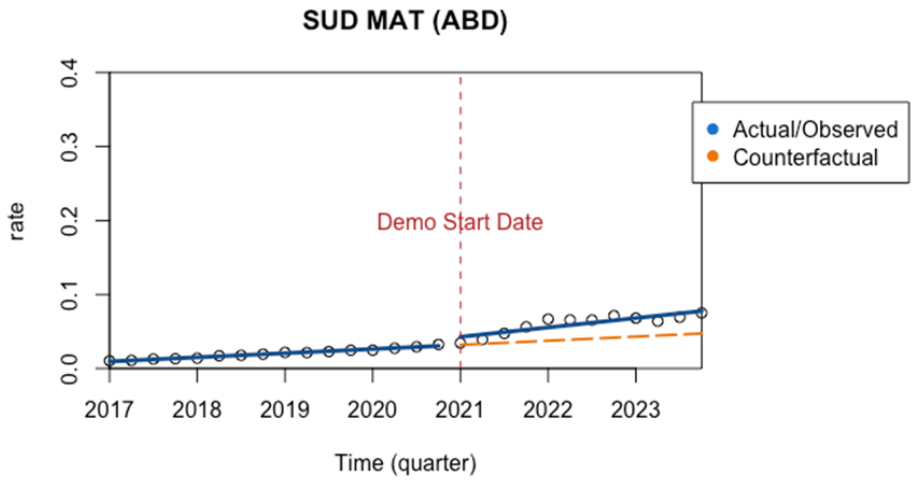


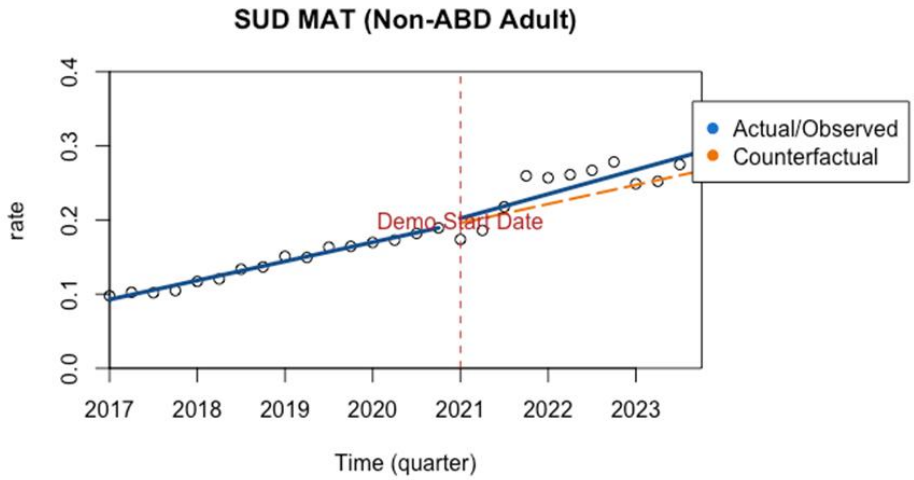
Aid Category

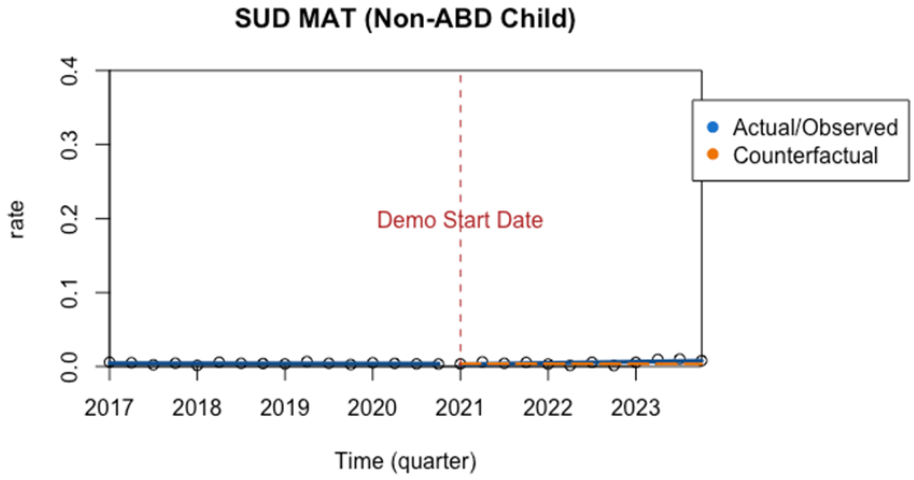
The general trend showed an increase in MAT use for the ABD and non-ABD Adult group. Members in the ABD group also were associated with increased use immediately following the start of the Demonstration and during the Demonstration period. There was a sustained increase in use of MAT for members in the non-ABD Child group during the Demonstration.

MAT ITS Model (Aid Category)	ABD	Non-ABD Adult	Non-ABD Child
General Trend (Time) (Standard Error)	0.01*** (0.001)	0.03*** (0.003)	-0.0001 (0.0004)
Immediate Effect of Demonstration Start (Standard Error)	0.01** (0.003)	0.005 (0.01)	-0.001 (0.002)
Sustained Effect (Standard Error)	0.002*** (0.0004)	0.002 (0.001)	0.0005** (0.0002)
Constant (Standard Error)	-11.29*** (1.93)	-51.89*** (6.40)	0.30 (0.86)

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


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


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

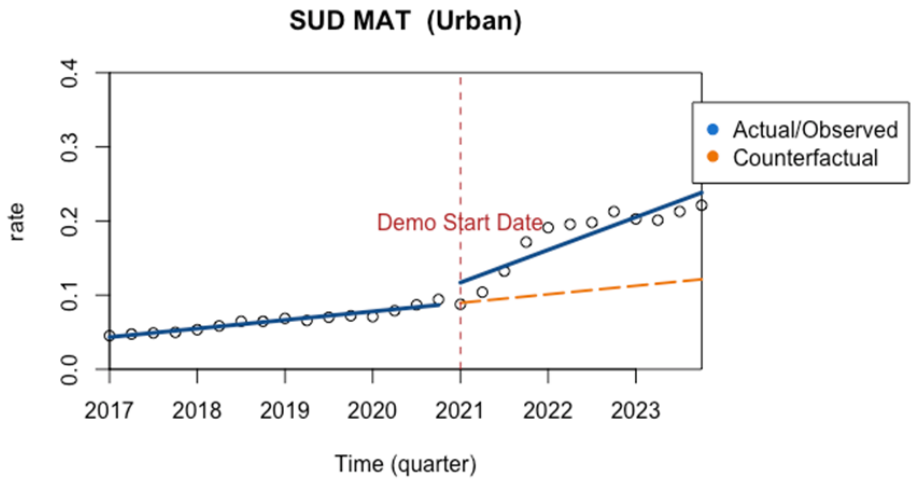

SUD MAT (Non-ABD Child)
rate
0.0
0.1
0.2
0.3
0.4
Demo Start Date
Actual/Observed
Counterfactual
2017
2018
2019
2020
2021
2022
2023
Time (quarter)

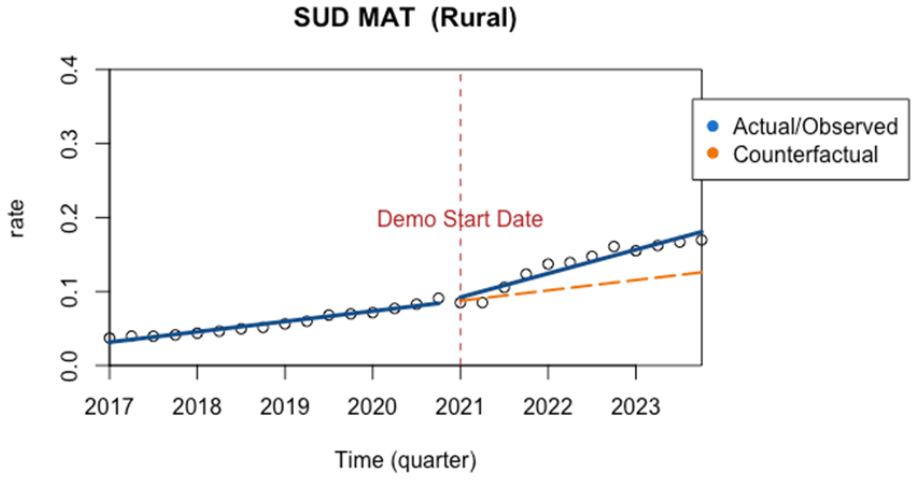
Urban/Rural

The general trend showed an increase in the use of MAT services for members in both urban and rural areas. There was a sustained increase in use for both groups during the Demonstration period.

MAT ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	0.01*** (0.003)	0.01*** (0.001)
Immediate Effect of Demonstration Start (Standard Error)	0.02 (0.01)	0.0002 (0.01)
Sustained Effect (Standard Error)	0.01*** (0.001)	0.005*** (0.001)
Constant (Standard Error)	-23.26*** (6.24)	-28.18*** (2.96)

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





Hypothesis 2 of Question 1 posits that the Demonstration will maintain or increase SUD provider availability. The measures are:

1.2.1. The percentage change in providers enrolled in Medicaid and qualified to deliver SUD services
1.2.2. The percentage change in providers enrolled in Medicaid and qualified to deliver MAT services

Measure Number	Description
1.2.1	Percentage change in providers enrolled in Medicaid and qualified to deliver SUD services
1.2.2	Percentage change in providers enrolled in Medicaid and qualified to deliver MAT services

Measure 1.2.1 – Percentage change in providers enrolled in Medicaid and qualified to deliver SUD services

Measure 1.2.2 – Percentage change in providers enrolled in Medicaid and qualified to deliver 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 enrolled SUD providers and those qualified to deliver MAT was obtained from OHCA monitoring protocol metric results reported to CMS for each year of the Demonstration.

Data Source and Time Period: Medicaid provider enrollment and 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, and those who are qualified to deliver MAT, has increased in each year of the Demonstration. The total number of enrolled SUD treatment providers was 854 in 2021, 909 in 2022, and 923 in 2023. Those who are qualified to deliver MAT rose from a baseline of 632 in 2021 to 696 in 2022, and 733 in 2023. The change from baseline is statistically significant in each year.

Year	Total Enrolled SUD Treatment Providers	Percent Change From Baseline	Total Qualified To Provide MAT	Percent Change From Baseline
2021	854	-	632	-
2022	909	6.4%*	696	10.1%*
2023	923	8.1%*	733	16.0%*

**Statistically significant change from baseline*

Hypothesis 3 of Question 1 posits that the Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug dependence. The measures examined are:

Measure Number	Description
1.3.1	Percentage of ED visits for 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

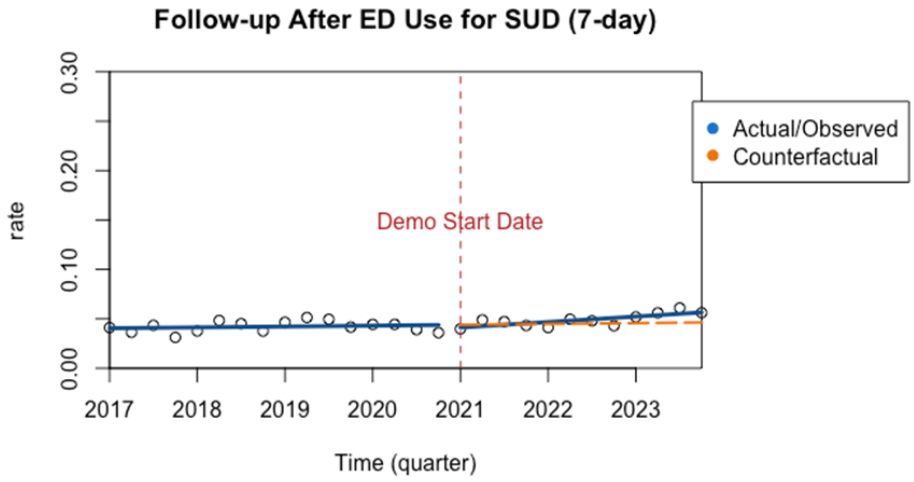
Question 1.	***Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?***
Hypothesis 3.	***The Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug dependence.***

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 follow-up visits with an outpatient provider within 7 days of the ED visit.

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

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

Findings: There was a statistically significant sustained increase in follow-up within 7 days of ED use for SUD during the Demonstration period in the aggregate analysis.



Follow-up After ED (7-day) ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.001	0.001	None
Immediate Effect of Demonstration Start	-0.004	0.004	None
Sustained Effect (Time since demo start)	0.001	0.001	p<0.05
Constant	-1.71	2.26	None

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. GLM 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 start of the Demonstration was associated with a slight decrease in follow-up. Older members, members in the expansion, and non-ABD Adult group were associated with an increase in follow-up. Women were associated with a decrease in follow-up.

Follow-up After ED (7-day) GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.001	0.001	None
Immediate Effect of Demo Start	-0.008	0.003	p<0.01
Sustained Effect	0.0004	0.0004	None
Age	0.001	0.0001	p<0.01
Gender (Female)	-0.006	0.002	p<0.01
Expansion Group	0.032	0.002	p<0.01
Non-ABD Adult	0.025	0.002	p<0.01
Non-ABD Child	0.002	0.004	None
Rural	0.0003	0.002	None
Constant	-1.674	2.018	None

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

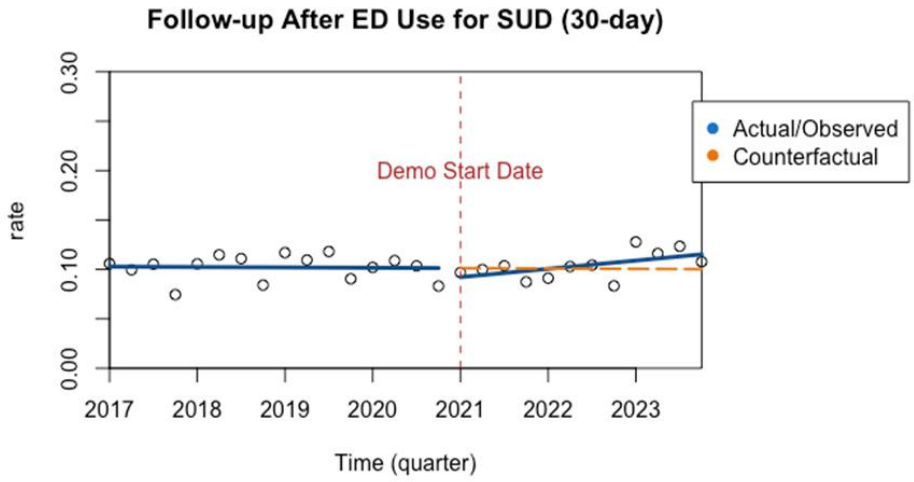
Question 1.	***Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?***
Hypothesis 3.	***The Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug dependence.***

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 follow-up visits with an outpatient provider within 30 days of the ED visit.

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

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

Findings: There were no statistically significant trends associated with follow-up within 30 days after ED use for SUD.



Follow-up After ED (30-day) ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.0004	0.003	None
Immediate Effect of Demonstration Start	-0.01	0.01	None
Sustained Effect (Time since demo start)	0.002	0.001	None
Constant	0.87	5.55	None

A generalized linear model was used to control for member demographics. Coefficient estimates are presented below. GLM 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 start of the Demonstration is associated with an initial decrease in follow-up. Older members and members in the expansion and non-ABD Adult groups are associated with an increase in follow-up within 30days after the ED use for SUD. Women were associated with a decrease in follow-up.

Follow-up After ED (30-day) GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-0.0005	0.001	None
Immediate Effect of Demo Start	-0.019	0.005	p<0.01
Sustained Effect	0.001	0.001	None
Age	0.002	0.0001	p<0.01
Gender (Female)	-0.007	0.002	p<0.01
Expansion Group	0.058	0.003	p<0.01
Non-ABD Adult	0.046	0.003	p<0.01
Non-ABD Child	0.004	0.006	None
Rural	-0.001	0.002	None
Constant	0.967	2.922	None

Hypothesis 4 of Question 1 posits that the Demonstration will maintain or increase initiation and engagement in treatment. The measures examined are:

Measure Number	Description
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

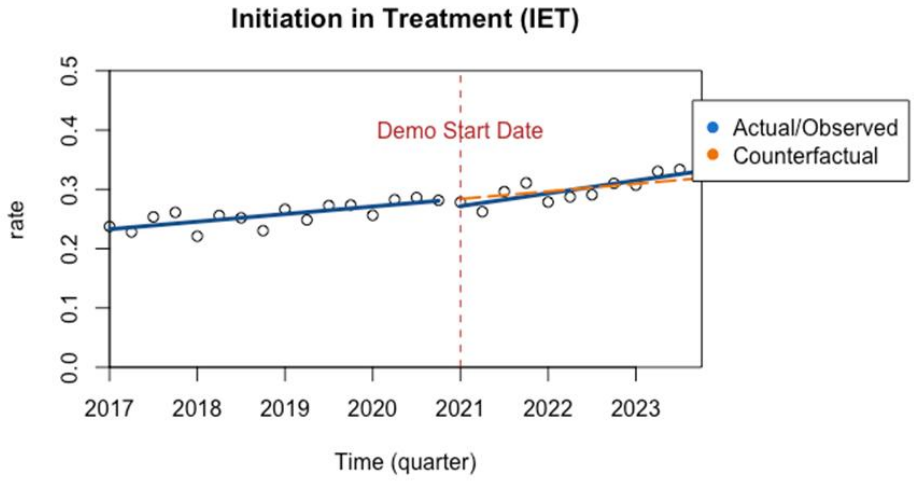
Question 1.	***Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?***
Hypothesis 4.	***Demonstration will maintain or increase initiation and engagement in treatment.***

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

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

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

Findings: The general trend showed a statistically significant increase in members initiating SUD treatment. There were no other statistically significant trends associated with the Demonstration.



Initiation ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.01	0.003	p<0.01
Immediate Effect of Demonstration Start	-0.01	0.01	None
Sustained Effect (Time since demo start)	0.002	0.001	None
Constant	-25.53	5.89	p<0.01

A generalized linear model was used to control for member demographics. Coefficient estimates are presented below. GLM 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 trend over time is associated with an increase in members initiating in treatment, although there was a slight decline associated with the start of the Demonstration. Older members, members in the expansion, and non-ABD Adult group are associated with increases in initiation. Women and members residing in rural areas are associated with a decrease in initiation in SUD treatment.

Initiation GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.012	0.001	p<0.01
Immediate Effect of Demo Start	-0.028	0.004	p<0.01
Sustained Effect	0.0003	0.001	None
Age	0.001	0.0001	p<0.01
Gender (Female)	-0.053	0.002	p<0.01
Expansion Group	0.061	0.003	p<0.01
Non-ABD Adult	0.026	0.003	p<0.01
Non-ABD Child	-0.021	0.006	None
Rural	-0.053	0.002	p<0.01
Constant	-24.854	2.618	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

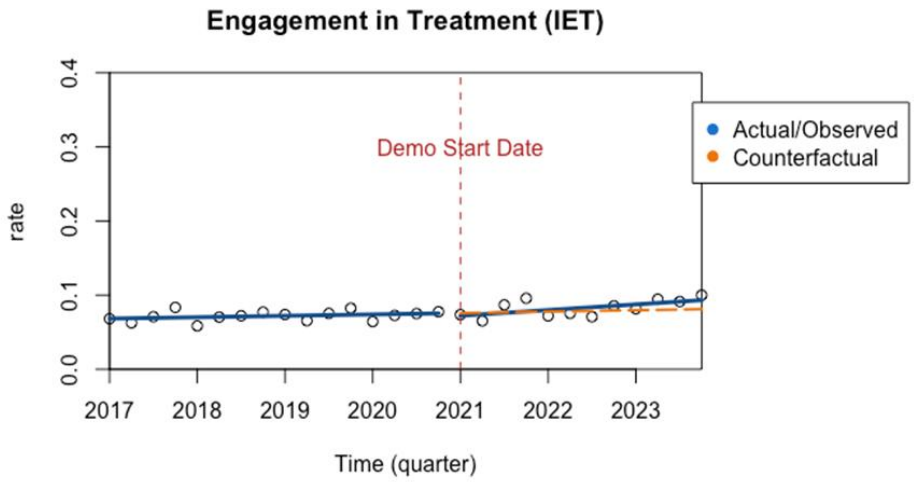
Question 1.	***Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD?***
Hypothesis 4.	***Demonstration will maintain or increase initiation and engagement in treatment.***

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 for 2017 – 2023.

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

Findings: There were no statistically significant trends associated with engagement in SUD treatment.



Engagement ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.002	0.002	None
Immediate Effect of Demonstration Start	-0.01	0.01	None
Sustained Effect (Time since demo start)	0.001	0.001	None
Constant	-3.73	3.49	None

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

An increase in engagement in treatment services is associated with the overall time period studied. The start of the Demonstration is associated with a slight decrease in engagement, but with a sustained increase observed during the Demonstration period. Older members, expansion, and non-ABD groups (adults and children) are associated with an increase in engagement. Women and members residing in rural areas are associated with a decrease in engagement.

Engagement GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.002	0.001	p<0.01
Immediate Effect of Demo Start	-0.009	0.003	p<0.01
Sustained Effect	0.001	0.0003	p<0.05
Age	0.0003	0.0001	p<0.01
Gender (Female)	-0.016	0.001	p<0.01
Expansion Group	0.030	0.002	p<0.01
Non-ABD Adult	0.031	0.002	p<0.01
Non-ABD Child	0.075	0.003	p<0.01
Rural	-0.004	0.001	p<0.01
Constant	-4.098	1.562	p<0.01

Evaluation Question 1 Summary

A summary of the findings related to evaluation Question 1 is presented below. Findings are summarized related both to the general trend and the sustained effect of the Demonstration period, and to control for the potential effect of the expansion group on outcomes.

When members in the expansion population were removed from the ITS, there was a statistically significant sustained decrease in the use of residential/inpatient services. In addition, sustained increases in the use of MAT and in 7-day follow-up after the ED for SUD were no longer significant. These changes suggest that expansion group members accounted for the increase observed in these outcomes (see Attachment 3).

Measure	Interrupted Time Series		
	General Trend	Sustained Effect	Significant Change without Expansion Pop
Hypothesis 1. The Demonstration will maintain or increase utilization of SUD treatment services			
1.1.1. Members receiving any SUD treatment service	↑	-	No
1.1.2. Members receiving SUD outpatient treatment	↑	-	Yes
1.1.3. Members receiving IOP/PH	-	-	No
1.1.4. Members receiving residential and inpatient	↑	-	Yes
1.1.5. Members receiving withdrawal mgt/detox	-	↑	No
1.1.6. Members receiving MAT	↑	↑	Yes
Hypothesis 2. The Demonstration will maintain or increase SUD provider availability			
1.2.1. Pct change in the number of providers enrolled in Medicaid qualified to deliver SUD treatment services	↑*	n/a	n/a
1.2.2. Pct change in the number of providers enrolled in Medicaid qualified to deliver SUD treatment services	↑*	n/a	n/a
Hypothesis 3. The Demonstration will maintain or increase follow-up after ED visits for alcohol and other drug dependence			
1.3.1. ED visits for AOD abuse or dependence with follow-up within 7-days of discharge	-	↑	Yes
1.3.2. ED visits for AOD abuse or dependence with follow-up within 30-days of discharge	-	-	No

Measure	Interrupted Time Series		
	General Trend	Sustained Effect	Significant Change without Expansion Pop
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	↑	-	No
1.4.2. Members who initiate treatment and engage in SUD treatment	-	-	No

Notes:
- No statistically significant change in trend
↑Statistically significant increase
↑*studied using a test of proportionality

SUD Evaluation Question 2 – Does the Demonstration maintain or increase adherence to and retention in treatment for alcohol or other drug use?

Evaluation Question 2 has one hypothesis: The Demonstration will maintain or increase continuity of pharmacotherapy for OUD. The measure examined is presented below.

Measure Number	Description
2.1.1	Percentage of 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 with pharmacotherapy for OUD who have at least 180 days of continuous treatment

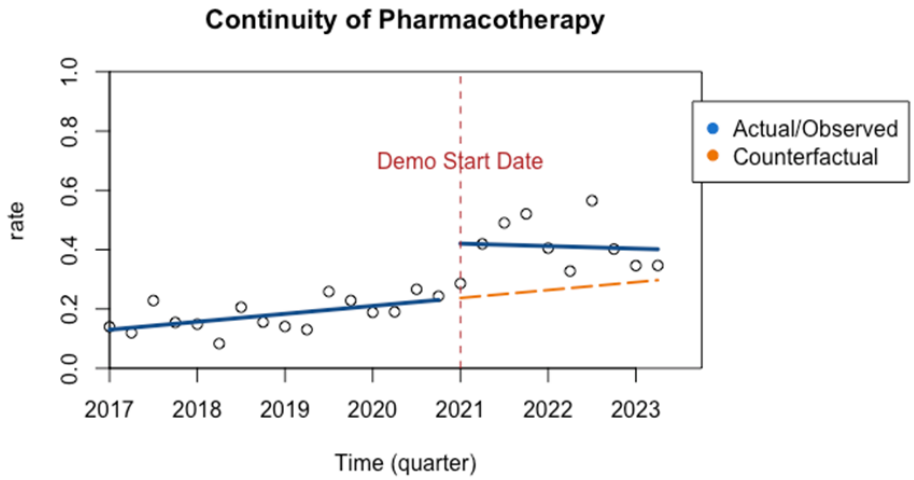
Question 2.	***Does the Demonstration maintain or increase adherence to and retention in treatment for alcohol or other drug use?***
Hypothesis 1.	***The Demonstration will maintain or increase continuity of pharmacotherapy for OUD.***

Measure Description: The denominator includes the number of Opioid Health Home (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 for 2017 – 2023.

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

Findings: There was a statistically significant increase in members receiving continuous pharmacotherapy treatment associated with the start of the Demonstration. No other statistically significant trends were observed.



Continuity of Pharmacotherapy ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.03	0.01	None
Immediate Effect of Demonstration Start	0.19	0.06	p<0.01
Sustained Effect (Time since demo start)	-0.01	0.01	None
Constant	-53.79	29.79	None

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

There was a statistically significant increase in continuity of pharmacotherapy over time and associated with the start date of the Demonstration. However, a decrease was sustained during the Demonstration period.

Older members and women were associated with increased continuity, while expansion group members and members residing in rural areas were associated with a decrease in continuity of pharmacotherapy.

Continuity of Pharmacotherapy GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.026	0.004	p<0.01
Immediate Effect of Demo Start	0.233	0.013	p<0.01
Sustained Effect	-0.011	0.002	p<0.01
Age	0.002	0.0003	p<0.01
Gender (Female)	0.022	0.007	p<0.01
Expansion Group	-0.021	0.010	p<0.05
Non-ABD Adult	0.007	0.010	None
Non-ABD Child	-0.064	0.101	None
Rural	-0.076	0.006	p<0.01
Constant	-53.000	8.710	p<0.01

Evaluation Question 2 Summary

A summary of the findings related to evaluation Question 2 is presented below. Findings are summarized related both to the general trend and the sustained effect of the Demonstration period, and to control for the potential effect of the expansion group on outcomes.

When members in the expansion population were removed from the ITS, there were no statistically significant changes in trends.

	Interrupted Time Series		
Measure	**General Trend**	**Sustained Effect**	**Significant Change Without Expansion Pop**
Hypothesis 1. The Demonstration will maintain or increase continuity of pharmacotherapy for OUD			
2.1.1. Percentage of members ages 18 and older who have at least 180 days of continuous OUD treatment	↑	-	No

Notes
- No statistically significant change in trend
↑Statistically significant increase

SUD Evaluation Question 3 – Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?

Evaluation Question 3 has one hypothesis: The Demonstration will contain or reduce the use of opioids at a high dosage. The measure examined is presented below.

Measure Number	Description
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

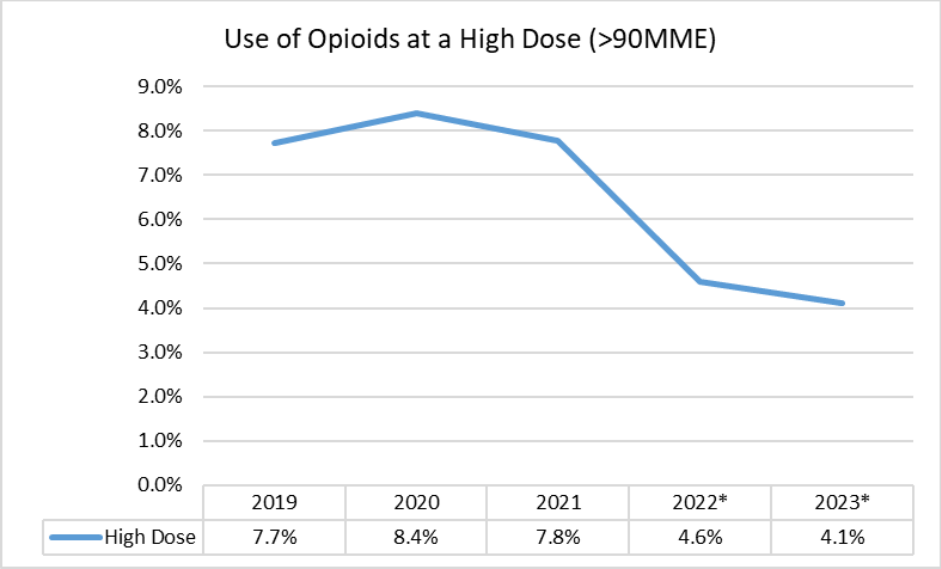
Question 3.	***Does the Demonstration contain or reduce opioid prescribing patterns that may lead to misuse or OUD?***
Hypothesis 1.	***The Demonstration will contain or reduce the use of opioids at a high dosage.***

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 for 2017 – 2023.

Analytical Approach: Logistic regression. Demonstration Year results (2021 – 2023) 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: There have been statistically significant decreases in the percentage of members prescribed opioids at a high dose in each year of the Demonstration (lower rates are preferred). The baseline of 8.4 percent dropped to 7.8 percent in 2021, 4.6 percent in 2022, and 4.1 percent in 2023.



**Statistically Significant Change from Baseline*

Evaluation Question 3 Summary

A summary of the findings related to evaluation Question 3 is presented below. Secondary test without expansion members was not performed due to the strength of the downward trend for the total population.

Measure	Analytic Approach	Statistically Significant Improvement
Hypothesis 1. The Demonstration will contain or reduce the use of opioids at a high dosage		
2.1.2. 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

SUD Evaluation Question 4 - Does the Demonstration contain or reduce overdose deaths?

Evaluation Question 4 has one hypothesis: The Demonstration will contain or reduce the rate of overdose deaths due to opioids in the Medicaid population.

The question was suspended due to data availability issues (see Attachment 1).

SUD Evaluation Question 5 – Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with an SUD?

Evaluation Question 5 includes the following two subsidiary questions:

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

b. How does service utilization vary by geographic areas (e.g., urban v rural)?

Hypothesis 1 of Question 5 posits that the Demonstration will contain or reduce the rate of ED visits. The measure examined is presented below.

Measure Number	Description
5.1.1	Total number of ED visits per 1,000 members with an SUD enrolled in Medicaid for at least one month

Measure 5.1.1 – Total number of ED visits per 1,000 members with an SUD enrolled in Medicaid for at least one month

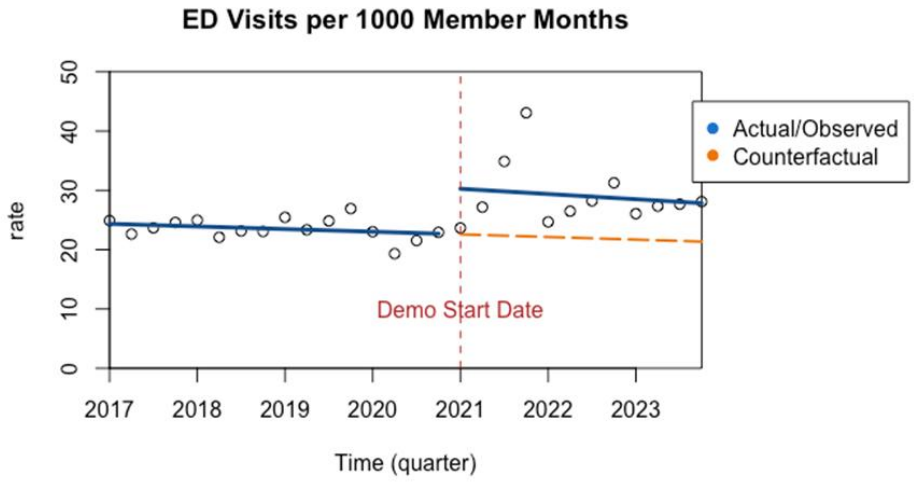
Question 5.	***Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with an SUD?***
Hypothesis 1.	***The Demonstration will contain or reduce the rate of ED visits.***

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

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

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

Findings: There was a statistically significant increase in ED use associated with the start of the Demonstration in the aggregate analysis.



ED Visits ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.44	0.82	None
Immediate Effect of Demonstration Start	7.79	2.96	p<0.05
Sustained Effect (Time since demo start)	-0.11	0.38	None
Constant	920.25	1,662.64	None

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

There was a statistically significant decrease in ED use over time (both general and sustained trends). However, the start of the Demonstration was associated with a statistically significant increase in use.

Older members, women, members residing in rural areas, and members in the non-ABD group (adults and children) were associated with decreased ED use. Members in the expansion group were associated with increased ED use.

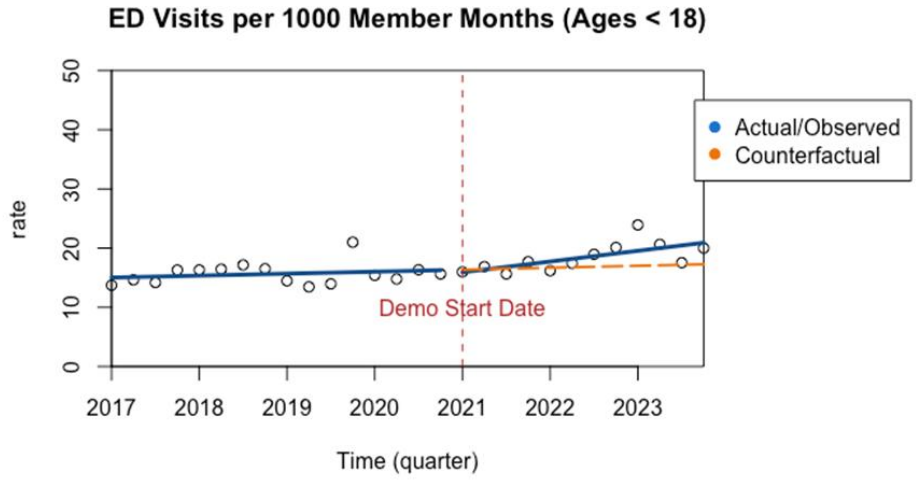
ED Visits GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-0.305	0.137	p<0.05
Immediate Effect of Demo Start	4.697	0.471	p<0.01
Sustained Effect	-0.532	0.058	p<0.01
Age	-0.380	0.009	p<0.01
Gender (Female)	-3.262	0.229	p<0.01
Expansion Group	4.524	0.365	p<0.01
Non-ABD Adult	-13.205	0.334	p<0.01
Non-ABD Child	-25.344	0.719	p<0.01
Rural	-4.839	0.221	p<0.01
Constant	666.407	275.942	p<0.05

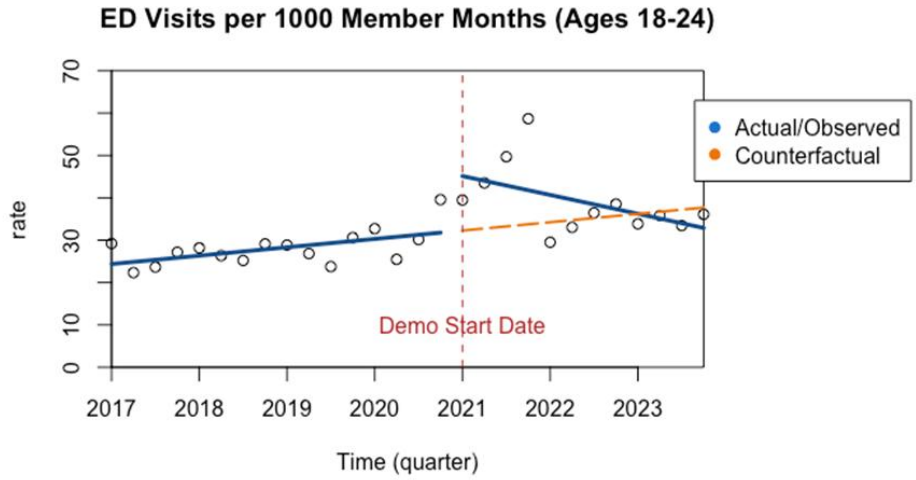
Age

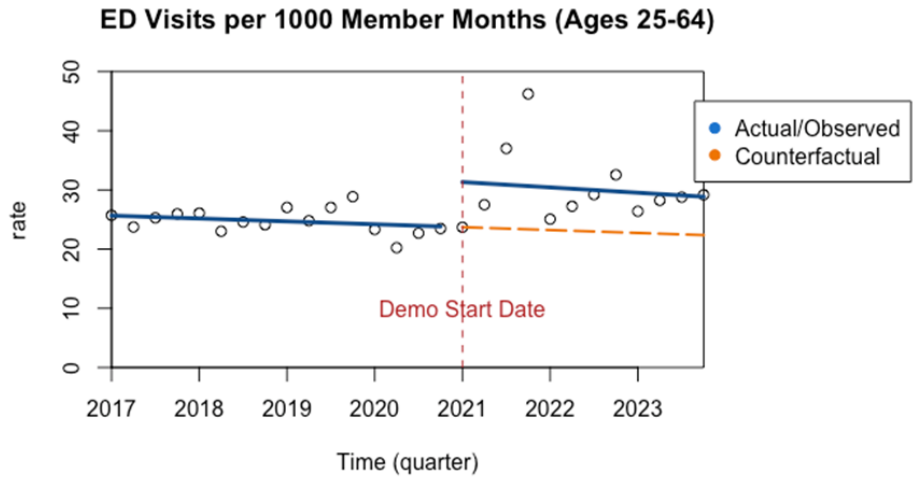
The general trend for members 65 years and older showed a decrease in ED use. Members 18 – 64 years old showed increased ED use immediately following the start of the Demonstration. Members 18 – 24 years old had a sustained decline in ED use during the Demonstration period.

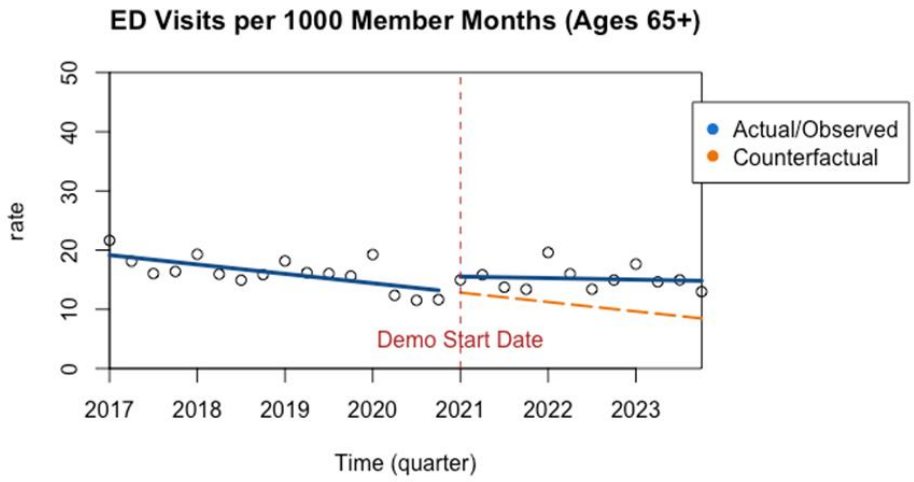
ED Visits ITS Model (Age)	Ages <18	Ages 18-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	0.33 (0.40)	1.97 (1.20)	-0.49 (0.96)	-1.59*** (0.45)
Immediate Effect of Demonstration Start (Standard Error)	-0.80 (1.45)	14.48*** (4.29)	7.72** (3.44)	2.38 (1.61)
Sustained Effect (Standard Error)	0.37 (0.19)	-1.61*** (0.55)	-0.10 (0.44)	0.33 (0.21)
Constant (Standard Error)	-655.05 (813.41)	-3,957.29 (2,414.70)	1,010.00 (1,934.13)	3,217.89*** (903.37)

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


ED Visits per 1000 Member Months (Ages < 18)
rate
0
10
20
30
40
50
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


ED Visits per 1000 Member Months (Ages 18-24)
rate
0
10
30
50
70
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


ED Visits per 1000 Member Months (Ages 25-64)
rate
0
10
20
30
40
50
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

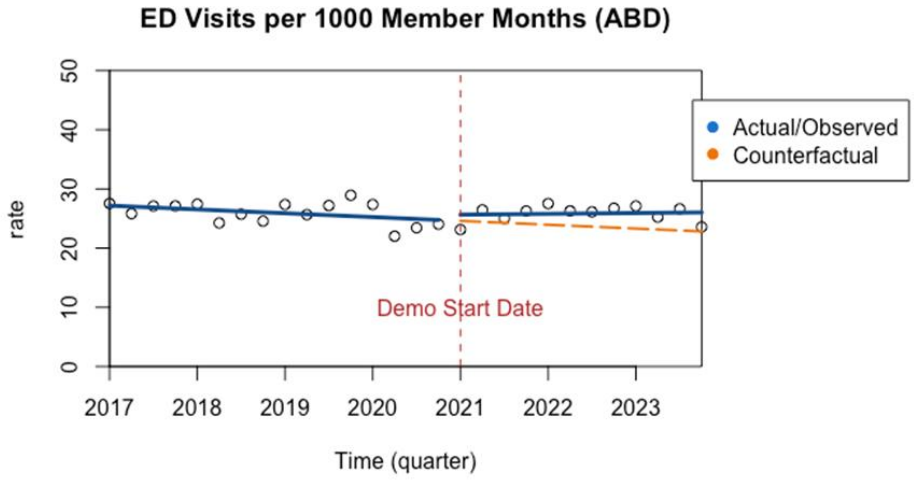


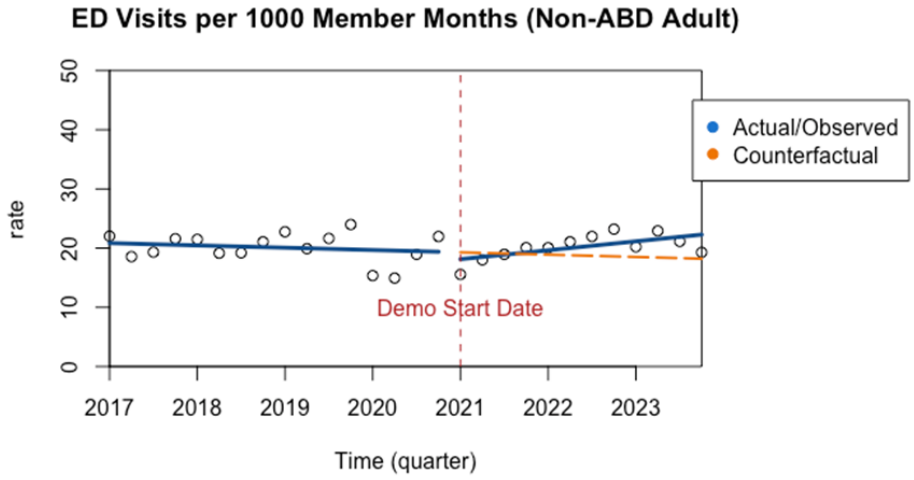
Aid Category

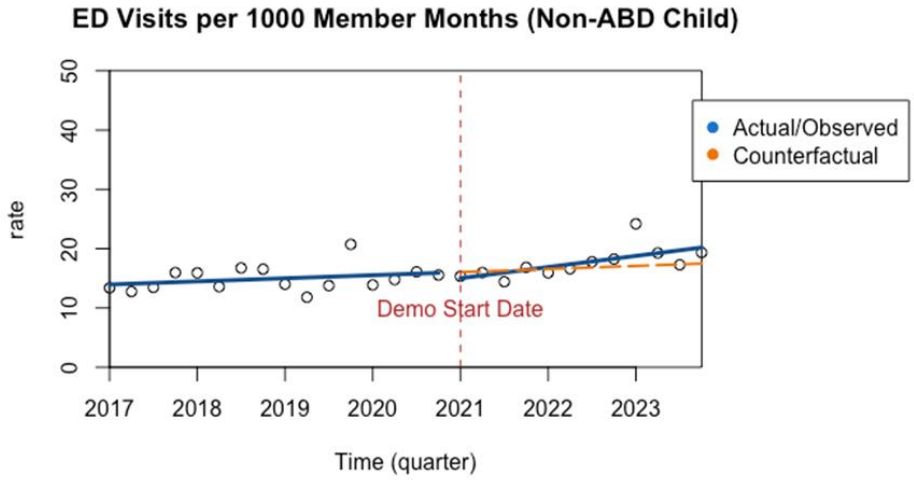
There was a sustained increase in ED use in the non-ABD Adult group. No other statistically significant trends were observed.

ED Visits ITS Model (Aid Category)	ABD	Non-ABD Adult	Non-ABD Child
General Trend (Time) (Standard Error)	-0.65 (0.35)	-0.39 (0.48)	0.52 (0.45)
Immediate Effect of Demonstration Start (Standard Error)	0.86 (1.27)	-1.63 (1.73)	-1.37 (1.61)
Sustained Effect (Standard Error)	0.20 (0.16)	0.47** (0.22)	0.34 (0.21)
Constant (Standard Error)	1,331.18 (712.74)	808.74 (972.28)	-1,039.12 (902.78)

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





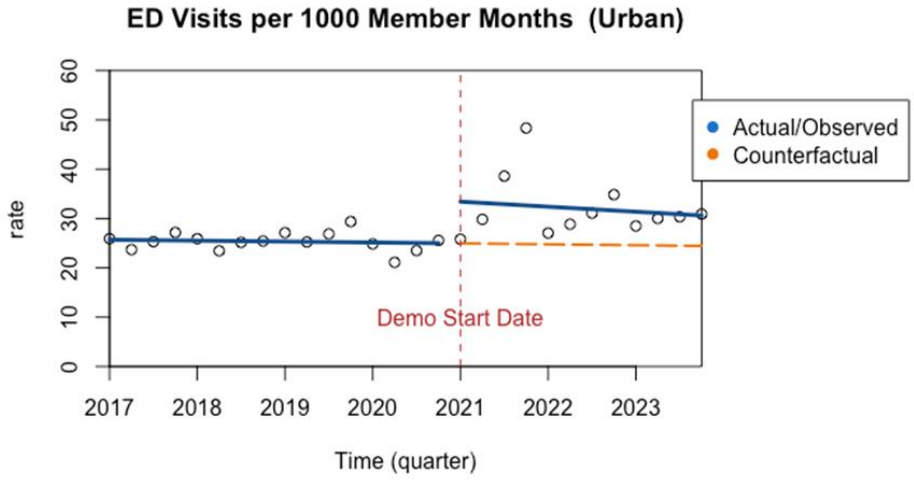


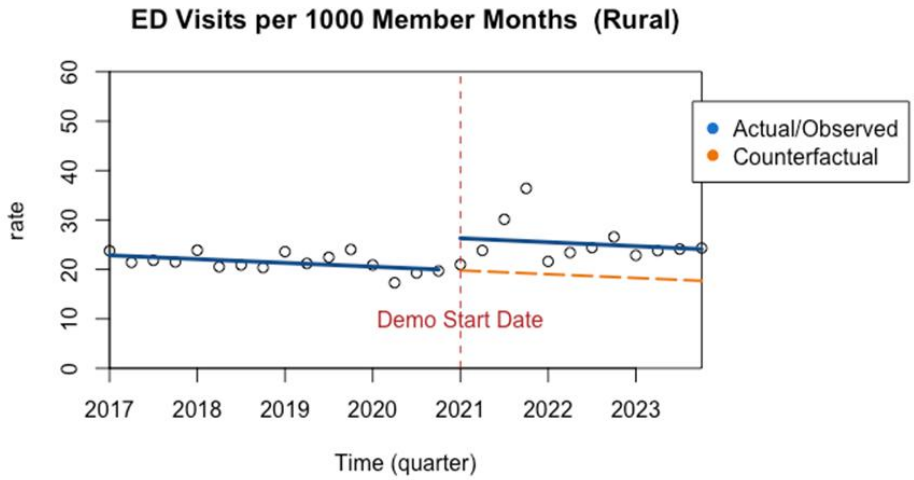
Urban/Rural

The Demonstration start date was associated with an increase in ED use for members both in rural and urban areas. No other statistically significant trends were observed.

ED Visits ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	-0.19 (0.95)	-0.76 (0.67)
Immediate Effect of Demonstration Start (Standard Error)	8.67** (3.41)	6.52** (2.42)
Sustained Effect (Standard Error)	-0.21 (0.44)	-0.01 (0.31)
Constant (Standard Error)	400.15 (1,920.00)	1,561.31 (1,358.79)

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


ED Visits per 1000 Member Months (Urban)
rate
0
10
20
30
40
50
60
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


ED Visits per 1000 Member Months (Rural)
rate
0
10
20
30
40
50
60
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

Hypothesis 2 of Question 5 posits that the Demonstration will contain or reduce inpatient admissions. The Hypothesis includes two subsidiary questions.

a. Does the Demonstration maintain or improve inpatient utilization by sub-population?

b. Does the Demonstration maintain or improve Inpatient utilization in both urban and rural areas?

The measure examined under Hypothesis 2 is presented below.

Measure Number	Description
5.2.1	Total number of inpatient stays per 1,000 members with an SUD enrolled in Medicaid for at least one month

Measure 5.2.1 – Total number of inpatient stays per 1,000 members for members enrolled in Medicaid for at least one month

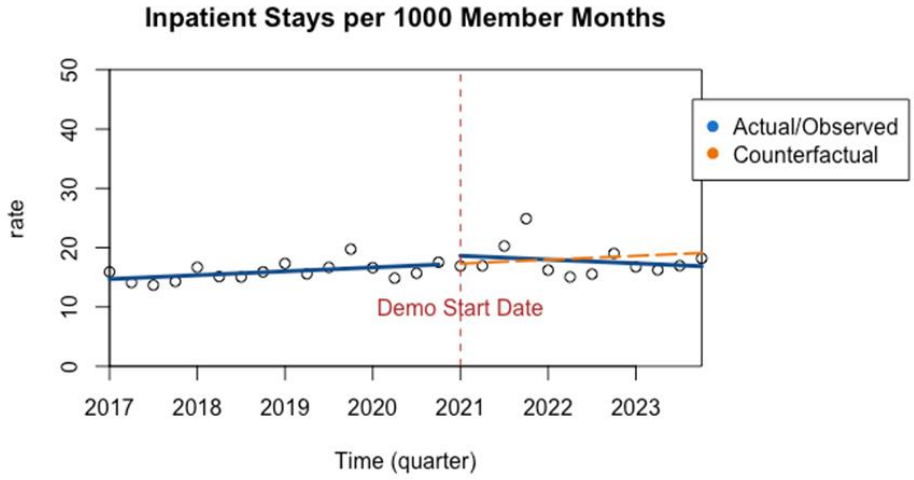
Question 5.	***Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with an SUD?***
Hypothesis 2.	***The Demonstration will contain or reduce inpatient admissions for members with an SUD.***

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

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

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

Findings: There were no statistically significant trends observed related to inpatient utilization in the aggregate analysis.



Inpatient ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.65	0.44	None
Immediate Effect of Demonstration Start	1.64	1.60	None
Sustained Effect (Time since demo start)	-0.32	0.20	None
Constant	-1,300.24	897.82	None

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

There was a statistically significant increase in inpatient care, both over time and immediately following the start of the Demonstration. The Demonstration period was associated with a sustained decrease in the use of inpatient care.

Older members and members in the non-ABD Child group were associated with increased use of inpatient care. Women, members residing in rural areas, members in the expansion, and non-ABD Adult groups were associated with decreased use.

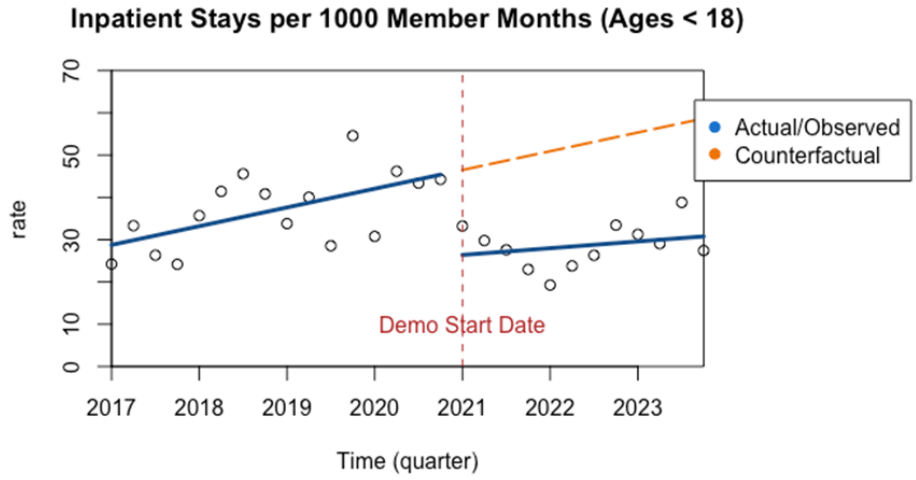
Inpatient GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.504	0.123	p<0.01
Immediate Effect of Demo Start	3.468	0.422	p<0.01
Sustained Effect	-0.244	0.052	p<0.01
Age	0.451	0.008	p<0.01
Gender (Female)	-6.973	0.206	p<0.01
Expansion Group	-4.255	0.328	p<0.01
Non-ABD Adult	-3.606	0.300	p<0.01
Non-ABD Child	25.328	0.646	p<0.01
Rural	-0.595	0.198	p<0.01
Constant	-1,016.404	247.712	p<0.01

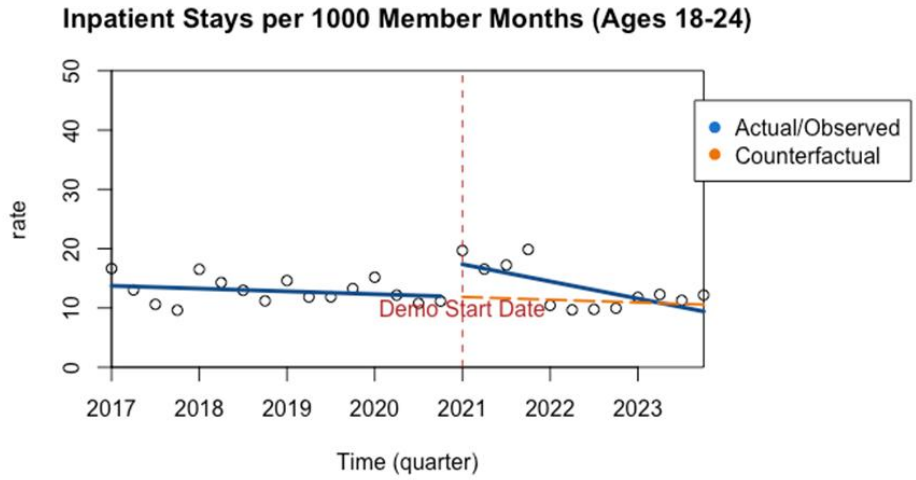
Age

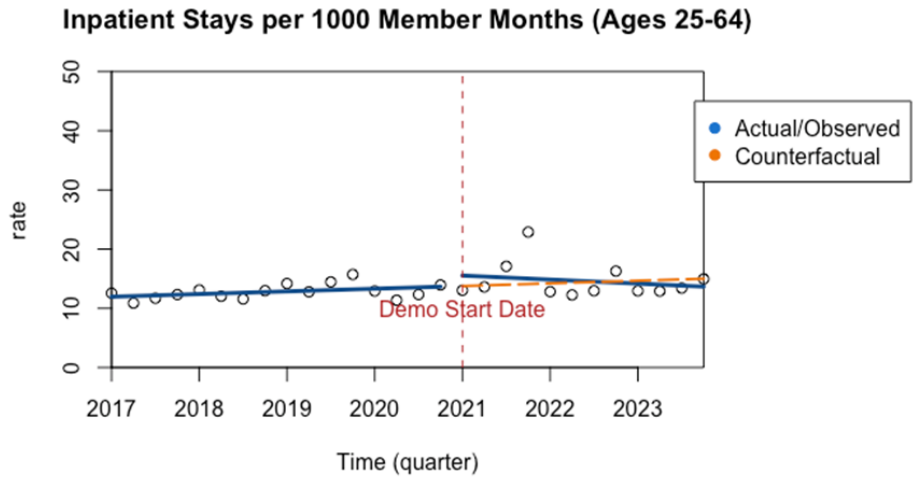
There was a statistically significant general trend of increased use of inpatient care for members under 18 years old, although the start of Demonstration was associated with a decrease in use for the under 18 age group. Members 18 -24 years old showed an immediate increase in use of inpatient care at the start of the Demonstration, countered by a sustained decrease in use during the Demonstration period. Members over 65 years old showed a statistically significant increase immediately following the start of the Demonstration and during the Demonstration period.

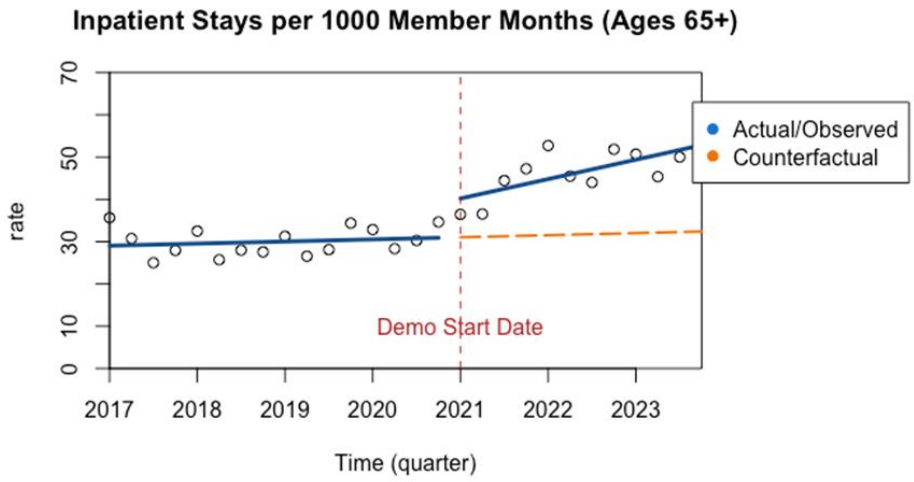
Inpatient ITS Model (Age)	Ages <18	Ages 18-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	4.43*** (1.43)	-0.47 (0.54)	0.45 (0.48)	0.50 (0.81)
Immediate Effect of Demonstration Start (Standard Error)	-19.39*** (5.15)	6.11*** (1.95)	2.05 (1.71)	8.15*** (2.89)
Sustained Effect (Standard Error)	-0.71 (0.66)	-0.61** (0.25)	-0.28 (0.22)	1.02** (0.37)
Constant (Standard Error)	-8,910.43*** (2,893.81)	961.14 (1,098.34)	-897.12 (960.43)	-973.22 (1,626.43)

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


Inpatient Stays per 1000 Member Months (Ages < 18)
rate
0
10
30
50
70
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


Inpatient Stays per 1000 Member Months (Ages 18-24)
rate
0
10
20
30
40
50
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


Inpatient Stays per 1000 Member Months (Ages 25-64)
rate
0
10
20
30
40
50
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

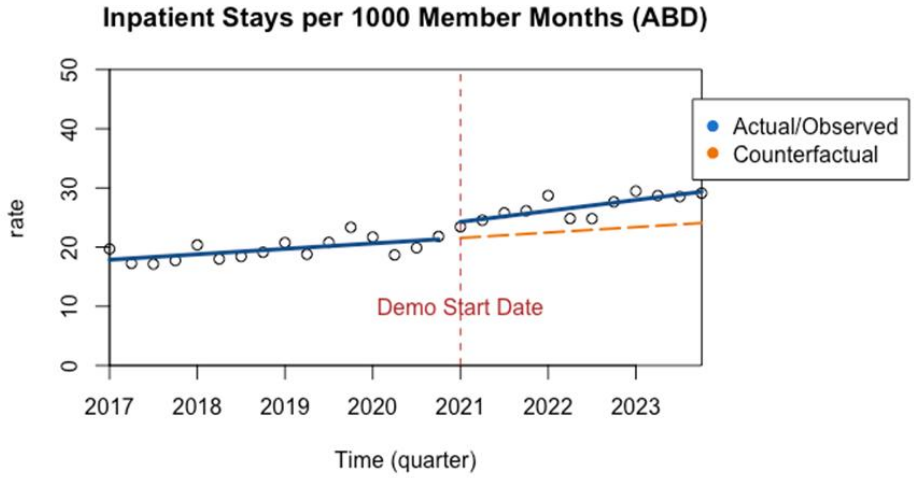


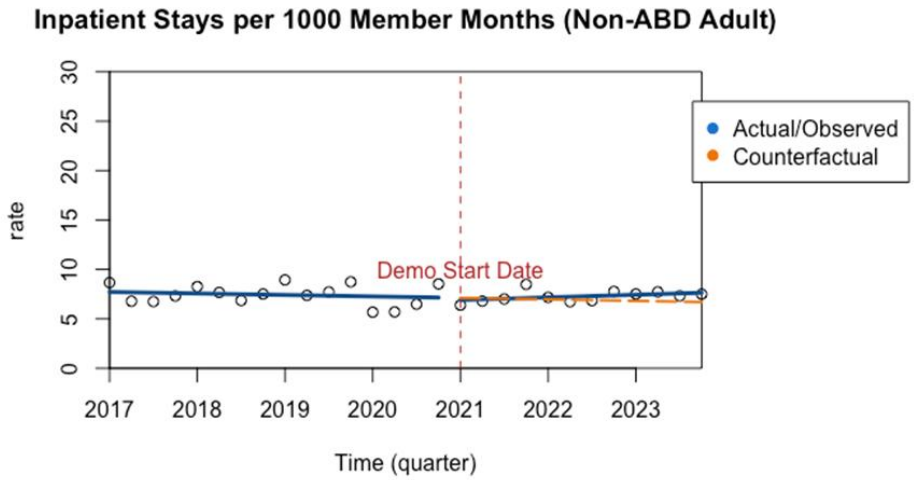
Aid Category

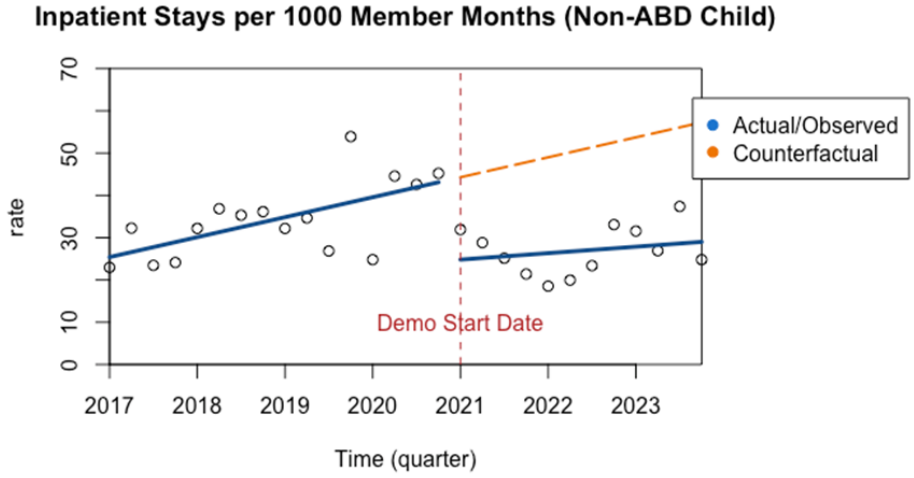
The general trend showed a statistically significant increase in inpatient care for members in the ABD and non-ABD Child group. There was an immediate in use at the start of the Demonstration associated with the ABD group and an immediate decrease in use associated with the non-ABD child group. No other statistically significant trends were observed.

Inpatient ITS Model (Aid Category)	ABD	Non-ABD Adult	Non-ABD Child
General Trend (Time) (Standard Error)	0.92*** (0.31)	-0.15 (0.19)	4.72*** (1.45)
Immediate Effect of Demonstration Start (Standard Error)	2.49** (1.10)	-0.32 (0.68)	-18.68*** (5.20)
Sustained Effect (Standard Error)	0.23 (0.14)	0.10 (0.09)	-0.80 (0.67)
Constant (Standard Error)	-1,834.82*** (621.09)	310.93 (381.99)	-9,497.29*** (2,924.46)

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


Inpatient Stays per 1000 Member Months (ABD)
rate
0
10
20
30
40
50
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


Inpatient Stays per 1000 Member Months (Non-ABD Adult)
rate
0
5
10
15
20
25
30
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

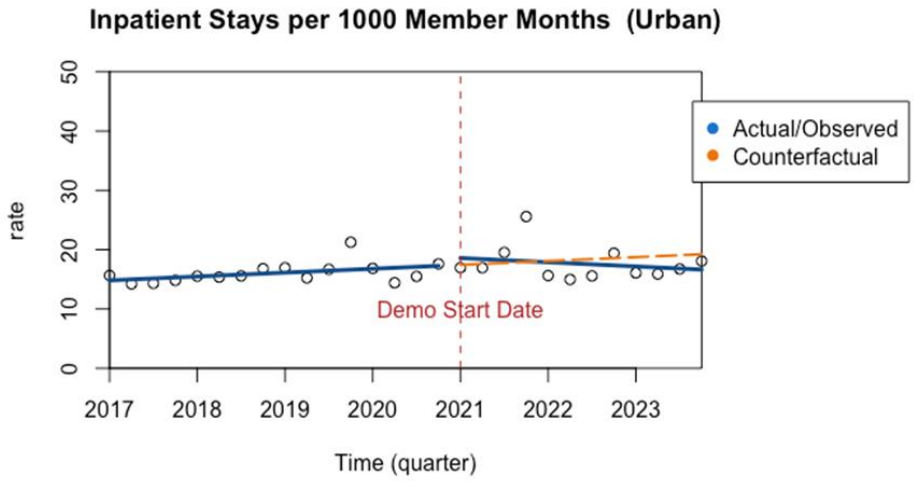

Inpatient Stays per 1000 Member Months (Non-ABD Child)
rate
0
10
30
50
70
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

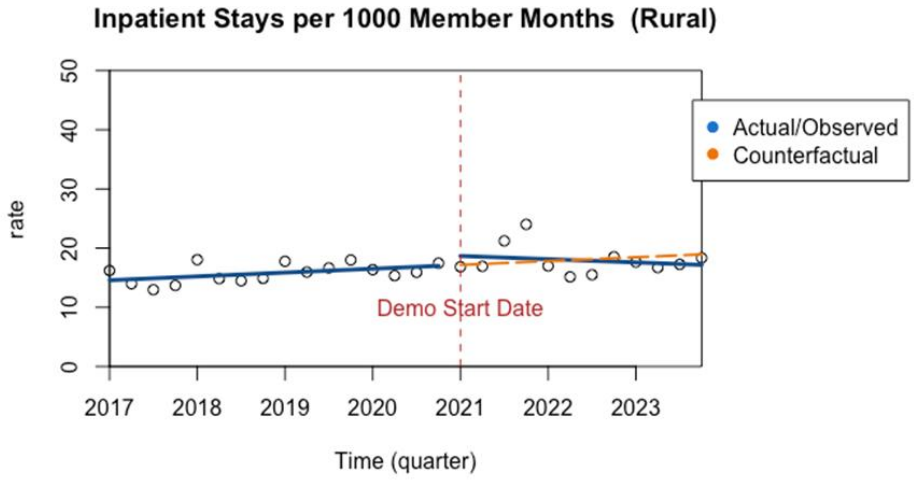
Urban/Rural

There were no statistically significant trends related to inpatient use associated with where members reside.

Inpatient ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	0.65 (0.49)	0.65 (0.43)
Immediate Effect of Demonstration Start (Standard Error)	1.50 (1.77)	1.81 (1.53)
Sustained Effect (Standard Error)	-0.34 (0.23)	-0.30 (0.20)
Constant (Standard Error)	-1,302.21 (994.09)	-1,291.52 (861.40)

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





Evaluation Question 5 Summary

A summary of the findings related to evaluation Question 5 is presented below. Findings are summarized related both to the general trend and the sustained effect of the Demonstration period, and to control for the potential effect of the expansion group on outcomes.

When members in the expansion group were removed from the ITS there were no statistically significant changes observed during the Demonstration period (i.e., sustained effect).

	Interrupted Time Series		
Measure	**General Trend**	**Sustained Effect**	**Significant Change Without Expansion Pop**
Hypothesis 1. The Demonstration will contain or reduce the rate of ED visits for individuals with an SUD			
2.1.1. Total number of ED visits for SUD per 1,000 members	-	-	No
Hypotheses 2. The Demonstration will contain or reduce inpatient admissions			
5.2.1. Total number of inpatient stays for SUD per 1,000 members	-	-	No

Notes
- No statistically significant change in trend

SUD Evaluation Question 6 – Does the Demonstration contain or reduce readmissions to the same or higher levels of care?

Evaluation Question 6 has one hypothesis: The Demonstration will contain or reduce readmissions to the same or higher levels of care for enrollees with an SUD. The measure examined is presented below.

Measure Number	Description
6.1.1	Percentage of readmission to the same or higher level of residential care

Measure 6.1.1 – Percentage of readmission to the same or higher level of residential care

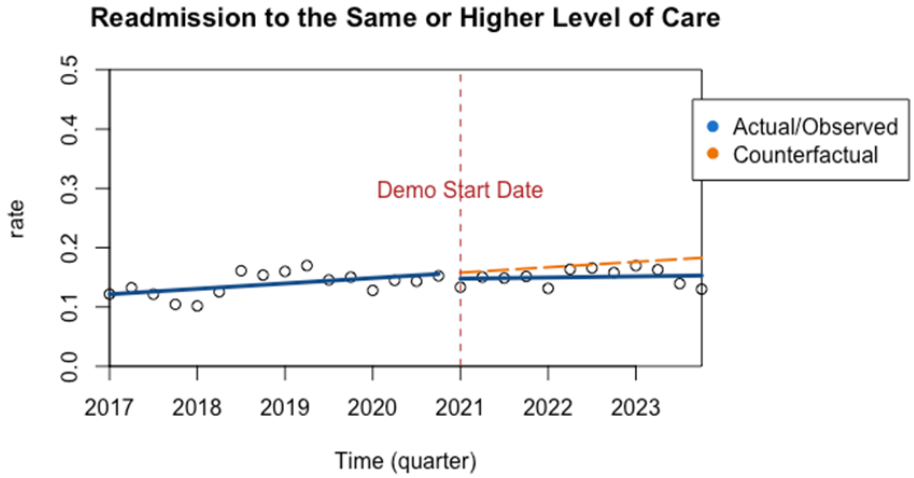
Question 6.	***Does the Demonstration contain or reduce readmissions to the same or higher levels of care?***
Hypothesis 1.	***The Demonstration will contain or reduce readmissions to the same or higher levels of care for enrollees with an SUD.***

Measure Description: The denominator includes members 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 for 2017 – 2023.

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

Findings: The general trend showed an increase in readmissions to the same or higher levels of care, both with and without expansion group members included in the analysis.



Readmissions ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.01	0.004	p<0.05
Immediate Effect of Demonstration Start	-0.01	0.01	None
Sustained Effect (Time since demo start)	-0.002	0.002	None
Constant	-18.23	7.17	p<0.05

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

There was a statistically significant increase in readmissions over time. However, the Demonstration period was associated with a sustained decrease in readmissions.

Older members, women, members in the expansion, non-ABD group (adults and children), and members residing in rural areas were associated with a decrease in readmissions.

Readmissions GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.009	0.002	p<0.01
Immediate Effect of Demo Start	-0.009	0.008	None
Sustained Effect	-0.002	0.001	p<0.05
Age	-0.002	0.0001	p<0.01
Gender (Female)	-0.031	0.004	p<0.01
Expansion Group	-0.038	0.005	p<0.01
Non-ABD Adult	-0.075	0.006	p<0.01
Non-ABD Child	-0.187	0.011	p<0.01
Rural	-0.017	0.004	p<0.01
Constant	-17.306	4.971	p<0.01

Evaluation Question 6 Summary

A summary of the findings related to evaluation Question 6 is presented below. Findings are summarized related to both the general trend and the sustained effect of the Demonstration period, and to control for the potential effect of the expansion group on outcomes.

When members in the expansion group were removed from the analysis there was a statistically significant sustained decrease in readmissions (see Attachment 3).

	Interrupted Time Series		
Measure	**General Trend**	**Sustained Effect**	**Significant Change Without Expansion Pop**
Hypothesis 1. The Demonstration will contain or reduce readmissions to the same or higher levels of care			
6.1.1. The percentage of readmissions to the same or higher level of residential care	↑*	-	Yes

Notes
- No statistically significant change in trend
↑Statistically significant increase
*Lower/decrease is preferred

SUD Evaluation Question 7 – Does the Demonstration maintain or improve access to care for physical health conditions?

Evaluation Question 7 has one hypothesis: The Demonstration will maintain or increase access to care for physical health conditions for enrollees with an SUD. The measure examined is presented below.

Measure Number	Description
7.1.1	Percentage of members with an SUD who had an ambulatory or preventive health care visit

Measure 7.1.1 – Percentage of members with an SUD who had an ambulatory or preventive health care visit

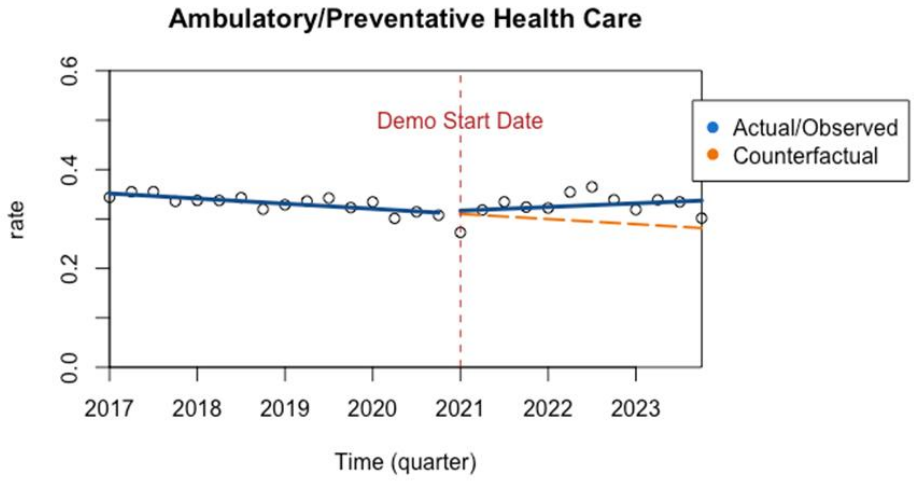
Question 7.	***Does the Demonstration maintain or improve access to care for physical health conditions?***
Hypothesis 1.	***The Demonstration will maintain or increase access to care for physical health conditions for enrollees with an SUD.***

Measure Description: The denominator includes the number of members 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 for 2017 – 2023.

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

Findings: The general trend showed a statistically significant decrease in ambulatory/preventive visits. However, the Demonstration period was associated with a statistically significant increase in visits.



Readmissions ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.01	0.004	p<0.05
Immediate Effect of Demonstration Start	0.002	0.01	None
Sustained Effect (Time since demo start)	0.004	0.002	p<0.05
Constant	21.28	7.58	p<0.01

A generalized linear model was used to control for member demographics. Coefficient estimates are presented below. GLM 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 was associated with a decrease in ambulatory/preventive care visits. However, the Demonstration period was associated with an increase in visits.

Older members, members in the expansion, non-ABD group (adults and children), and members residing in rural areas were associated with fewer visits.

Readmissions GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-0.009	0.001	p<0.01
Immediate Effect of Demo Start	0.004	0.003	None
Sustained Effect	0.004	0.0003	p<0.01
Age	-0.003	0.0001	p<0.01
Gender (Female)	0.0004	0.001	None
Expansion Group	-0.096	0.002	p<0.01
Non-ABD Adult	-0.150	0.002	p<0.01
Non-ABD Child	-0.186	0.004	p<0.01
Rural	-0.025	0.001	p<0.01
Constant	19.167	1.547	p<0.01

Evaluation Question 7 Summary

A summary of the findings related to evaluation Question 7 is presented below. Findings are summarized related to both the general trend and the sustained effect of the Demonstration period, and to control for the potential effect of the expansion group on outcomes.

When members in the expansion group were removed from the analysis there were no statistically significant changes in trend observed.

	Interrupted Time Series		
Measure	**General Trend**	**Sustained Effect**	**Significant Change Without Expansion Pop**
Hypothesis 1. The Demonstration will maintain or increase access to care for physical health conditions			
7.1.1. The percentage of members with an SUD who had an ambulatory/preventive health care visit	↓	↑	No

Notes
↑Statistically significant increase
↓Statistically significant decrease

SUD Evaluation Question 8 - How does the cost of care change over time?

Evaluation Question 8 is an exploratory analysis to examine how expenditures change over time. There are two subsidiary questions and no hypotheses. The subsidiary questions are:

a. How does the Medicaid eligibility expansion impact cost over time?

b. Does increased federal share for IMD services have an association with increased State investments in behavioral health services?

The measures examined are:

Measure Number	Description
8.1.1	PMPM Medicaid cost for individuals who have an SUD
8.1.2	PMPM cost of SUD-related treatment for individuals who have an SUD
8.1.3	PMPM cost of physical health care for individuals who have an SUD

Measure 8.1.1 – PMPM Medicaid cost for individuals who have an SUD

Question 8. ***How does the cost of care change over time?***

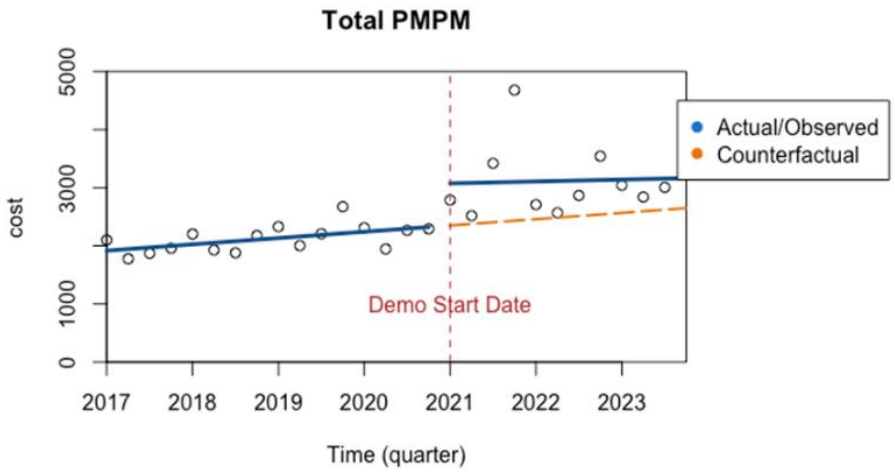
Hypothesis 1. ***N/A***

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

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

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

Findings: There was a statistically significant increase in the total PMPM associated with the start of the Demonstration in the aggregate analysis. No other significant trends were observed.



Total PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	108.42	93.60	None
Immediate Effect of Demonstration Start	744.14	336.09	p<0.05
Sustained Effect (Time since demo start)	-19.01	43.01	None
Constant	-216,770.70	188,965.70	None

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

There was a statistically significant increase in the total PMPM expenditures associated with time and the start date of the Demonstration. However, there was a slight decrease in PMPM expenditures during the Demonstration period.

Older members, women, members living in rural areas, and members in the non-ABD Adult group were associated with a decrease in expenditures. Expansion group and members in the non-ABD Child group were associated with an increase in expenditures.

Total PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	118.236	18.851	p<0.01
Immediate Effect of Demo Start	493.698	64.900	p<0.01
Sustained Effect	-60.424	7.980	p<0.01
Age	-9.706	1.286	p<0.01
Gender (Female)	-730.820	31.639	p<0.01
Expansion Group	739.901	50.405	p<0.01
Non-ABD Adult	-693.206	46.070	p<0.01
Non ABD Child	236.474	99.177	p<0.05
Rural	-69.783	30.425	p<0.05
Constant	-235,425.400	38,054.820	p<0.01

Measure 8.1.2 – PMPM cost of SUD-Related treatment for individuals who have an SUD

Question 8. ***How does the cost of care change over time?***

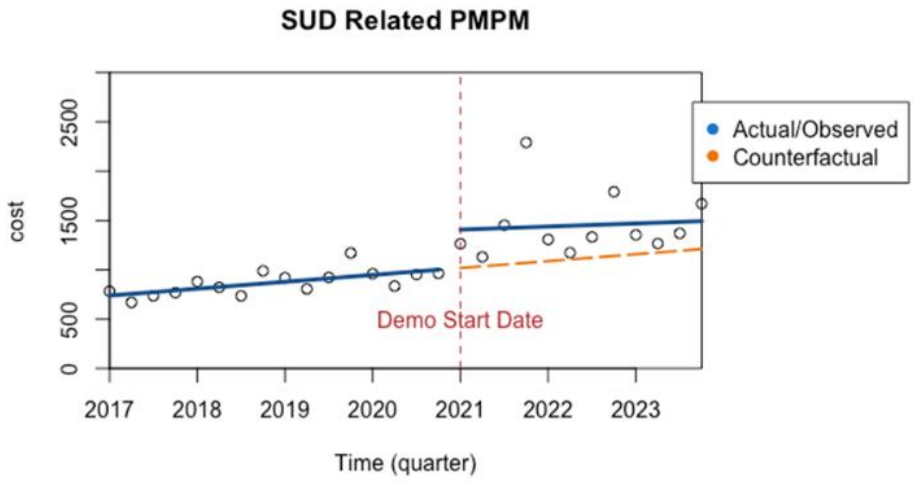
Hypothesis 1. ***N/A***

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

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

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

Findings: There was a statistically significant increase in the SUD-related PMPM associated with the start of the Demonstration in the aggregate analysis. No other statistically significant trends were observed.



SUD-Related PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	69.92	50.34	None
Immediate Effect of Demonstration Start	398.84	180.77	p<0.05
Sustained Effect (Time since demo start)	-9.64	23.13	None
Constant	-140,292.40	101,639.40	None

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

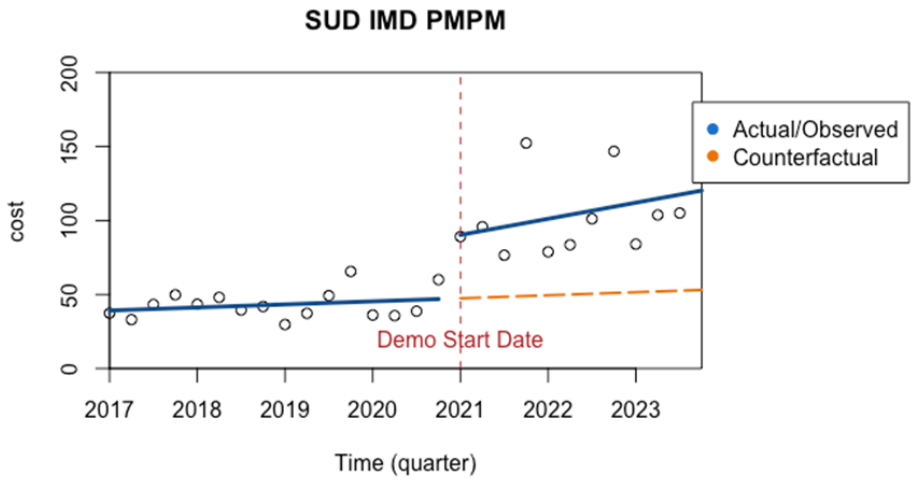
There was a statistically significant increase in SUD-related PMPM expenditures in the trend over time and associated with the start of the Demonstration. However, the Demonstration period was associated with a slight decline in PMPM expenditures.

Women and members residing in rural areas were associated with fewer expenditures. Members in the expansion and non-ABD (Adult and Child) groups were associated with an increase in SUD-related expenditures.

SUD-Related PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	74.141	11.840	p<0.01
Immediate Effect of Demo Start	212.025	40.762	p<0.01
Sustained Effect	-42.401	5.012	p<0.01
Age	-1.501	0.808	None
Gender (Female)	-558.210	19.872	p<0.01
Expansion Group	855.616	31.659	p<0.01
Non-ABD Adult	35.565	28.935	None
Non-ABD Child	225.766	62.291	p<0.01
Rural	-70.201	19.109	p<0.01
Constant	-148,382.300	23,901.540	p<0.01

SUD-IMD Related PMPM

There was a statistically significant increase in the SUD-IMD PMPM associated with the start of the Demonstration in the aggregate analysis. No other statistically significant trends were observed.



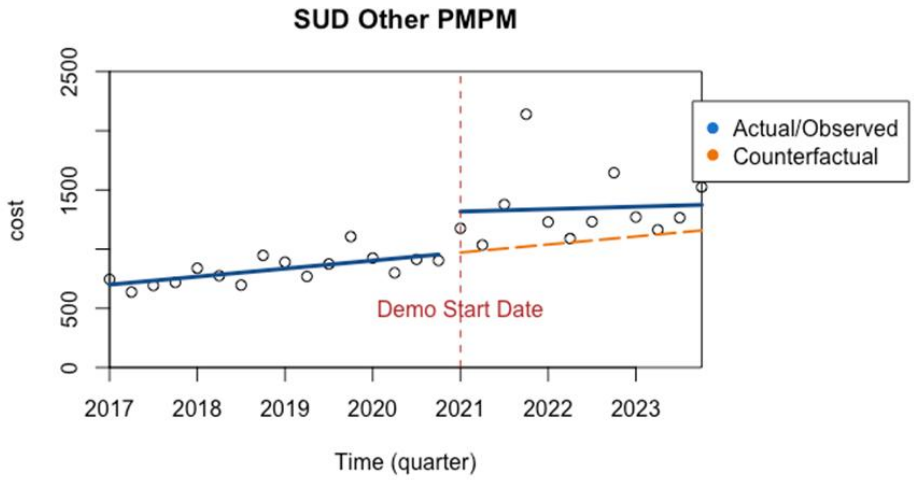
SUD-IMD PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	2.06	4.12	None
Immediate Effect of Demonstration Start	40.63	14.79	$p \leq 0.05$
Sustained Effect (Time since demo start)	2.21	1.89	None
Constant	-4,116.52	8,315.05	None

A generalized linear model was used to control for member demographics. Coefficient estimates are presented below. When considering the impact of demographic factors, as well as temporal, the analysis showed a statistically significant decrease in the SUD-IMD PMPM during the Demonstration period. Older members, women, and members residing in rural areas were associated with fewer expenditures. Members in the expansion and non-ABD Adult groups were associated with an increase in SUD-IMD expenditures.

SUD-IMD PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	2.715	1.490	None
Immediate Effect of Demo Start	7.742	5.128	None
Sustained Effect	-2.169	0.631	p<0.01
Age	-1.028	0.102	p<0.01
Gender (Female)	-24.234	2.500	p<0.01
Expansion Group	159.234	3.983	p<0.01
Non-ABD Adult	63.713	3.640	p<0.01
Non-ABD Child	12.252	7.837	None
Rural	-9.979	2.404	p<0.01
Constant	-5,393.914	3,007.114	None

SUD-Other (non-IMD) PMPM

There was a statistically significant increase in other SUD-related expenditures associated with the start of the Demonstration in the aggregate analysis. No other statistically significant trends were observed.



Other SUD PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	67.86	47.11	None
Immediate Effect of Demonstration Start	358.20	169.15	p<0.05
Sustained Effect (Time since demo start)	-11.85	21.64	None
Constant	-136,175.90	95,102.86	None

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page.

There was a statistically significant increase in other SUD-related expenditures over time and following the start of the Demonstration. However, when demographic and temporal factors were considered, the Demonstration period was associated with a decrease in other SUD related expenditures.

Women and members residing in rural areas were associated with fewer expenditures. Members in the expansion and non-ABD Child groups were associated with an increase in other SUD-related expenditures.

Other SUD PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	71.427	11.744	p<0.01
Immediate Effect of Demo Start	204.283	40.434	p<0.01
Sustained Effect	-40.232	4.972	p<0.01
Age	-0.473	0.801	None
Gender (Female)	-533.976	19.711	p<0.01
Expansion Group	696.382	31.403	p<0.01
Non-ABD Adult	-28.148	28.702	None
Non-ABD Child	213.513	61.789	p<0.01
Rural	-60.222	18.955	p<0.01
Constant	-142,988.400	23,708.830	p<0.01

Measure 8.1.3 – PMPM cost of physical health care for individuals who have an SUD

Question 8. ***How does the cost of care change over time?***

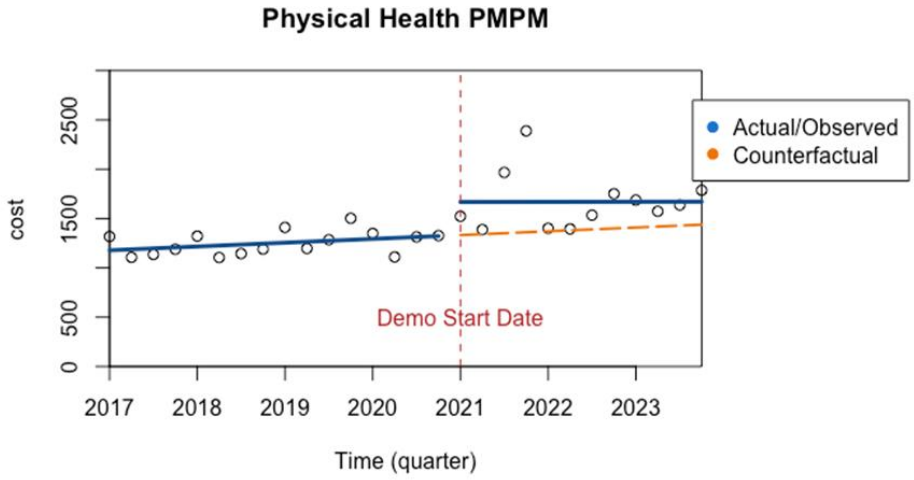
Hypothesis 1. ***N/A***

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

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

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

Findings: There was a statistically significant increase in the physical health-related PMPM associated with the start of the Demonstration in the aggregate analysis.



Physical Health PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	38.50	46.20	None
Immediate Effect of Demonstration Start	345.30	165.89	p<0.05
Sustained Effect (Time since demo start)	-9.37	21.23	None
Constant	-76,478.33	93,273.00	None

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. GLM allows us to explain the variation in utilization

attributable to individual demographic factors, as well as temporal factors such as the Demonstration start date.

There was a statistically significant increase in physical health-related PMPM expenditures in the trend over time and associated with the start of the Demonstration. However, the Demonstration period was associated with a slight decline in PMPM.

Older members, women, expansion group, and members in the non-ABD Adult group were associated with fewer physical health care related expenditures.

Physical Health PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	44.095	12.570	p<0.01
Immediate Effect of Demo Start	281.673	43.276	p<0.01
Sustained Effect	-18.023	5.321	p<0.01
Age	-8.206	0.858	p<0.01
Gender (Female)	-172.610	21.097	p<0.01
Expansion Group	-115.715	33.611	p<0.01
Non-ABD Adult	-728.771	30.720	p<0.01
Non-ABD Child	10.708	66.133	None
Rural	0.418	20.288	None
Constant	-87,043.140	25,375.610	p<0.01

Evaluation Question 8 Summary

A summary of the findings related to evaluation Question 8 is presented below. Findings are summarized related to both the general trend and the sustained effect of the Demonstration period, and to address the potential effect of the expansion group on outcomes.

When expansion group members were removed from the analysis there was a significant decrease, both in total PMPM expenditures and in each SUD-related PMPM expenditures, associated with the start date of the Demonstration. There were no statistically significant trends with respect to physical health-related PMPM expenditures (see Attachment 3).

	Interrupted Time Series		
Measure	**General Trend**	**Sustained Effect**	**Significant Change Without Expansion Pop**
Expenditure Analyses – Total Cost			
8.1.1. Total PMPM	-	-	Yes
8.1.2(a) SUD PMPM	-	-	Yes
8.1.2(b) SUD IMD PMPM	-	-	Yes
8.1.2(c) SUD Other PMPM	-	-	Yes
8.1.3. Physical Health PMPM	-	-	No

- No statistically significant trend

State Expenditures for Behavioral Health

Evaluation Question 8 includes a subsidiary review of State behavioral health expenditures. General Fund spending by the Oklahoma Department of Mental Health and Substance Abuse Services is reported by the OHCA as part of its annual report to CMS.

Behavioral Health Homes were sunset as the delivery system transitioned to integrated CCBHCs. CCBHC designations were completed in year two of the Demonstration. State investments in behavioral health services increased in each year of the Demonstration.

	State Dollars				
	SFY 2020 (Pre-Demo)	SFY 2021 (Demo-6mos)	SFY 2022	SFY2023	Change From Pre-Demo
Regular TXIX	$54,898,648	$55,115,363	$43,071,740	$48,105,475	($6,793,173)
CHIP	$2,608,734	$7,481,445	$11,373,731	$16,129,667	$13,520,933
Health Homes	$6,614,172	$4,002,923	$632,255	-	-
CCBHC	$17,505,607	$23,352,812	$31,288,545	$55,400,740	$37,895,133
Total	**$81,627,161**	**$89,952,543**	**$86,366,271**	**$119,635,883**	**$38,008,722**

SUD Evaluation Question 9 – What are the cost drivers?

Evaluation Question 9 is an exploratory analysis to examine costs drivers for expenditures related to SUD. There are two subsidiary questions and no hypotheses. The subsidiary questions are:

a. Does increased community-based service utilization have an association with lower ED costs?

b. Does increased community-based service utilization have an association with lower inpatient costs?

Community-based service utilization was defined as members having claims in any of the following categories of services: outpatient treatment, IOP/PH, or medications for opioid use disorder.

The measures examined are:

Measure Number	Description
9.1.1	PMPM Medicaid cost of outpatient (non-ED) for individuals who have an SUD
9.1.2	PMPM cost of pharmacy for individuals who have an SUD
9.1.3	PMPM cost of outpatient ED for individuals who have an SUD
9.1.4	PMPM cost of inpatient care for individuals who have an SUD
9.1.5	PMPM cost of long term care for individuals who have an SUD

Measure 9.1.1 – PMPM cost of outpatient (non-ED) for individuals who have an SUD

Question 9. ***What are the cost drivers?***

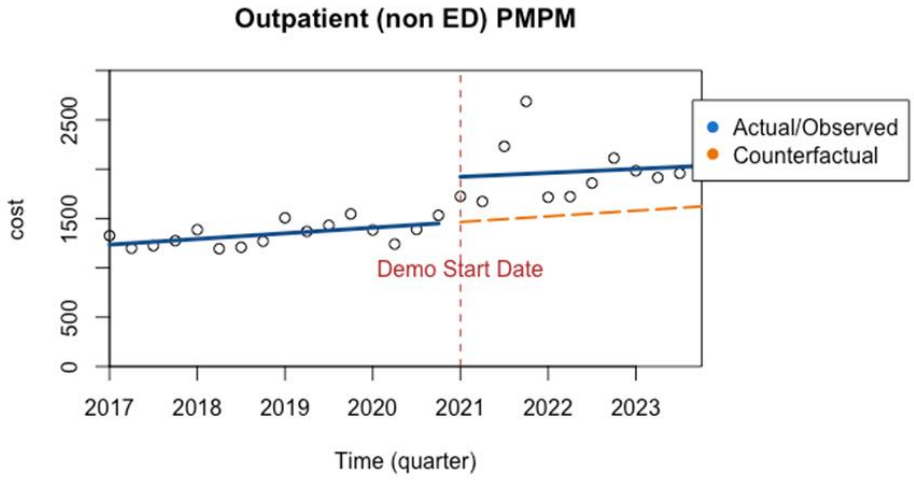
Hypothesis 1. ***N/A***

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

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

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

Findings: There was an increase in outpatient-related expenditures at the start of the Demonstration in the aggregate analysis.



Outpatient PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	57.42	45.53	None
Immediate Effect of Demonstration Start	462.25	163.47	p<0.01
Sustained Effect (Time since demo start)	-4.32	20.92	None
Constant	-114,584.70	91,911.96	None

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. GLM allows us to explain the variation in utilization

attributable to individual demographic factors, as well as temporal factors such as the Demonstration start date.

There was an increase in outpatient-related expenditures over time and at the start of the Demonstration. However, the Demonstration period was associated with a decrease in outpatient expenditures.

Older members and members in the non-ABD group (adults and children) were associated with fewer outpatient expenditures. Expansion group and members residing in rural areas were associated with more outpatient expenditures.

Outpatient PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	64.233	7.399	p<0.01
Immediate Effect of Demo Start	286.451	25.474	p<0.01
Sustained Effect	-26.834	3.132	p<0.01
Age	-13.415	0.505	p<0.01
Gender (Female)	-20.858	12.418	None
Expansion Group	558.057	19.784	p<0.01
Non-ABD Adult	-237.938	18.083	p<0.01
Non-ABD Child	-376.294	38.928	p<0.01
Rural	86.566	11.942	p<0.01
Constant	-127,663.500	14,936.740	p<0.01

Measure 9.1.2 – PMPM cost of pharmacy for individuals who have an SUD

Question 9. ***What are the cost drivers?***

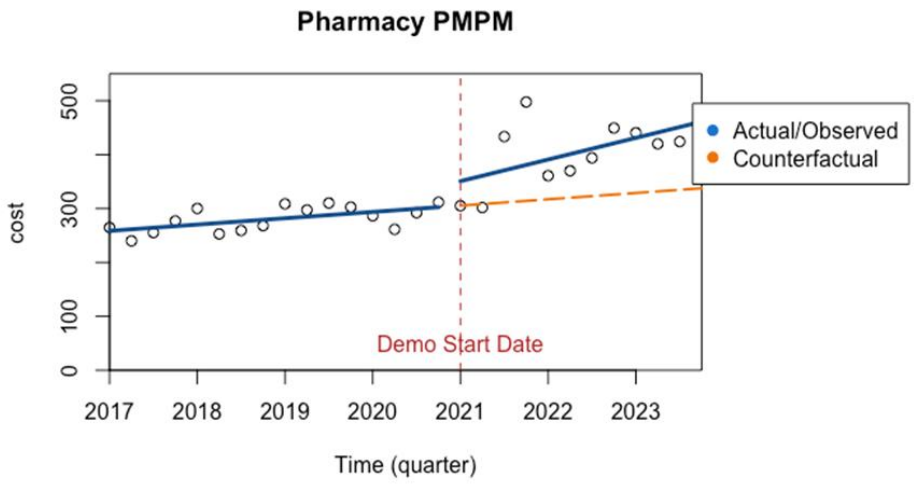
Hypothesis 1. ***N/A***

Measure Description: The sum of all Medicaid payments made for pharmacy services divided by the total number of member months.

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

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

Findings: There were no statistically significant trends associated with pharmacy expenditures in the aggregate analysis.



Pharmacy PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	11.72	8.03	None
Immediate Effect of Demonstration Start	38.23	28.82	None
Sustained Effect (Time since demo start)	7.11	3.69	None
Constant	-23,376.85	16,201.71	None

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. GLM 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 trend over time was associated with an increase in pharmacy related expenditures. Older members, members in the expansion group, and members residing in rural areas were associated with an increase in expenditures. Members in the non-ABD group (adults and children) were associated with fewer pharmacy-related expenditures.

Pharmacy PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	12.366	3.930	p<0.01
Immediate Effect of Demo Start	10.648	13.531	None
Sustained Effect	3.207	1.664	None
Age	-2.525	0.268	p<0.01
Gender (Female)	3.390	6.596	None
Expansion Group	85.599	10.509	p<0.01
Non-ABD Adult	-56.576	9.605	p<0.01
Non ABD Child	-285.073	20.678	p<0.01
Rural	39.965	6.343	p<0.01
Constant	-24,561.140	7,934.179	p<0.01

Measure 9.1.3 – PMPM cost of outpatient ED for individuals who have an SUD

Question 9. ***What are the cost drivers?***

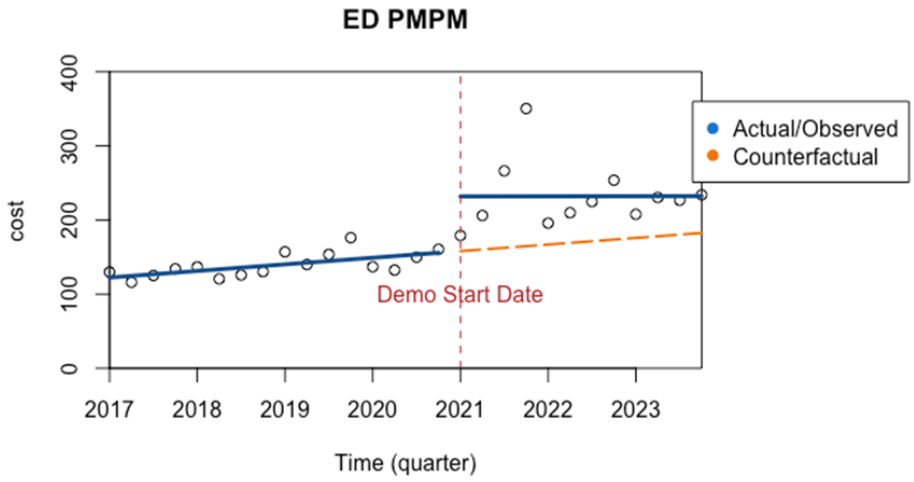
Hypothesis 1. ***N/A***

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

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

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

Findings: There was a statistically significant increase in ED expenditures associated with the start date of the Demonstration in the aggregate analysis. No other statistically significant trends were observed.



ED PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	8.91	6.85	None
Immediate Effect of Demonstration Start	76.00	24.59	p<0.01
Sustained Effect (Time since demo start)	-2.19	3.15	None
Constant	-17,850.22	13,825.08	None

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

There was a statistically significant increase in ED expenditures associated with time and the start date of the Demonstration. However, there was a decrease in expenditures associated with the Demonstration period.

Older members, women, members residing in rural areas, and those in the non-ABD group (adults and children) were associated with fewer ED expenditures. The expansion group was associated with increased ED expenditures.

ED PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	10.183	1.286	p<0.01
Immediate Effect of Demo Start	41.510	4.426	p<0.01
Sustained Effect	-6.891	0.544	p<0.01
Age	-3.060	0.088	p<0.01
Gender (Female)	-22.267	2.158	p<0.01
Expansion Group	105.074	3.438	p<0.01
Non-ABD Adult	-47.535	3.142	p<0.01
Non-ABD Child	-144.988	6.764	p<0.01
Rural	-35.452	2.075	p<0.01
Constant	-20,228.290	2,595.302	p<0.01

Community Based Service Utilization and ED Expenditures

Results show that for each unit of community-based services utilized (i.e., counts of outpatient, IOP/PH, and MAT services) the ED PMPM decreases by $1.79. The regression formula is presented below.

$$EDpmpm = 190.867 + (-1.788) * CBunits$$

ED $ Variable	Coefficient
Community Based Units (Standard Error)	-1.788*** (0.084)
Constant (Standard Error)	190.867*** (1.066)

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

Measure 9.1.4 – PMPM cost of inpatient care for individuals who have an SUD

Question 9. ***What are the cost drivers?***

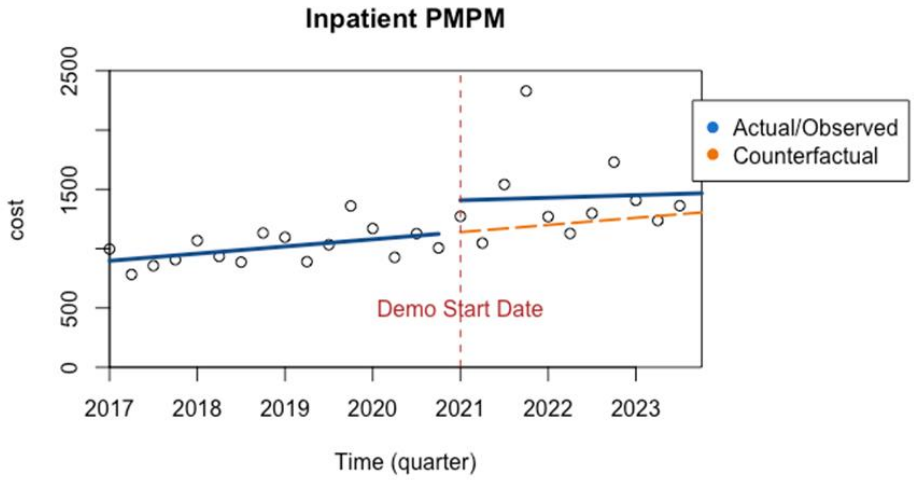
Hypothesis 1. ***N/A***

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

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

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

Findings: There were no statistically significant trends observed relative to inpatient expenditures in the aggregate analysis.



Inpatient PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	60.45	54.81	None
Immediate Effect of Demonstration Start	278.25	196.82	None
Sustained Effect (Time since demo start)	-9.70	25.18	None
Constant	-121,037.70	110,660.10	None

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

There was a statistically significant increase in inpatient expenditures associated with time and the start date of the Demonstration. However, there was a decrease in expenditures associated with the Demonstration period.

Women, members residing in rural areas, and those in the non-ABD Adult group were associated with fewer inpatient expenditures. The expansion group was associated with increased inpatient expenditures.

Inpatient PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	63.557	15.725	p<0.01
Immediate Effect of Demo Start	207.905	54.140	p<0.01
Sustained Effect	-28.224	6.657	p<0.01
Age	1.993	1.073	None
Gender (Female)	-680.520	26.393	p<0.01
Expansion Group	111.546	42.048	p<0.01
Non-ABD Adult	-573.212	38.432	p<0.01
Non-ABD Child	315.189	82.734	None
Rural	-105.860	25.380	p<0.01
Constant	-126,729.000	31,745.580	p<0.01

Community Based Service Utilization and Inpatient Expenditures

Results show that for each unit of community-based services utilized (i.e., counts of outpatient, IOP/PH, and MAT services) the Inpatient PMPM decreases by $19.467. The regression formula is presented below.

$$IPpmpm = 1{,}281.498 + (-19.467) * CBunits$$

Inpatient $ Variable	Coefficient
Community Based Units (Standard Error)	-19.467*** (1.023)
Constant (Standard Error)	1,281.498*** (12.987)

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

Measure 9.1.5 – PMPM cost of long term care for individuals who have an SUD

Question 9. What are the cost drivers?

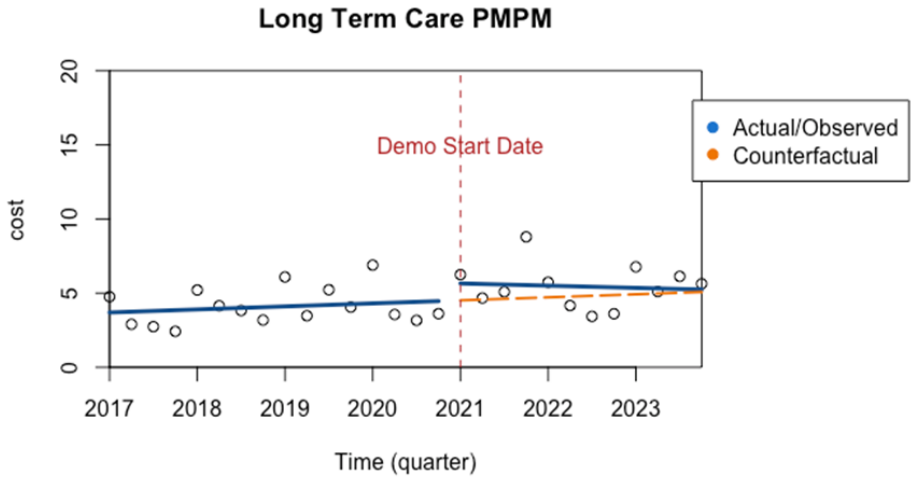
Hypothesis 1. N/A

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

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

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

Findings: There were no statistically significant trends observed related to long term care expenditures in the aggregate analysis.



LTC PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.20	0.30	None
Immediate Effect of Demonstration Start	1.23	1.08	None
Sustained Effect (Time since demo start)	-0.09	0.14	None
Constant	-408.66	609.98	None

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. GLM 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 start date of the Demonstration was associated with an increase in long term care expenditures. Older members also were associated with an increase in long term care expenditures. Women, expansion group, and non-ABD Adult group members were associated with lower long term care expenditures.

LTC PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.097	0.231	None
Immediate Effect of Demo Start	2.248	0.796	p<0.01
Sustained Effect	0.011	0.098	None
Age	0.218	0.016	p<0.01
Gender (Female)	-1.819	0.388	p<0.01
Expansion Group	-3.337	0.618	p<0.01
Non-ABD Adult	-2.345	0.565	p<0.01
Non-ABD Child	0.253	1.216	None
Rural	-0.545	0.373	None
Constant	-200.116	466.760	None

Evaluation Question 9 Summary

A summary of the findings related to evaluation Question 9 is presented below. Findings are summarized related to both the general trend and the sustained effect of the Demonstration period, and to address the potential effect of the expansion group on outcomes.

When expansion group members were removed from the analysis there was a significant decrease in the PMPM related to all cost drivers (outpatient, pharmacy, ED, inpatient, and long term care) associated with the start of the Demonstration (see Attachment 3).

A subsidiary analysis of service utilization relative to ED and inpatient expenditures showed that each unit of community-based service received was associated with lower ED and inpatient expenditures.

	Interrupted Time Series		
Measure	**General Trend**	**Sustained Effect**	**Significant Change Without Expansion**
Expenditure Analyses –Cost Drivers			
9.1.1. Outpatient (non-ED) PMPM	-	-	Yes
9.1.2. Pharmacy PMPM	-	-	Yes
9.1.3 ED PMPM	-	-	Yes
9.1.4 Inpatient PMPM	-	-	Yes
9.1.5 LTC PMPM	-	-	Yes

- No statistically significant trend

5. SUD-IMD Summary and Conclusions

Trends were examined for calendar years 2017 – 2020 as the pre-Demonstration period and 2021 – 2023 as the Demonstration period. The interim evaluation findings should be interpreted with caution, as the Demonstration coincided with the ongoing novel coronavirus PHE. In addition, Medicaid expansion began in Oklahoma effective July 2021.

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, test of proportions) 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 1 – SUD Treatment

The percentage of Medicaid members receiving any type of SUD treatment increased over time, as has the use of outpatient and residential/inpatient care. During the Demonstration period there was a statistically significant sustained increase in the use of withdrawal management/detox services and medications to treat OUD. The expansion group provides some explanatory power for the increased use of outpatient, residential/inpatient, and MAT. **Hypothesis 1, *The Demonstration will maintain or increase utilization of SUD treatment services,* was supported, with all six of the measures maintaining or improving trends.**

The overall number of Medicaid enrolled providers qualified to deliver SUD treatment increased by eight percent. Providers qualified to deliver MAT increased by 16 percent. **Hypothesis 2, *The Demonstration will maintain or increase SUD provider availability*, was supported, with both measures improving.**

The general trends for follow-up within 7 days after ED visits for alcohol and other drug abuse showed a statistically significant increase. There were no changes during the Demonstration period. There were no statistically significant changes follow-up within 30 days. Members in the expansion tended to engage in follow-up more often. **Hypothesis 3, *The Demonstration will maintain or increase follow-up after ED visits for alcohol and other drug use*, was supported, with both measures maintain or improving trends.**

The general trend for initiation in SUD treatment showed a statistically significant increase, as did the trend during the Demonstration period. There were no changes in trends for members engaging in treatment. Members in the expansion group tended to initiate and engage in treatment more often. **Hypothesis 4, *The Demonstration will maintain or increase initiation and engagement in SUD treatment,* was supported, with both maintaining or improving trends.**

Evaluation Question 1	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. The Demonstration will maintain or increase utilization of SUD treatment services			
1.1.1. Members receiving any SUD treatment service	ITS	Yes	-*
1.1.2. Members receiving SUD outpatient treatment	ITS	Yes	-*
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 enrolled SUD providers	T-test	Yes	↑
1.2.2 Medicaid providers qualified to deliver MAT	T-test	Yes	↑
Hypothesis 3. The Demonstration will maintain or increase follow-up after ED visits for alcohol & other drug use			
1.3.1. ED visits for AOD abuse or dependence with follow-up within 7-days of discharge	ITS	Yes	↑
1.3.2. ED visits for AOD abuse or dependence with follow-up within 30-days of discharge	ITS	Yes	-
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	-

Notes
- No statistically significant change in trend
_*General Trend shows statistically significant improvement
↑Statistically significant increase during the Demonstration period (sustained effect)
↓Statistically significant decrease during the Demonstration period (sustained effect)

Evaluation Question 2 - Pharmacotherapy

The trend for continuity of pharmacotherapy (180 days of continuous treatment) showed an increase associated with the start of the Demonstration. There were no other changes observed, either with or without the expansion population. **Hypothesis 1, *The Demonstration will maintain or increase continuity of pharmacotherapy for OUD for Opioid Health Home members*, was supported by maintaining performance.**

Evaluation Question 2	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. The Demonstration will maintain or increase continuity of pharmacotherapy for members with OUD			
2.1.1. Members who have at least 180 days of continuous OUD treatment	ITS	Yes	-

- No statistically significant change in trend

Evaluation Question 3 – Opioid Use

In each year of the Demonstration there were statistically significant improvements in the percentage of members receiving opioids at a high dose during the Demonstration. **Hypothesis 1, *The Demonstration will contain or reduce the use of opioids at a high dosage,* was supported, with improved performance in each year.**

Evaluation Question 3	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
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	Yes

Evaluation Question 5 – ED Visits

There were no statistically significant changes observed in ED visits during the Demonstration period with or without the expansion population. However, when the expansion population was removed, there was a lower rate of ED use associated with the start date of the Demonstration. **Hypothesis 1, *The Demonstration will contain or reduce the rate of ED visits for individuals with SUD*, was supported, with the measure maintaining trends.**

There were no statistically significant changes observed in inpatient stays during the Demonstration period, either with or without the expansion population. **Hypothesis 2, *The***

***Demonstration will contain or reduce inpatient admissions,* was supported, with the measure maintaining trends.**

Evaluation Question 5	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. The Demonstration will contain or reduce the rate of preventable ED visits for individuals with an SUD			
2.1.1. Total number of ED visits for SUD per 1,000 members	ITS	Yes	-
Hypotheses 2. The Demonstration will contain or reduce preventable inpatient admissions			
5.2.1. Total number of inpatient stays for SUD per 1,000 members	ITS	Yes	-

- No statistically significant change in trend

Evaluation Question 6 - Readmissions

The general trend showed a statistically significant increase in readmissions over time. There were no statistically significant effects associated with the Demonstration period. When members in the expansion group were removed, the readmission rate decreased. **Hypothesis 1, *The Demonstration will contain or reduce readmissions to the same of higher levels of care*, was supported, with the measure maintaining trends.**

Evaluation Question 6	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. The Demonstration will contain or reduce the readmissions to the same or higher levels of care			
6.1.1. Percentage of readmission to the same or higher level of residential care	ITS	Yes	-

- No statistically significant change in trend

Evaluation Question 7 – Access to Care

The general trend showed a statistically significant increase in the percentage of members receiving ambulatory/preventive care visits. There was a statistically significant increase associated with the Demonstration period. No significant changes were observed when the expansion group was removed from the analysis. **Hypothesis 1, *The Demonstration will maintain or increase access to care for physical health conditions for health home enrollees*, was supported**.

Evaluation Question 7	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. The Demonstration will maintain or increase access to care for physical health conditions			
7.1.1. The percentage of members with an SUD who had an ambulatory/preventive health care visit	ITS	Yes	↑

↑Statistically significant increase during the Demonstration period (sustained effect)

Exploratory Expenditure Analysis (Evaluation Questions 8 – 9)

There were statistically significant increases in the trend for total PMPM, as well as breakouts for SUD-related, SUD-IMD, SUD-Other, and physical health care associated with start of the Demonstration. The expansion population was associated with increases in all breakouts, apart from the PMPM cost related to physical health care.

The generalized linear model showed that older members and women were associated with fewer expenditures in every category. Members residing in rural counties also were associated with fewer expenditures in every category, apart from physical health care.

There were no statistically significant sustained changes in trend related to expenditures for any cost driver (outpatient, inpatient, ED, pharmacy, and long term care services) during the Demonstration period. When expansion members were removed from the analysis, there was a significant reduction in PMPM expenditures for all cost drivers, with the exception of long term care, which showed a very slight increase.

Interim Conclusion

When 50 percent or more of the measures studied maintained or improved performance, the evaluation question was considered supported. Overall findings by evaluation question are presented below.

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?	100% (12/12)	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?	100% (1/1)	Supported
Evaluation Question 4. Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with an SUD?	100% (2/2)	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

F. SMI/SED EVALUATION QUESTIONS, HYPOTHESES AND FINDINGS

The State's SMI/SED Implementation Plan includes quality enhancements, the expansion of non-residential crisis services and the transformation of CMHC programs to Certified Community Behavioral Health Centers (CCBHCs). The Demonstration goals, Implementation Plan and related activities provide the context for the SMI aspects of the evaluation. This section provides an overview of:

1. SMI/SED logic model and quantifiable targets
2. SMI/SED-related evaluation questions and hypotheses
3. SMI/SED-related modifications to the general analytics presented in Section C
4. SMI/SED-related evaluation measures and interim findings
5. Summary and conclusions related to the SMI/SED-related evaluation components

1. SMI/SED Logic Model and Quantifiable Targets

Under the Demonstration, the State is expanding non-residential crisis services through: mobile outreach; enhancing the tracking of crisis and inpatient psychiatric beds; annually assessing the availability of mental health services; and taking steps to expand capacity as needed. These activities are expected to increase the availability of crisis stabilization services, including call centers, mobile crisis outreach, intensive outpatient, residential, and psychiatric inpatient services (Goal 3).

The Demonstration also supports the expansion of entities designated as CCBHCs. The Implementation Plan calls for statewide CCBHC coverage by the end of DY3; the expansion actually was completed by the end of DY2.

CCBHC designation requires entities to support integrated primary and behavioral health services and to ensure seamless transitions of care across settings. This includes maintaining contracts or MOUs with regional hospitals, psychiatric rehabilitation and treatment facilities, and other systems to ensure formal care delivery structures are in place for coordination and timely transitions of care, including discharges from the ED. The State plans to assess and address the need for additional employment supports and crisis outreach services during the Demonstration.

Quality enhancements for community-based structures crisis center providers also were implemented. All centers classified as an IMD must have accreditation from a nationally recognized entity. National accreditation requires facilities to have demonstrated comprehensive treatment planning and a holistic focus on member's needs.

These quality enhancements are expected to:

- Increase access to community-based services, including through increased integration of primary and behavioral health care (Goal 4);
- Improve metabolic monitoring for children and adolescents on antipsychotic medication;
- Increase medication continuation following inpatient psychiatric discharge; and
- Increase follow-up within 7 and 30 days after discharge from an ED for mental illness.

In total, the activities outlined in the SMI/SED implementation plan are expected to:

- Reduce ED utilization among Medicaid members with SMI/SED (Goal 1);
- Reduce preventable readmissions to acute care hospitals and residential settings (Goal 2); and
- Improve care coordination, especially continuity of care in the community following episodes of acute care in hospitals and residential treatment facilities (Goal 5) and maintain or reduce length of stay in the ED while awaiting mental health treatment in specialized settings (Goal 1).

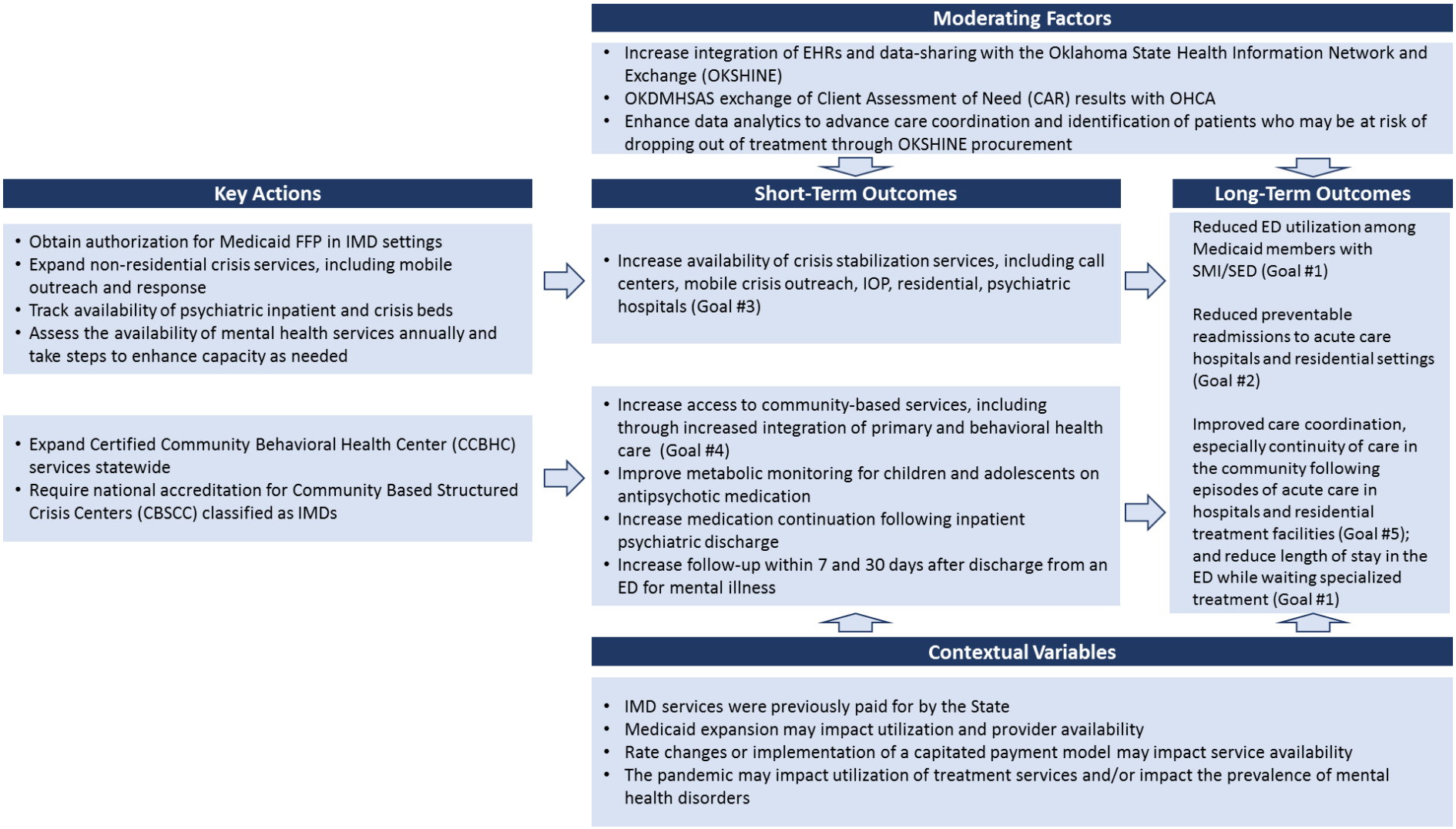
Under the Demonstration, the State also has the authority for Medicaid reimbursement of QRTP stays of 60 days or less in facilities that the State determines are IMDs. Currently, the State does not expect any QRTP facility to be classified as an IMD. In addition, the timeline and plan to transition facilities and their care model to serve as QRTPs is being reexamined. QRTP models are not included in the evaluation design.

Moderating factors contributing to the success of the planned SMI/SED activities include the further integration of EHRs with the State's Health Information Exchange; the exchange of Client Assessment Record information between ODMHSAS and the OHCA; and enhanced data analytics to support care coordination and identify clients at risk of dropping out of treatment.

The evaluation design considers several contextual factors, including services added to the Medicaid State Plan that were previously funded through non-Medicaid sources; the potential impact of the novel coronavirus pandemic; and the impact of Medicaid eligibility expansion beginning July 1, 2021. The procurement of managed care organizations to begin operation in the fall of 2021 was placed on hold by the legislature. MCO implementation began April 1, 2024.

A visual depiction of the SMI/SED aspects of the Demonstration is provided on the following page.

SMI/SED Demonstration Logic Model



2. SMI/SED Evaluation Questions and Hypotheses

The SMI-related evaluation components consider ten primary evaluation questions, with sixteen subsidiary questions related to SMI/SED services. The evaluation questions include:

1. Does the Demonstration result in reductions in emergency department utilization among members with an SMI?
2. Does the Demonstration result in reductions in preventable readmissions to acute care hospitals or residential settings for members with an SMI?
3. Does the Demonstration result in increased treatment for comorbid SUD and physical health conditions after IMD discharge?
4. Does the Demonstration result in improved availability of crisis outreach and response services?
5. Does the Demonstration result in improved availability of non-residential, non-hospital crisis outreach and response services?
6. Does the Demonstration result in improved availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED?
7. Does the Demonstration improve the integration of primary and behavioral health care to address the chronic mental health care needs of members with SMI/SED?
8. Does the Demonstration result in improved care coordination for members with SMI/SED?
9. How does the cost of care change over time?
10. What are the cost drivers?

An overview of each evaluation question, hypothesis, and measure is outlined in Section F-4 (SMI/SED Results). See Attachment 4 for a complete listing of measures from the approved evaluation design by evaluation question and hypothesis, including any changes made during the implementation of the evaluation due to data availability or integrity.

3. SMI/SED-Specific Methods and Analytics

SMI/SED-related evaluation questions one through three, nine, and ten were examined using an interrupted time series approach as described in Section C. The remaining questions were examined using longitudinal/descriptive, coarsened exact matching and within subjects time series methods. A summary of SMI/SED design elements is provided in the table below.

SMI/SED Evaluation Question	Approach
1. Does the Demonstration result in reductions in emergency department utilization among members with an SMI?	ITS
2. Does the Demonstration result in reductions in preventable readmissions to acute care hospitals or residential settings for members with an SMI?	ITS
3. Does the Demonstration result in increased treatment for comorbid SUD and physical health conditions after IMD discharge?	ITS
4. Does the Demonstration result in improved availability of crisis outreach and response services?	Longitudinal (Descriptive)
5. Does the Demonstration result in improved availability of non-residential, non-hospital crisis outreach and response services?	Longitudinal (Descriptive)
6. Does the Demonstration result in improved availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED? a. How does access differ for members receiving CCBHC services? b. How does access differ following the provider's CCBHC designation?	Longitudinal (Descriptive) a. CEM w/t-test b. Within-Subjects Time Series
7. Does the Demonstration improve the integration of primary and behavioral health care to address the chronic mental health care needs of members with SMI/SED? a. How does integration differ for members receiving CCBHC services? b. How does integration differ following the provider's CCBHC designation?	a. CEM w/t-test b. Within-Subjects Time Series
8. Does the Demonstration result in improved care coordination for members with SMI/SED? a. How does care coordination differ for members receiving CCBHC services? b. How does care coordination differ following the provider's CCBHC designation?	a. CEM w/t-test b. Within-Subjects Time Series
9. How does the cost of care change over time? a. How does the Medicaid eligibility expansion impact cost over time? b. Does increased federal share for IMD services have an association with increased State investments in behavioral health services?	ITS
10. What are the cost drivers? a. Does increased community-based service utilization have an association with lower ED costs? b. Does increased community-based service utilization have an association with lower inpatient costs?	

As mentioned in Section C-5, the evaluation relies on measures that by nature include participants with attributes that are highly correlated. For example, many measures focus on specific diagnoses, 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 the sample size and variation decreases.

However, several SMI/SED evaluation questions focus on broader population trends. As part of the SMI/SED-related interrupted time series analysis, the evaluator controlled for member demographic characteristics (i.e., age, gender, and aid category code) for the SMI/SED-related measures outlined in the table below.

Measures Controlled for Member Demographics
1. Does the Demonstration result in reductions in emergency department utilization among members with an SMI?
• Percent of members using the ED for mental health
2. Does the Demonstration result in reductions in preventable readmissions to acute care hospitals or residential settings for members with an SMI?
• Rate of 30-day all-cause unplanned readmissions following psychiatric hospitalization
9. How does the cost of care change over time?
• Per member per month Medicaid cost for individuals who have an SMI/SED • Per member per month cost of MH-Related treatment for individuals who have an SMI/SED • Per member per month cost of physical health care for individuals who have an SMI/SED
10. What are the cost drivers?
• Per member per month cost of outpatient (non-ED) for individuals who have an SMI/SED • Per member per month cost of pharmacy for individuals who have an SMI/SED • Per member per month cost of outpatient ED for individuals who have an SMI/SED • Per member per month cost of inpatient care for individuals who have an SMI/SED • Per member per month cost of long-term care for individuals who have an SMI/SED

In addition, Attachment 5 includes include a plot of the actual time series and a plot of the partial autocorrelation function (pACF) for each outcome measure.

One measure, ED length of stay, associated with SMI/SED evaluation question eight, hypothesis three, is currently under development. The evaluators will work with the OHCA and the Health Information Exchange (HIE) staff to refine the metric for inclusion in the summative evaluation report, once data is collected and extracts are available.

Coarsened Exact Matching

Coarsened exact matching was used for evaluating members participating in the SMI/SED IMD Demonstration. 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, and aid category code. The evaluator performed a separate analysis for each year of the Demonstration; thus, the year was also entered as a covariate. The aid category which determines how a member qualified for Medicaid was one-hot encoded to become the following binary variables: expansion; ABD adult; ABD-child; 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 6. 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).

Qualitative Methods

Qualitative methods will be employed in the final year of the Demonstration to measure providers' perception of the length of time members are in the ED while awaiting treatment in specialized mental health settings. The results of this analysis will be presented in the Summative Evaluation Report, due to CMS 18 months following the close of the Demonstration.

4. SMI/SED Results

Results for each hypothesis and measure are presented by evaluation question. Measure description, analytics, and statistical details are provided in the findings. Results for measures examined using the ITS approach were assessed using the following variables.

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 (and without Medicaid expansion, which began July 1. 2021)

SMI/SED Evaluation Question 1 – Does the Demonstration result in reductions in emergency department utilization among members with an SMI?

Evaluation Question 1 includes the following two subsidiary questions:

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

b. How does utilization vary by geographic areas (e.g., urban v rural)?

Hypothesis 1 of Question 1 posits that the Demonstration will contain or reduce mental health-related ED use for adults with an SMI:

a. ED utilization will maintain or improve by sub-population.

b. ED utilization will maintain or improve in both urban and rural areas.

The measure examined is:

Measure Number	Description
1.1.1	Percent of members with SMI/SED using the ED for mental health

Measure 1.1.1 – Percent of members with SMI/SED using the ED for mental health

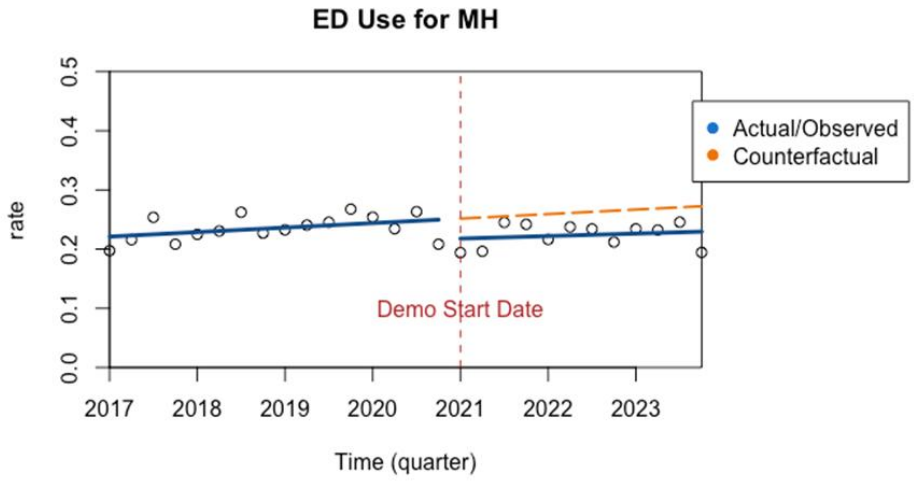
Question 1.	***Does the Demonstration result in reductions in emergency department utilization among members with an SMI?***
Hypothesis 1.	***Demonstration will contain or reduce mental health-related ED use for adults with an SMI.***

Measure Description: The denominator represents the number of members with an SMI/SED who had an ED visit during the measurement period. The numerator includes the number of ED visits with a mental health-related diagnosis as the primary diagnosis.

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

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

Findings: There was a statistically significant decline in ED use associated with the start of the Demonstration period. No other significant trends were observed.



ED for MH ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.01	0.004	None
Immediate Effect of Demonstration Start	-0.03	0.02	p<0.05
Sustained Effect (Time since demo start)	-0.001	0.002	None
Constant	-15.13	8.90	None

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

There was a statistically significant decrease associated with the start of the Demonstration period. Older members were associated with fewer ED visits for mental health. Members in the expansion group were associated with more ED visits for mental health. No other significant trends were observed.

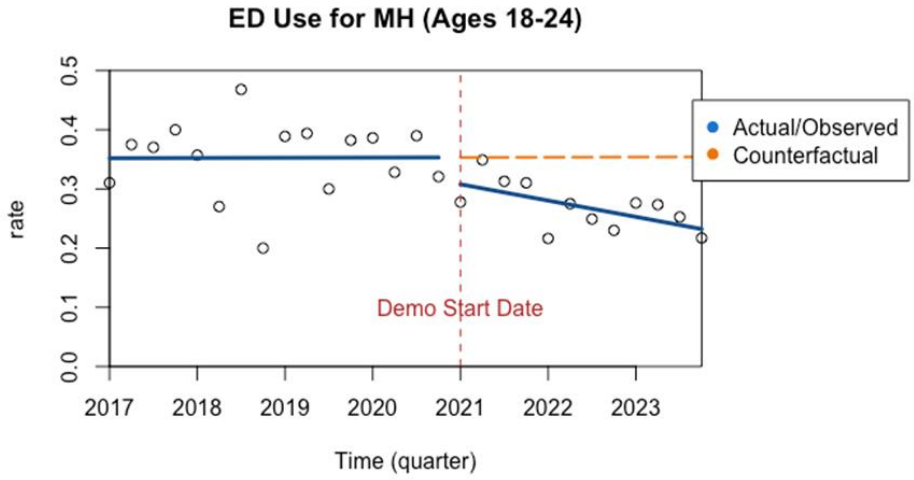
ED for MH GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.006	0.004	None
Immediate Effect of Demo Start	-0.031	0.011	p<0.01
Sustained Effect	-0.002	0.001	None
Age	-0.002	0.0002	p<0.01
Gender (Female)	0.007	0.004	None
Expansion Group	0.024	0.005	p<0.01
Non-ABD	0.013	0.009	None
Rural	0.006	0.005	None
Constant	-10.777	7.955	None

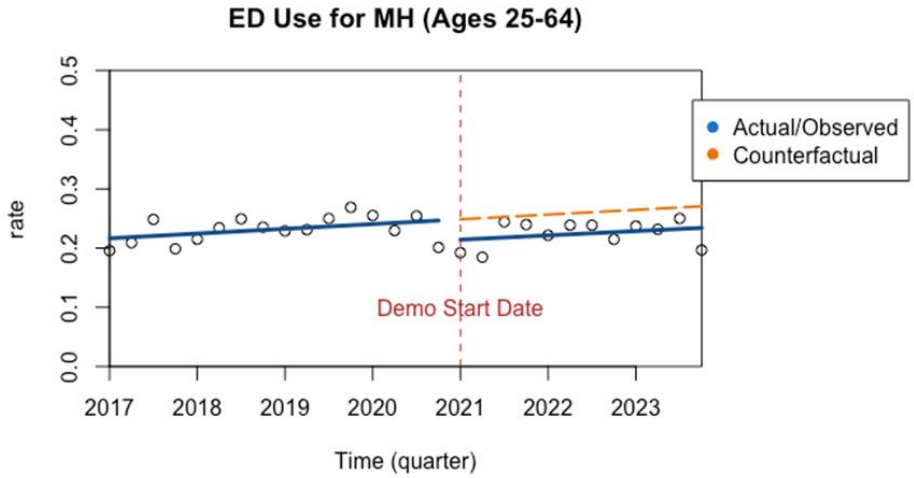
Age

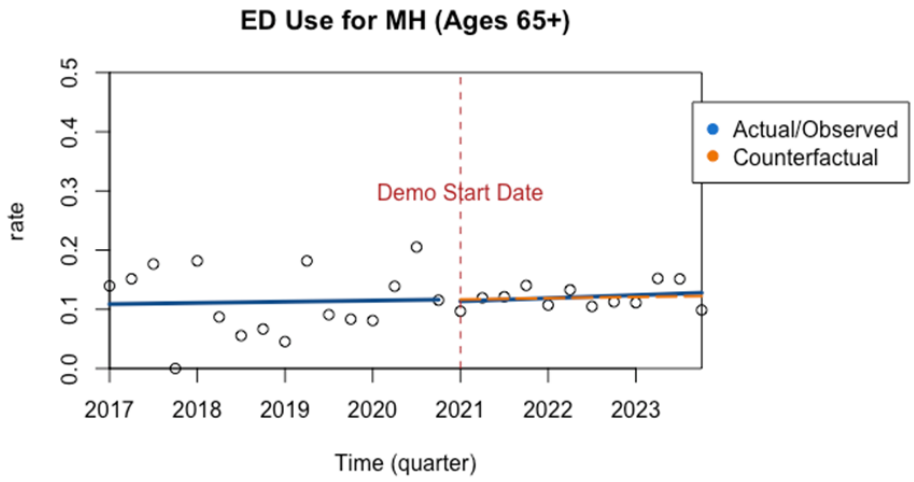
No statistically significant trends in ED visits for mental health were observed in any age group examined.

ED for MH ITS Model (Age)	Ages 18-24	Ages 25-64	Ages 65+
General Trend (Time) (Standard Error)	0.0003 (0.01)	0.01 (0.005)	0.002 (0.01)
Immediate Effect of Demonstration Start (Standard Error)	-0.04 0.04	-0.03 0.02	-0.004 0.04
Sustained Effect (Standard Error)	-0.01 0.01	-0.0002 0.002	0.001 0.005
Constant (Standard Error)	-0.28 (23.68)	-15.96 (9.41)	-3.91 (20.87)

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


ED Use for MH (Ages 18-24)
rate
0.0
0.1
0.2
0.3
0.4
0.5
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual


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

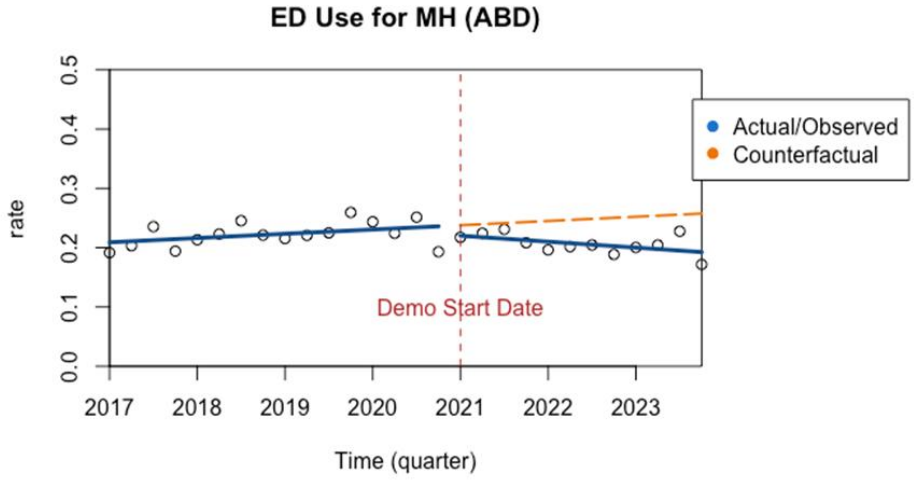


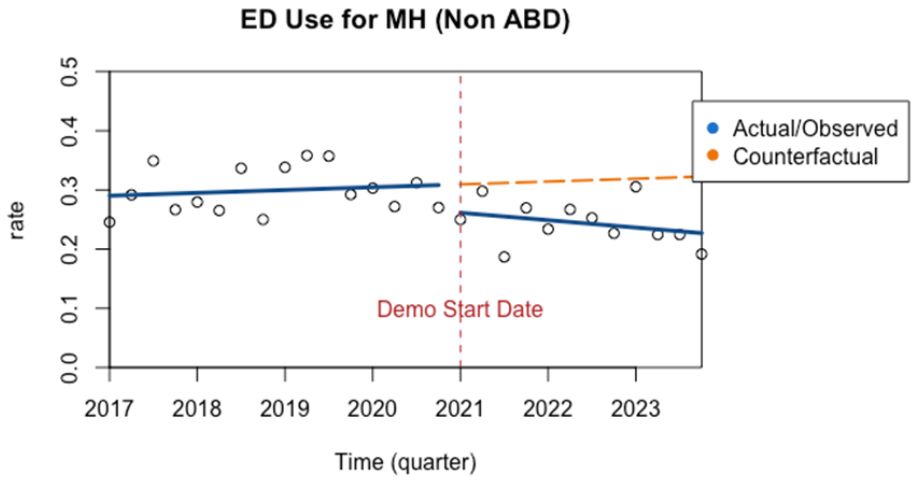
Aid Category

The demonstration period was associated with a slight decrease in ED visits for mental health for members in the ABD eligibility group. No other statistically significant trends were observed.

ED for MH ITS Model (Aid Category)	ABD	Non-ABD Adult
General Trend (Time) (Standard Error)	0.01 (0.004)	0.005 (0.01)
Immediate Effect of Demonstration Start (Standard Error)	-0.01 (0.01)	-0.04 (0.03)
Sustained Effect (Standard Error)	-0.004** (0.002)	-0.004 (0.004)
Constant (Standard Error)	-14.29 (7.83)	-9.35 (16.79)

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



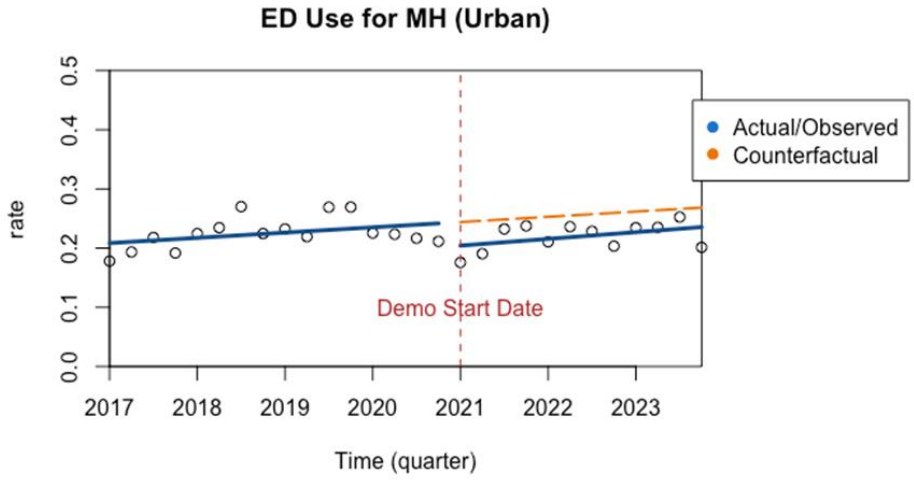


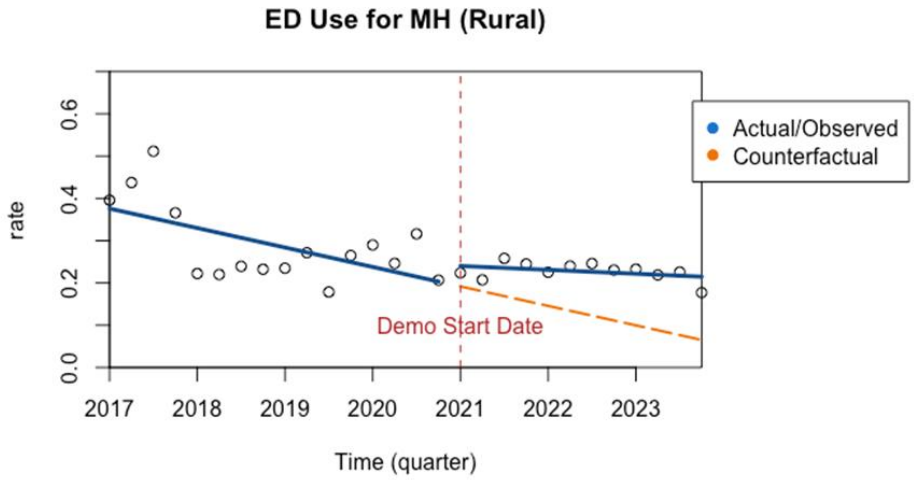
Urban/Rural

The start of the Demonstration was associated with a statistically significant decrease in ED visits for members living in urban areas. The general trend showed a statistically significant decrease in ED visits for mental health for members living in rural areas.

ED for MH ITS Model (Urban/Rural)	Urban	Rural
General Trend (Time) (Standard Error)	0.01 (0.01)	-0.05*** (0.01)
Immediate Effect of Demonstration Start (Standard Error)	-0.04** (0.02)	0.04 (0.05)
Sustained Effect (Standard Error)	0.001 (0.002)	0.01 (0.01)
Constant (Standard Error)	-17.71 (10.48)	93.25*** (26.55)

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




ED Use for MH (Rural)
rate
0.0
0.2
0.4
0.6
2017
2018
2019
2020
2021
2022
2023
Time (quarter)
Demo Start Date
Actual/Observed
Counterfactual

Evaluation Question 1 Summary

A summary of the findings related to evaluation Question 1 is presented below. Findings are summarized related both to the general trend and the sustained effect of the Demonstration period, and to control for the potential effect of the expansion group on outcomes.

When members in the expansion group were removed from the ITS there were no statistically significant changes observed during the Demonstration period (i.e., sustained effect). An examination of utilization by age also showed no significant trends.

Members in the ABD aid category were associated with a decrease in ED visits during the Demonstration period. Members residing in urban areas were associated with a decrease in utilization at the start date of the Demonstration, while members in rural areas showed a general trend for fewer visits over time.

	Interrupted Time Series		
Measure	**General Trend**	**Sustained Effect**	**Significant Change without Expansion Pop**
Hypothesis 1. The Demonstration will contain or reduce the rate of ED visits for MH for adults with an SMI			
2.1.1. Percent of members using the ED for MH related diagnoses	-	-	No

Notes
- No statistically significant change in trend

SMI/SED Evaluation Question 2 – Does the Demonstration result in reductions in preventable readmissions to acute care hospitals or residential settings for members with an SMI?

Hypothesis 1 of Question 2 posits that the Demonstration will contain or reduce readmissions to acute care hospitals or residential settings for adults with an SMI. The measure is:

Measure Number	Description
2.1.1	Rate of 30-day all-cause unplanned readmissions following psychiatric hospitalization

Measure 2.1.1 – Rate of 30-day all-cause unplanned readmissions following psychiatric hospitalization

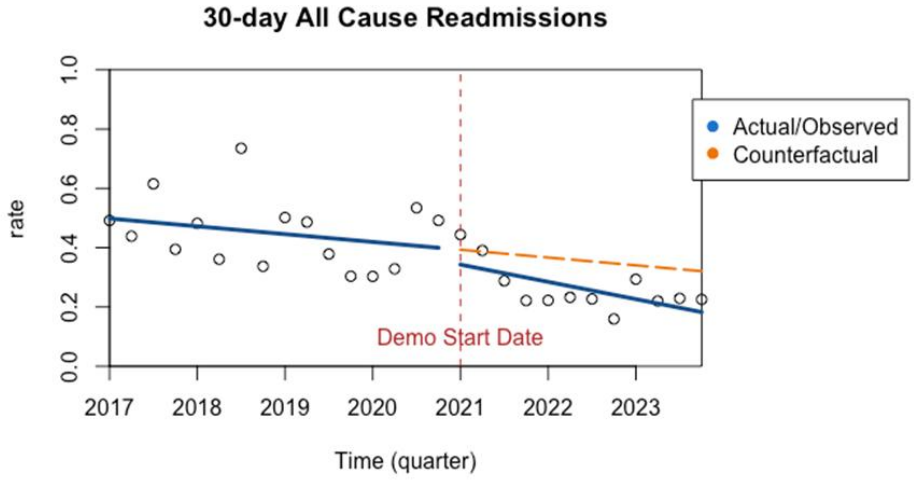
Question 2.	***Does the Demonstration result in reductions in preventable readmissions to acute care hospitals or residential settings for members with an SMI?***
Hypothesis 1.	***The Demonstration will contain or reduce readmissions to acute care hospitals or residential settings for adults with an SMI.***

Measure Description: The denominator represents the number of members with a discharge from a psychiatric hospital during the measurement period. The numerator includes the number of discharges followed by a readmission within 30 days.

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

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

Findings: There were no statistically significant trends observed for all cause readmissions following psychiatric hospitalization.



All Cause Readmits ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.03	0.02	None
Immediate Effect of Demonstration Start	-0.04	0.08	None
Sustained Effect (Time since demo start)	-0.01	0.01	None
Constant	53.59	43.55	None

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

Older members were associated with more readmissions. Members in the expansion and non-ABD groups were associated with fewer readmissions. No other statistically significant trends were observed.

All Cause Readmits GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-0.030	0.029	None
Immediate Effect of Demo Start	-0.079	0.072	None
Sustained Effect	0.002	0.009	None
Age	0.005	0.001	p<0.01
Gender (Female)	-0.007	0.024	None
Expansion Group	-0.122	0.029	p<0.01
Non-ABD Adult	-0.120	0.043	p<0.01
Rural	0.058	0.025	p<0.05
Constant	60.401	58.764	None

Evaluation Question 2 Summary

A summary of the findings related to evaluation Question 2 is presented below. Findings are summarized related both to the general trend and the sustained effect of the Demonstration period, and to control for the potential effect of the expansion group on outcomes.

When members in the expansion group were removed from the ITS, there were no statistically significant changes observed during the Demonstration period (i.e., sustained effect).

	Interrupted Time Series		
Measure	**General Trend**	**Sustained Effect**	**Significant Change Without Expansion Pop**
Hypothesis 1. The Demonstration will contain or reduce the readmissions to acute care hospitals or residential settings for adults with an SMI			
2.1.1. Rate of all cause unplanned readmissions following psychiatric hospitalization	-	-	No

Notes
- No statistically significant change in trend

SMI/SED Evaluation Question 3 – Does the Demonstration result in increased treatment for comorbid SUD and physical health conditions after IMD discharge?

Hypothesis 1 of Question 3 posits that the Demonstration will maintain or increase access to physical health and/or SUD treatment post-discharge for adults with an SMI. The measure examined is:

Measure Number	Description
3.1.1	Percentage of members who receive outpatient treatment for an SUD and/or physical health conditions within 30-days of IMD discharge

Measure 3.1.1 – Percentage of members who receive outpatient treatment for an SUD and/or physical health conditions within 30 days of SUD IMD discharge

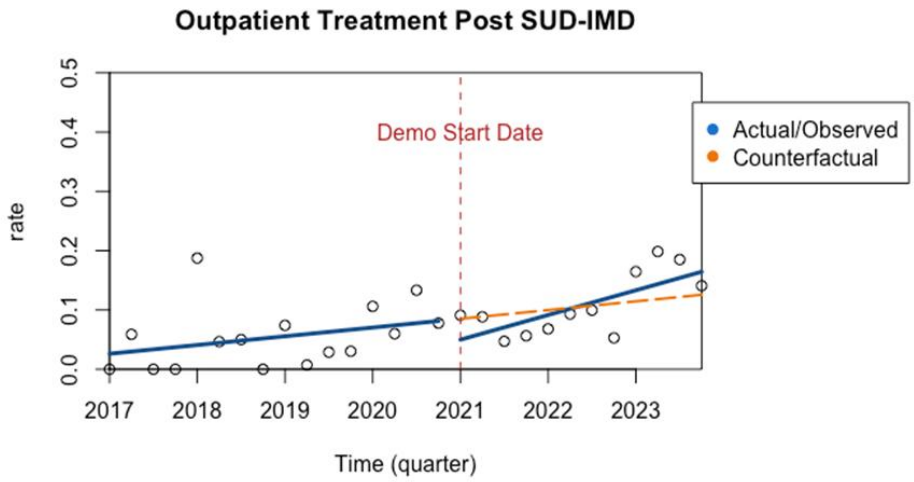
Question 3.	***Does the Demonstration result in increased treatment for comorbid SUD and physical health conditions after IMD discharge?***
Hypothesis 1.	***The Demonstration will maintain or increase access to physical health and/or SUD treatment post-discharge for adults with an SMI.***

Measure Description: The denominator represents the number of members with a discharge from an SUD IMD during the measurement period. The numerator includes the number of discharges followed by an outpatient treatment visit for SUD or physical health within 30 days.

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

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

Findings: There were no statistically significant trends observed in outpatient treatment post discharge for members with an SMI who received SUD IMD treatment.



Treatment Post SUD IMD ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.01	0.01	None
Immediate Effect of Demonstration Start	-0.04	0.04	None
Sustained Effect (Time since demo start)	0.01	0.005	None
Constant	-29.69	20.62	None

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

There was a slight decline in treatment in the 30 days post discharge associated with the start date of the Demonstration, while a sustained increase in treatment post discharge was observed during the Demonstration period.

Expansion and non-ABD group members were associated with an increase in outpatient treatment post SUD-IMD discharge.

Treatment Post SUD IMD GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.013	0.012	None
Immediate Effect of Demo Start	-0.071	0.029	p<0.05
Sustained Effect	0.009	0.004	p<0.05
Age	0.001	0.001	None
Gender (Female)	-0.019	0.012	None
Expansion Group	0.049	0.014	p<0.01
Non-ABD Adult	0.068	0.022	p<0.01
Rural	0.006	0.012	None
Constant	-26.054	23.651	None

Evaluation Question 3 Summary

A summary of the findings related to evaluation Question 3 is presented below. Findings are summarized related both to the general trend and the sustained effect of the Demonstration period, and to control for the potential effect of the expansion group on outcomes.

When members in the expansion group were removed from the ITS, there were no statistically significant changes observed during the Demonstration period (i.e., sustained effect).

	Interrupted Time Series		
Measure	**General Trend**	**Sustained Effect**	**Significant Change Without Expansion Pop**
Hypothesis 1. The Demonstration will maintain or increase access to physical health and/or SUD treatment post-discharge from SUD-IMD for adults with an SMI			
3.1.1. Percentage of members who receive outpatient treatment for an SUD and/or physical health conditions within 30 days of SUD IMD discharge	-	-	No

Notes
- No statistically significant change in trend

SMI/SED Evaluation Question 4 – Does the Demonstration result in improved availability of crisis outreach and response services?

Hypothesis 1 of Question 4 posits that the Demonstration will maintain or improve the availability of crisis outreach and response services throughout the state. The measure examined is:

Measure Number	Description
4.1.1	The annual ratio of crisis outreach and response services to Medicaid members who have an SMI/SED

Measure 4.1.1 – The annual ratio of crisis outreach and response services to Medicaid members who have an SMI/SED

Question 4.	***Does the Demonstration result in improved availability of crisis outreach and response services?***
Hypothesis 1.	***The Demonstration will maintain or improve the availability of crisis outreach and response services throughout the state.***

Measure Description: The annual ratio of crisis outreach and response services to Medicaid members who have an SMI/SED.

Data Source and Time Period: OHCA Annual Assessment of the Availability of Mental Health Services reports to CMS for 2020 – 2023.

Analytical Approach: Longitudinal (Descriptive)

Findings: There was no change in the number of crisis call centers during the Demonstration. The number of mobile crisis teams increased seven percent, from 72 at baseline to 77 in DY3.

While the number of teams increased, so did the number of individuals identified as having an SMI or SED. Thus, the ratio of members-to-providers increased (a lower ratio is preferred).

The ratio of members-to-call centers increased by 41 percent, while the ratio of members-to-mobile crisis units increased 32 percent over baseline.

Measure	Baseline (2020)	DY1 (2021)	DY2 (2022)	DY3 (2023)	% Change From Baseline
Members with SMI or SED	117,459	144,162	157,598	165,692	41%
Number of Crisis Call Centers	77	77	77	77	0
Number of Mobile Crisis Units/Community Response Teams	72	72	72	77	7%
Ratio of Medicaid members with SMI/SED to Crisis Call Centers	1,525.44	1,872.23	2,046.73	2,151.84	41%
Ratio of Medicaid members with SMI/SED to Mobile Crisis Units/Community Response Teams	1,631.38	2,002.25	2,188.86	2,151.84	32%

SMI/SED Evaluation Question 5 – Does the Demonstration result in improved availability of non-residential, non-hospital crisis outreach and response services?

Hypothesis 1 of Question 5 posits that the Demonstration will maintain or improve the availability of non-residential, non-hospital crisis outreach and response services. The measure examined is:

Measure Number	Description
5.1.1	The annual ratio of non-residential and non-hospital crisis outreach and response services to Medicaid members who have an SMI/SED

Measure 5.1.1 – The annual ratio of non-residential and non-hospital crisis outreach and response services to Medicaid members who have an SMI/SED

Question 5.	***Does the Demonstration result in improved availability of non-residential, non-hospital crisis outreach and response services?***
Hypothesis 1.	***The Demonstration will maintain or improve the availability of non-residential, non-hospital crisis outreach and response services.***

Measure Description: The annual ratio of non-residential and non-hospital crisis outreach and response services to Medicaid members who have an SMI/SED.

Data Source and Time Period: OHCA Annual Assessment of the Availability of Mental Health Services reports to CMS for 2020 – 2023.

Analytical Approach: Longitudinal (Descriptive)

Findings: The number of crisis observation/assessment centers increased from five at baseline to 25 during DY3. The number of crisis stabilization units increased from 11 at baseline to 17 during DY3.

The increase in non-hospital services resulted in a lower ratio of members-to-providers (lower numbers are preferred). The ratio of members-to-crisis observation/assessment centers improved by 72 percent and the ratio of members-to-crisis stabilization crisis units improved nine percent over baseline.

Measure	Baseline (2020)	DY1 (2021)	DY2 (2022)	DY3 (2023)	% Change From Baseline
Members with SMI or SED	117,459	144,162	157,598	165,692	41%
Number of Crisis Observation/ Assessment Centers	5	11	11	25	400%
Number of Crisis Stabilization Units	11	13	13	17	55%
Ratio of Medicaid members with SMI/SED to Crisis Observation/ Assessment Centers	23,491.80	13,105.64	14,327.09	6,627.68	-72%
Ratio of Medicaid members with SMI/SED to Crisis Stabilization Units	10,678.09	11,089.38	12,122.92	9,746.59	-9%

SMI/SED Evaluation Question 6 – Does the Demonstration result in improved availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED?

Hypothesis 1 of Question 6 posits that the Demonstration will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED. The measure examined is:

Measure Number	Description
6.1.1	The annual ratio of Medicaid-enrolled psychiatrists and licensed mental health practitioners to Medicaid members who have an SMI/SED

Measure 6.1.1 – The annual ratio of Medicaid enrolled Psychiatrists and licensed Mental Health practitioners to Medicaid members who have an SMI/SED

Question 6.	***Does the Demonstration result in improved availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED?***
Hypothesis 1.	***The Demonstration will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED.***

Measure Description: The annual ratio of Medicaid enrolled psychiatrists and licensed mental health practitioners to Medicaid members who have an SMI/SED.

Data Source and Time Period: OHCA Annual Assessment of the Availability of Mental Health Services reports to CMS for 2020 – 2023.

Analytical Approach: Longitudinal (Descriptive)

Findings: The number of psychiatrists and providers authorized to prescribe increased by seven percent under the Demonstration. Ninety-nine percent of psychiatrists and providers authorized to prescribe were enrolled in the Medicaid program in DY3.

The number of licensed mental health practitioners enrolled in Medicaid fell by over 65 percent, despite an increase in licensed practitioners. However, this may be an artifact of the reporting process, as staff operating within CCBHC programs are not individually counted in the annual assessment of mental health service availability. Therefore, the ratios reported may be undercounting availability.

While the number of psychiatrists/prescribers increased, so did the number of individuals identified as having an SMI or SED. Thus, the ratio members-to-psychiatrists increased 32 percent (a lower ratio is preferred). The ratio of members-to-licensed practitioners increased by 126 percent due to the drop in Medicaid enrolled providers (see table on following page).

Measure	Baseline (2020)	DY1 (2021)	DY2 (2022)	DY3 (2023)	% Change From Baseline
Members with SMI or SED	117,459	144,162	157,598	165,692	41%
Psychiatrists/Authorized Prescribers					
Total Licensed	457	485	521	479	5%
Number of Medicaid-Enrolled	444	380	362	473	7%
Percent Medicaid Enrolled	97%	78%	69%	99%	2%
Ratio of Medicaid Members with SMI/SED to Prescribers	264.55	379.37	435.35	350.30	32%
Other Practitioners					
Total Licensed	8,410	10,521	10,307	13,901	65%
Number Medicaid Enrolled	6,252	6,086	4,868	3,905	-38%
Percent Medicaid Enrolled	74%	58%	47%	28%	-62%
Ratio of Medicaid Members with SMI/SED to Practitioners	18.79	23.69	32.37	42.43	126%

Hypothesis 2 of Question 6 examines the transition of mental health services to CCBHCs and posits that expanding CCBHCs statewide will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED.

There are two subsidiary questions under evaluation question six, hypothesis two:

a. How does access differ for members receiving CCBHC services?

b. How does access differ following the provider's CCBHC designation?

The measures examined are:

Measure Number	Description
6.2.1	Use of first-line psychosocial care for youth on antipsychotics
6.2.2	Medication Continuation Following Inpatient Psychiatric Discharge

Measure 6.2.1 – Use of first-line psychosocial care for youth on antipsychotics

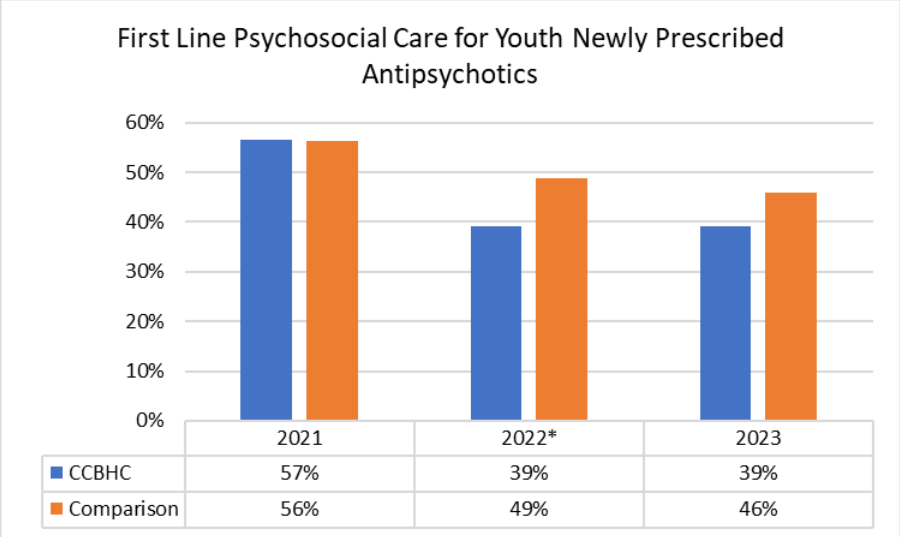
Question 6.	***Does the Demonstration result in improved availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED?***
Hypothesis 2.	***Expanding CCBHCs statewide will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED.***

Measure Description: The denominator represents the number of members ages 1 to 17 who had a new prescription for an antipsychotic medication. The numerator is the number of members who received psychosocial care in the 121-day period from 90 days prior to the prescription start date through 30 days after the prescription start.

Data Source and Time Period: MMIS paid claims for 2021 – 2023.

Analytical Approach: Coarsened Exact Matching with t-test.

Findings: There were no statistically significant differences between the treatment (CCBHC) and comparison group, apart from 2022 (DY2) when the comparison group performed 10 points stronger than the CCBHC group on the use of psychosocial care for youth newly prescribed antipsychotics.



	2021	2022*	2023
CCBHC	57%	39%	39%
Comparison	56%	49%	46%

**Statistically Significant Difference Between Treatment and Comparison Group*

Performance Pre/Post CCBHC Designation

Agencies received CCBHC designations throughout calendar year 2022, resulting in one year or less of data in the post designation period. Measurement specifications require a look back and negative history period prior to the period being assessed. Because of the short post-designation period, a test of means post-CCBHC designation could not be performed. The analysis will be included in the summative evaluation report, as more data post-CCBHC designation becomes available.

Measure 6.2.2 – Medication Continuation Following Inpatient Psychiatric Discharge

Question 6.	***Does the Demonstration result in improved availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED?***
Hypothesis 2.	***Expanding CCBHCs statewide will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED.***

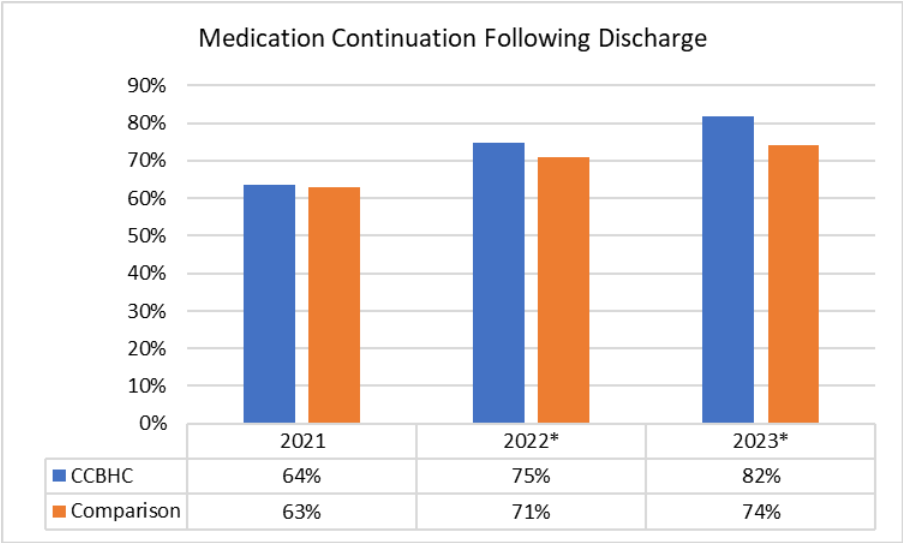
Measure Description: The denominator represents the number of members ages 18 years and older discharged from an inpatient psychiatric facility with a principal diagnosis of MDD, schizophrenia, or bipolar disorder. The numerator represents to the number of members who were dispensed evidence-based outpatient medication within two days prior to discharge through 30 days post-discharge.

Data Source and Time Period: MMIS paid claims for 2021 – 2023 for comparison group testing and 2017 – 2023 for within subjects test pre- and post-CCBHC designation.

Analytical Approach: Coarsened Exact Matching with t-test for comparison group testing; Welch Two Sample t-test for pre/post testing.

Findings: There was no significant difference in performance between the treatment (CCBHC) and comparison group in the first year of the Demonstration (2022). In the following two years, the CCBHC group outperformed the comparison group.

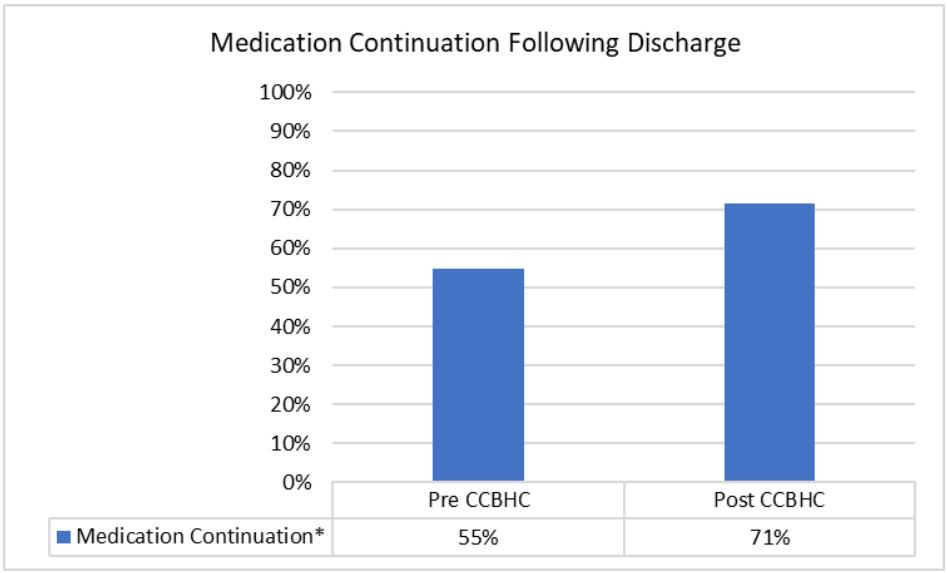
In 2022, 75 percent of members in the CCBHC group showed continuation of medications versus 71 percent in the comparison group. In 2023, 82 percent of the members in the CCBHC group showed medication continuation versus 74 percent in the comparison group.



**Statistically Significant Difference Between Treatment and Comparison Group*

Performance Pre/Post CCBHC Designation

In a test of means before and after CCBHC designation, performance on continuation of medication following discharge from a psychiatric hospital improved. Performance rose from 55 percent in the years prior to designation to 71 percent following CCBHC designation. A CEM matched t-test to control for more demographic factors was performed and yielded similar results.



**Statistically Significant Difference Pre and Post CCBHC Designation*

Evaluation Question 6 Summary

A summary of the findings related to evaluation Question 6 is presented below.

Measure	Analytic Approach	Statistically Significant Improvement
Hypothesis 1. The Demonstration will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED.		
8.1.1. The annual ratio of Medicaid enrolled Psychiatrists and licensed Mental Health practitioners to Medicaid members who have an SMI/SED	Descriptive	*
Hypothesis 2. Expanding CCBHCs statewide will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED.		
6.2.1. Use of first-line psychosocial care for youth on antipsychotics	CEM	No
6.2.2. (a) Medication Continuation Following Inpatient Psychiatric Discharge	CEM	Yes
(b) Medication Continuation Following Inpatient Psychiatric Discharge (Performance Post CCBHC Designation)	Welch t-sample t-test	Yes

*Approved designed called for descriptive overview of findings, significance testing was not performed

SMI/SED Evaluation Question 7 - Does the Demonstration improve the integration of primary and behavioral health care to address the chronic mental health care needs of members with SMI/SED?

Evaluation Question 7 includes the following two subsidiary questions:

a. How does integration differ for members receiving CCBHC services?

b. How does integration differ following the provider's CCBHC designation?

Hypothesis 1 of Question 7 posits that expanding CCBHCs statewide will maintain or improve the integration of primary and behavioral health care to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED. The measures examined are:

Measure Number	Description
7.1.1	Access to Preventive/Ambulatory Health Services for members who have an SMI
7.1.2	Metabolic monitoring for youth on antipsychotics

Measure 7.1.1 – Access to Preventive/Ambulatory Health Services for members who have an SMI

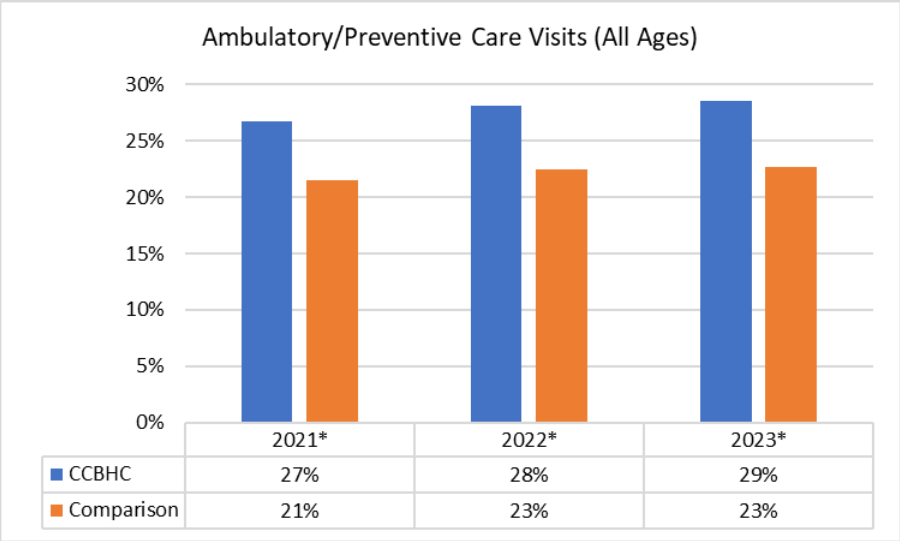
Question 7.	***Does the Demonstration improve the integration of primary and behavioral health care to address the chronic mental health care needs of members with SMI/SED?***
Hypothesis 1.	***Expanding CCBHCs statewide will maintain or improve the integration of primary and behavioral health care to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED.***

Measure Description: The denominator includes the number of members in the treatment and comparison group. The numerator is the number of members who had one or more ambulatory or preventive care visits during the year.

Data Source and Time Period: MMIS paid claims for 2021 – 2023 for comparison group testing and 2017 – 2023 for within subjects test pre and post CCBHC designation.

Analytical Approach: Coarsened Exact Matching with t-test for comparison group testing; Welch Two Sample t-test for pre/post testing.

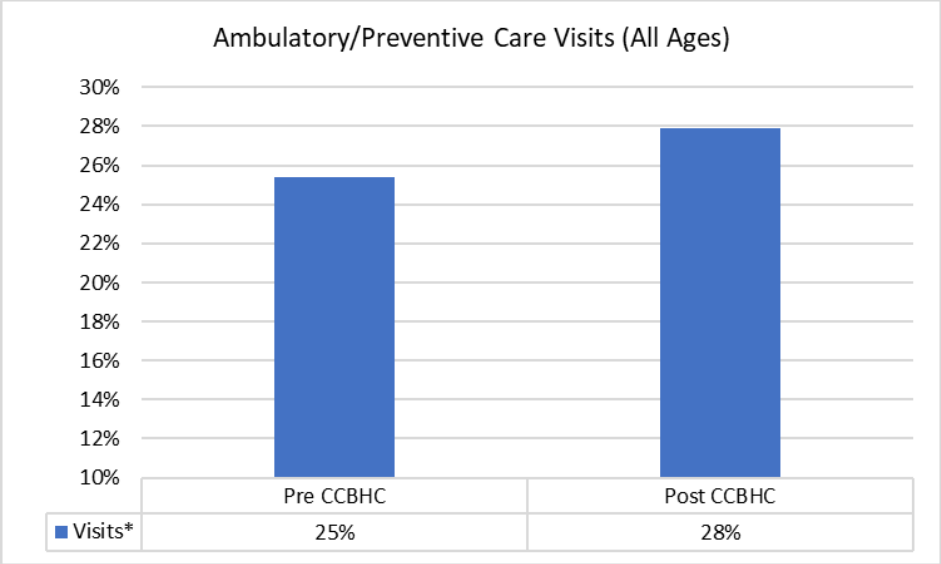
Findings: The treatment (CCBHC) group outperformed the comparison group in each year studied. In 2021, 27 percent of members in the CCBHC group had an ambulatory/preventive care visit versus 21 percent in the comparison group. In 2022, 28 percent of CCBHC members had visits versus 23 percent of the comparison group. In 2023, 29 percent of CCBHC members had visits versus 23 percent of the comparison group. Differences were statistically significant in each year studied.



**Statistically Significant Difference Between Treatment and Comparison Group*

Performance Pre/Post CCBHC Designation

In a test of means before and after CCBHC designation, members receiving ambulatory/preventive care visits improved post-CCBHC designation. Performance rose from 25 percent prior to designation to 28 percent following CCBHC designation. A CEM matched t-test to control for more demographic factors was performed and yielded similar results.



**Statistically Significant Difference Pre and Post CCBHC Designation*

Measure 7.1.2 – Metabolic monitoring for youth on antipsychotics

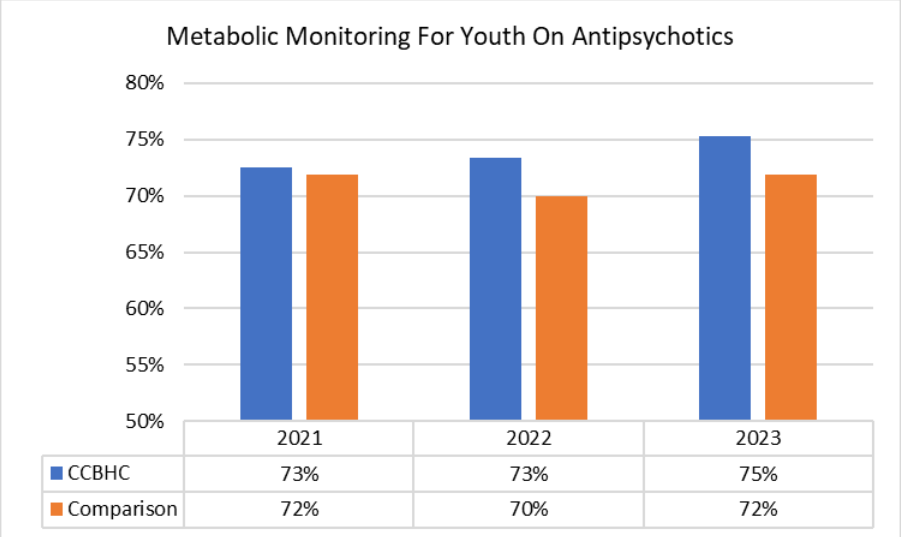
Question 7.	***Does the Demonstration improve the integration of primary and behavioral health care to address the chronic mental health care needs of members with SMI/SED?***
Hypothesis 1.	***Expanding CCBHCs statewide will maintain or improve the integration of primary and behavioral health care to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED.***

Measure Description: The denominator represents the number of members ages 1 – 17 who had at least two antipsychotic medication dispensing events of the same or different medications, on different dates of service. The numerator represents the number of members who had metabolic testing (at least one test for blood glucose, HbA1c, or Cholesterol).

Data Source and Time Period: MMIS paid claims for 2021 – 2023 for comparison group testing and 2017 – 2023 for within subjects test pre and post CCBHC designation.

Analytical Approach: Coarsened Exact Matching with t-test for comparison group testing; Welch Two Sample t-test for pre/post testing.

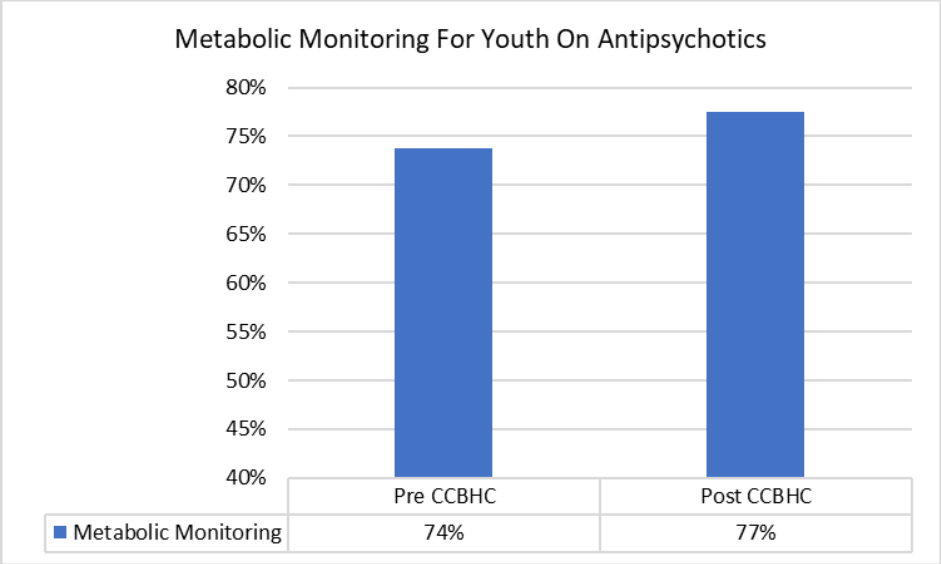
Findings: There were no statistically significant differences in metabolic monitoring for youth on antipsychotics between the treatment (CCBHC) and comparison group, in any year studied.



	2021	2022	2023
CCBHC	73%	73%	75%
Comparison	72%	70%	72%

Performance Pre/Post CCBHC Designation

In a test of means before and after CCBHC designation, metabolic monitoring for youth on antipsychotics improved post-CCBHC designation. Performance increased from 74 percent prior to designation to 77 percent following CCBHC designation. However, the difference was not statistically significant. A CEM matched t-test to control for more demographic factors was performed and yielded similar results.



Evaluation Question 7 Summary

A summary of the findings related to evaluation Question 7 is presented below.

Measure		Analytic Approach	Statistically Significant Improvement
Hypothesis 1. Expanding CCBHCs statewide will maintain or improve the integration of primary and BH care to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED			
7.1.1	(a) Access to ambulatory/preventive care for members who have an SMI/SED (all ages)	CEM	Yes
	(b) Access to ambulatory/preventive care for members who have an SMI/SED (all ages) (Performance Post CCBHC Designation)	Welch t-sample t-test	Yes
7.12	(a) Metabolic Monitoring for Youth on Antipsychotics	CEM	No*
	(b) Metabolic Monitoring for Youth on Antipsychotics (Performance Post CCBHC Designation)	Welch t-sample t-test	No

*The CCBHC group performed higher, although not statistically significant

SMI/SED Evaluation Question 8 - Does the Demonstration result in improved care coordination for members with SMI/SED?

Evaluation question eight has six subsidiary questions, five of which will be addressed through qualitative analysis in the summative evaluation report. The remaining subsidiary question is included in this interim report:

a. How does care coordination differ following the provider's CCBHC designation?

Hypothesis 1 of Question 8 posits that expanding CCBHCs statewide will maintain or improve care coordination for members with an SMI/SED. The measures examined are:

Measure Number	Description
8.1.1	Follow-up within 7 days after hospitalization for MH for members ages 6 – 17 who had an acute inpatient discharge with a principal diagnosis of mental illness or intentional self-harm
8.1.2	Follow-up within 30-days after hospitalization for MH for members ages 6 – 17 who had an acute inpatient discharge with a principal diagnosis of mental illness or intentional self-harm
8.1.3	Follow-up within 7-days after ED visit for MH for members ages 18 and older on the date of the visit
8.1.4	Follow-up within 30-days after ED visit for MH members ages 18 and older on the date of the visit

Measure 8.1.1 – Follow-up within 7 days after hospitalization for Mental Health for members ages 6 – 17 who had an acute inpatient discharge with a principal diagnosis of mental illness or intentional self-harm

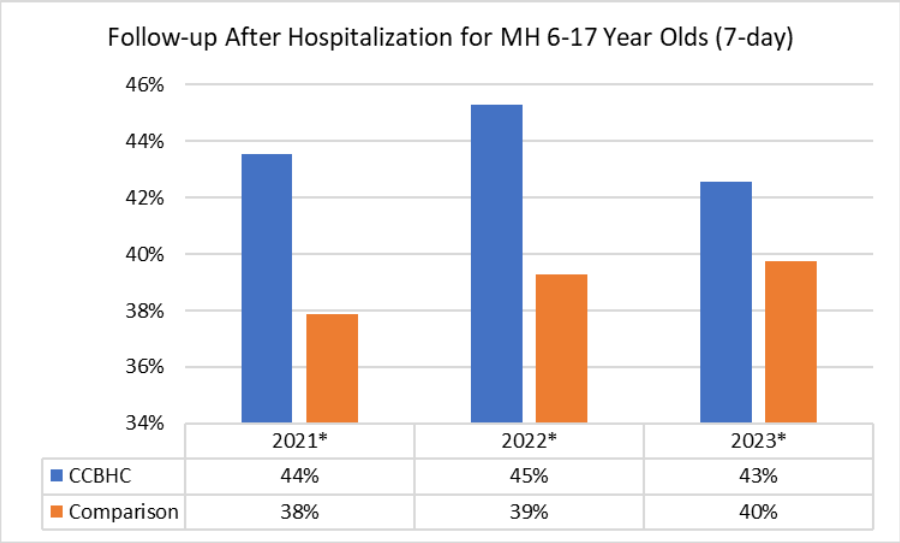
Question 8.	***Does the Demonstration result in improved care coordination for members with SMI/SED?***
Hypothesis 1.	***Expanding CCBHCs statewide will maintain or improve care coordination for members with an SMI/SED.***

Measure Description: The numerator represents to the number of members ages 6 – 17 who had an acute inpatient discharge with a principal diagnosis of mental illness or intentional self-harm. The numerator is the number of members who had a follow-up visit with a mental health practitioner within 7 days of discharge.

Data Source and Time Period: MMIS paid claims for 2021 – 2023 for comparison group testing and 2017 – 2023 for within subjects test pre and post CCBHC designation.

Analytical Approach: Coarsened Exact Matching with t-test for comparison group testing; Welch Two Sample t-test for pre/post testing.

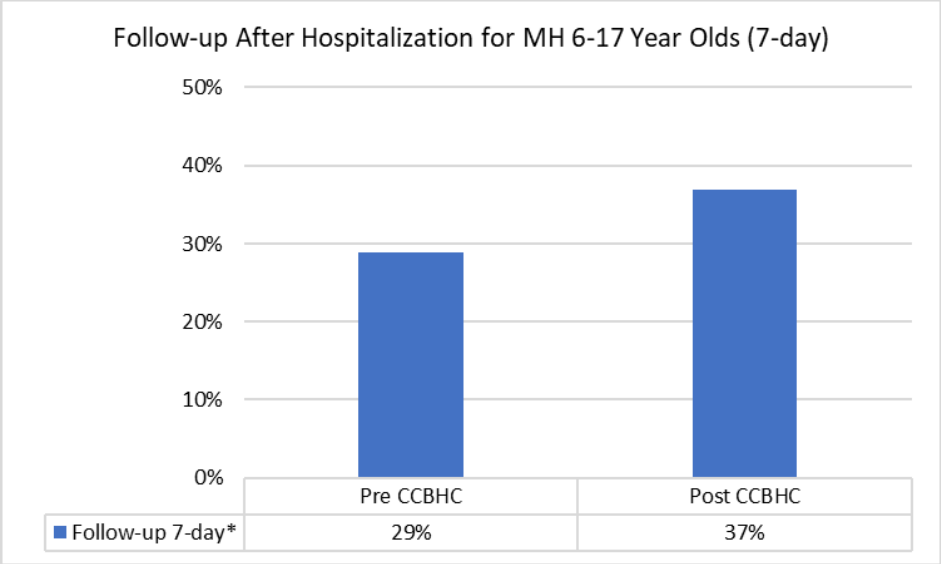
Findings: The treatment (CCBHC) group outperformed the comparison group in each year studied. In 2021, 44 percent of CCBHC members had a follow-up within 7 days versus 38 percent in the comparison group. In 2022, 45 percent of CCBHC members had a follow-up versus 39 percent in the comparison group. In 2023, 43 percent of CCBHC members had a follow-up versus 40 percent in the comparison group. Differences were statistically significant in each year studied.



**Statistically Significant Difference Between Treatment and Comparison Group*

Performance Pre/Post CCBHC Designation

In a test of means before and after CCBHC designation, follow-up within 7 days after hospitalization improved post CCBHC designation. Performance increased from 29 percent prior to designation to 37 percent following CCBHC designation. A CEM matched t-test to control for more demographic factors was performed and yielded similar results.



**Statistically Significant Difference Pre and Post CCBHC Designation*

Measure 8.1.2 – Follow-up within 30-days after hospitalization for Mental Health for members ages 6 – 17 who had an acute inpatient discharge with a principal diagnosis of mental illness or intentional self-harm

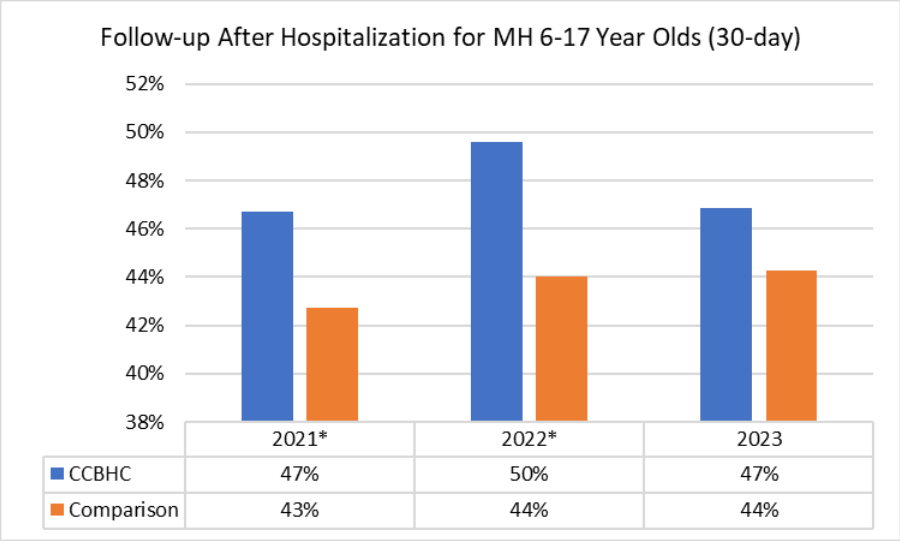
Question 8.	***Does the Demonstration result in improved care coordination for members with SMI/SED?***
Hypothesis 1.	***Expanding CCBHCs statewide will maintain or improve care coordination for members with an SMI/SED.***

Measure Description: The numerator represents to the number of members ages 6 – 17 who had an acute inpatient discharge with a principal diagnosis of mental illness or intentional self-harm. The numerator is the number of members who had a follow-up visit with a mental health practitioner within 30 days of discharge.

Data Source and Time Period: MMIS paid claims for 2021 – 2023 for comparison group testing and 2017 – 2023 for within subjects test pre and post CCBHC designation.

Analytical Approach: Coarsened Exact Matching with t-test for comparison group testing; Welch Two Sample t-test for pre/post testing.

Findings: The treatment (CCBHC) group outperformed the comparison in each year studied. In 2021, 47 percent of CCBHC members had a follow-up within 30 days versus 43 percent in the comparison group. In 2022, 50 percent of CCBHC members had a follow-up versus 44 percent in the comparison group. In 2023, 47 percent of CCBHC members had a follow-up versus 44 percent in the comparison group. Differences were statistically significant in each year studied.

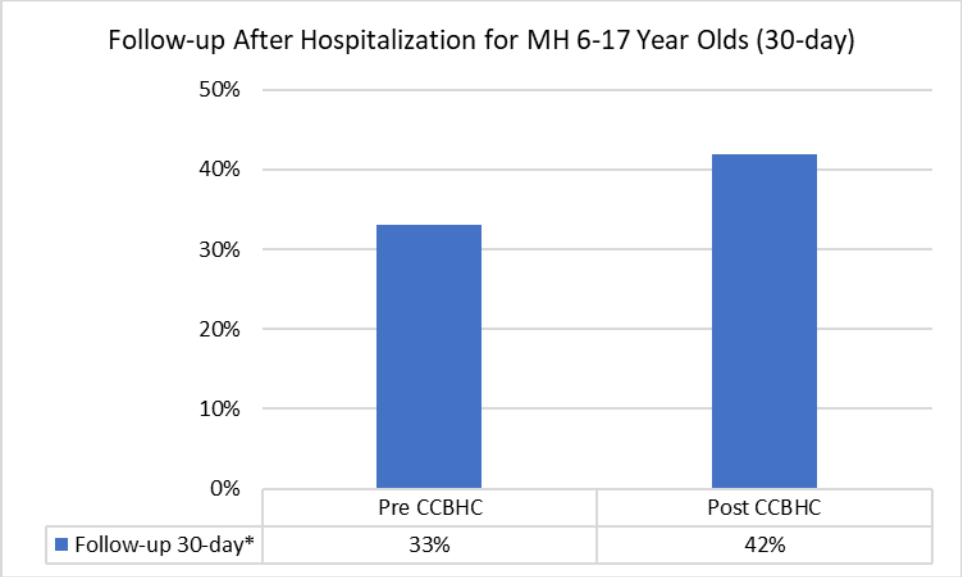


	2021*	2022*	2023
CCBHC	47%	50%	47%
Comparison	43%	44%	44%

**Statistically Significant Difference Between Treatment and Comparison Group*

Performance Pre/Post CCBHC Designation

In a test of means before and after CCBHC designation, follow-up within 30 days after hospitalization improved post-CCBHC designation. Performance increased from 33 percent prior to designation to 42 percent following CCBHC designation. A CEM matched t-test to control for more demographic factors was performed and yielded similar results.



**Statistically Significant Difference Between Treatment and Comparison Group*

Measure 8.1.3 – Follow-up within 7-days after ED visit for Mental Health for members ages 18 and older on the date of the visit

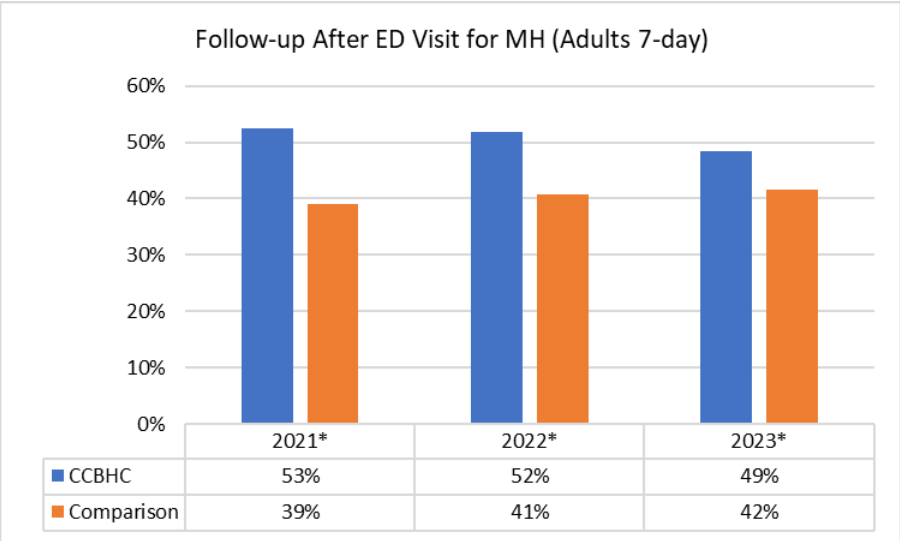
Question 8.	***Does the Demonstration result in improved care coordination for members with SMI/SED?***
Hypothesis 1.	***Expanding CCBHCs statewide will maintain or improve care coordination for members with an SMI/SED.***

Measure Description: The denominator represents the number of ED visits for a mental health disorder where the member is age 18 years old or older on the date of the visit. The numerator is the number of ED visits for which the member received a follow-up visit with any practitioner, with a principal diagnosis of a mental health disorder within 7 days after the ED visit.

Data Source and Time Period: MMIS paid claims for 2021 – 2023 for comparison group testing and 2017 – 2023 for within subjects test pre and post CCBHC designation.

Analytical Approach: Coarsened Exact Matching with t-test for comparison group testing; Welch Two Sample t-test for pre/post testing.

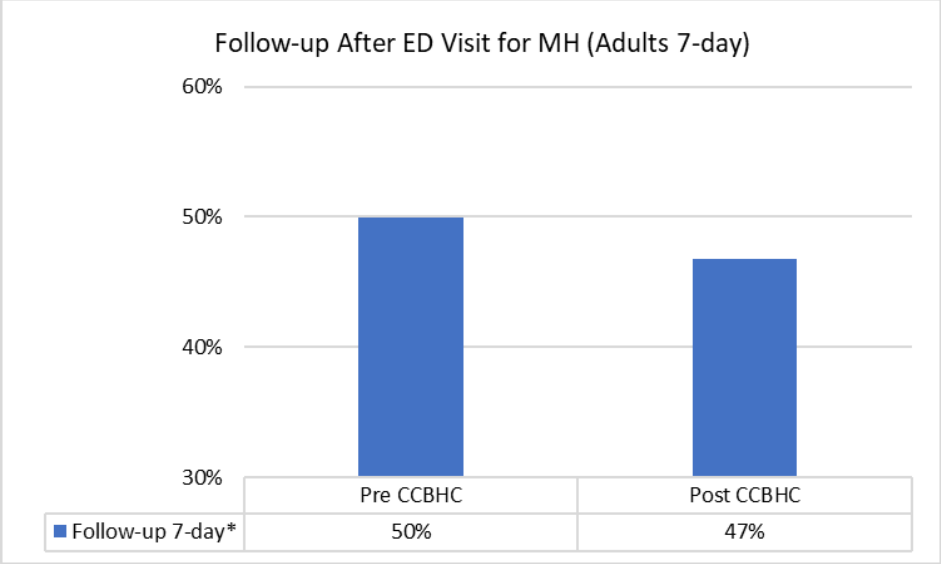
Findings: The treatment (CCBHC) group outperformed the comparison group in each year studied. In 2021, 53 percent of CCBHC members had a follow-up within 7 days versus 39 percent in the comparison group. In 2022, 52 percent of CCBHC members had a follow-up versus 41 percent in the comparison group. In 2023, 49 percent of CCBHC members had a follow-up versus 42 percent in the comparison group. Differences were statistically significant in each year studied.



**Statistically Significant Difference Between Treatment and Comparison Group*

Performance Pre/Post CCBHC Designation

In a test of means before and after CCBHC designation, follow-up within 7 days after and ED visit for mental health hospitalization declined post-CCBHC designation. Performance declined from 50 percent prior to designation to 47 percent following CCBHC designation. A CEM matched t-test to control for more demographic factors was performed and yielded similar results.



**Statistically Significant Difference Between Treatment and Comparison Group*

Measure 8.1.4 – Follow up within 30 days after ED visit for Mental Health members ages 18 and older on the date of the visit.

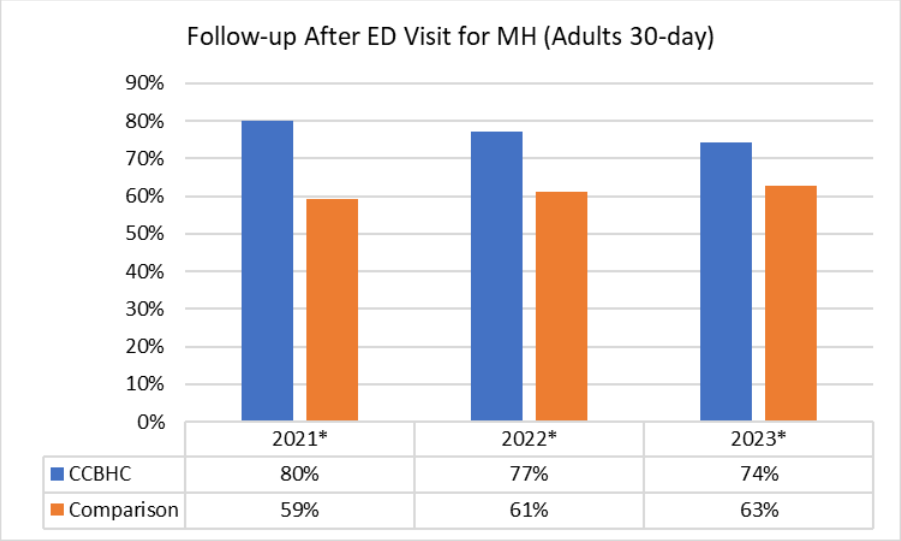
Question 8.	***Does the Demonstration result in improved care coordination for members with SMI/SED?***
Hypothesis 1.	***Expanding CCBHCs statewide will maintain or improve care coordination for members with an SMI/SED.***

Measure Description: The denominator represents the number of ED visits for a mental health disorder where the member is age 18 years old or older on the date of the visit. The numerator is the number of ED visits for which the member received a follow-up visit with any practitioner, with a principal diagnosis of a mental health disorder within 30 days after the ED visit.

Data Source and Time Period: MMIS paid claims for 2021 – 2023 for comparison group testing and 2017 – 2023 for within subjects test pre and post CCBHC designation.

Analytical Approach: Coarsened Exact Matching with t-test for comparison group testing; Welch Two Sample t-test for pre/post testing.

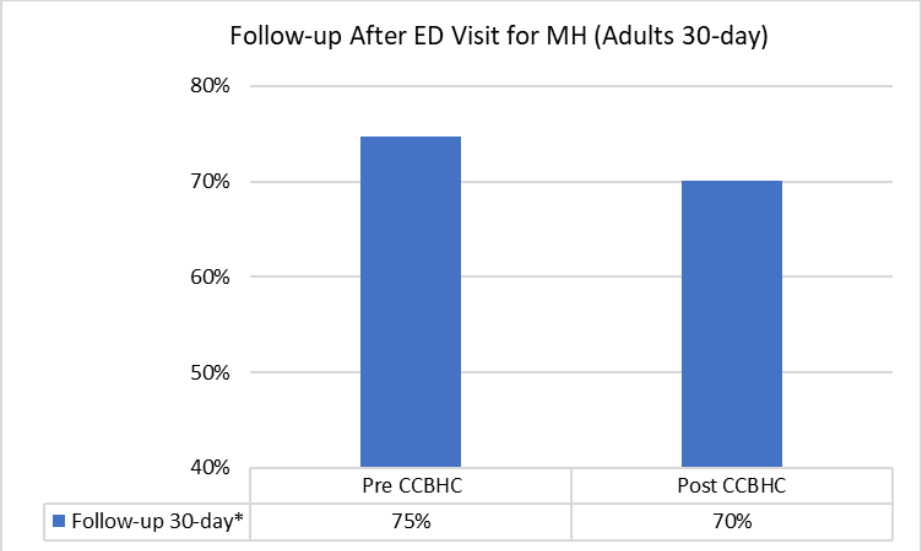
Findings: The treatment (CCBHC) group outperformed the comparison group in each year studied. In 2021, 80 percent of CCBHC members had a follow-up within 30 days versus 59 percent in the comparison group. In 2022, 77 percent of CCBHC members had a follow-up versus 61 percent in the comparison group. In 2023, 74 percent of CCBHC members had a follow-up versus 63 percent in the comparison group. Differences were statistically significant in each year studied.



**Statistically Significant Difference Between Treatment and Comparison Group*

Performance Pre/Post CCBHC Designation

In a test of means before and after CCBHC designation, follow-up within 30 days after and ED visit for mental health hospitalization declined post-CCBHC designation. Performance declined from 75 percent prior to designation to 70 percent following CCBHC designation. A CEM matched t-test to control for more demographic factors was performed and yielded similar results.



**Statistically Significant Difference Between Treatment and Comparison Group*

Evaluation Question 8 Summary

A summary of findings for evaluation question 8 is provided below.

Measure	Analytic Approach	Statistically Significant Improvement
Hypothesis 1. Expanding CCBHCs statewide will maintain or improve care coordination for members with an SMI/SED		
8.1.1. (a) Follow-up within 7 days after hospitalization for MH for members ages 6-17 with an SMI/SED	CEM	Yes
(b) Follow-up within 7 days after hospitalization for MH for members ages 6-17 with an SMI/SED (Performance Post CCBHC Designation)	Welch t-sample t-test	Yes
8.1.2. (a) Follow-up within 30 days after hospitalization for MH for members ages 6-17 with an SMI/SED	CEM	Yes
(b) Follow-up within 30 days after hospitalization for MH for members ages 6-17 with an SMI/SED (Performance Post CCBHC Designation)	Welch t-sample t-test	Yes
8.1.3. (a) Follow-up within 7 days after ED visit for MH for members ages 18 and older on the date of the visit	CEM	Yes
(b) Follow-up within 7-days after ED visit for MH for members ages 18 and older on the date of the visit (Performance Post CCBHC Designation)	Welch t-sample t-test	No
8.1.4. (a) Follow-up within 30 days after ED visit for MH for members ages 18 and older on the date of the visit	CEM	Yes
(b) Follow-up within 30 days after ED visit for MH for members ages 18 and older on the date of the visit (Performance Post CCBHC Designation)	Welch t-sample t-test	No

SMI/SED Evaluation Question 9 - How does the cost of care change over time?

Evaluation Question 9 is an exploratory analysis to examine how expenditures change over time. There are two subsidiary questions and no hypotheses. The subsidiary questions are:

a. How does the Medicaid eligibility expansion impact cost over time?

b. Does increased federal share for IMD services have an association with increased State investments in behavioral health services?

The measures examined are:

Measure Number	Description
9.1.1	PMPM Medicaid cost for individuals who have an SMI/SED
9.1.2	PMPM cost of MH-related treatment for individuals who have an SMI/SED
9.1.3	PMPM cost of physical health care for individuals who have an SMI/SED

Measure 9.1.1 – PMPM Medicaid cost for individuals who have an SMI/SED

Question 9. ***How does the cost of care change over time?***

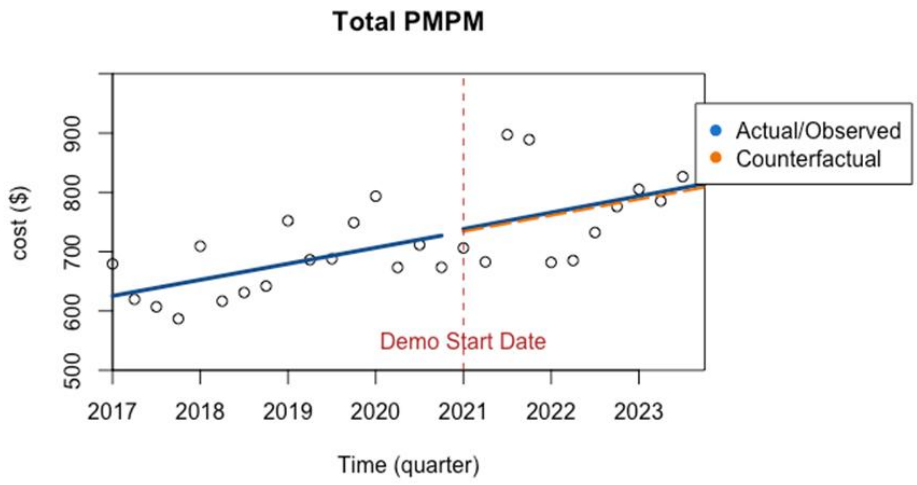
Hypothesis 1. ***N/A***

Measure Description: The sum of all Medicaid payments made (physical- and mental health-related health care), divided by the total number of member months.

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

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

Findings: There were no statistically significant trends observed in the total PMPM.



Total PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	27.12	13.75	None
Immediate Effect of Demonstration Start	4.27	49.38	None
Sustained Effect (Time since demo start)	0.14	6.32	None
Constant	-54,072.80	27,762.16	None

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

There was a statistically significant increase in PMPM over time. Older members and members residing in rural areas were associated with more expenditures. Women and members in the non-ABD group (Adult and Child) were associated with fewer expenditures.

Total PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	28.747	2.385	p<0.01
Immediate Effect of Demo Start	-5.856	8.457	None
Sustained Effect	-1.077	1.070	None
Age	1.349	0.131	p<0.01
Gender (Female)	-45.106	4.292	p<0.01
Expansion Group	6.194	7.207	None
Non-ABD Adult	-218.862	7.553	p<0.01
Non-ABD Child	-86.809	9.062	p<0.01
Rural	19.388	4.083	p<0.01
Constant	-57,368.780	4,815.449	p<0.01

Measure 9.1.2 – PMPM cost of Mental Health-Related treatment for individuals who have an SMI/SED

Question 9. ***How does the cost of care change over time?***

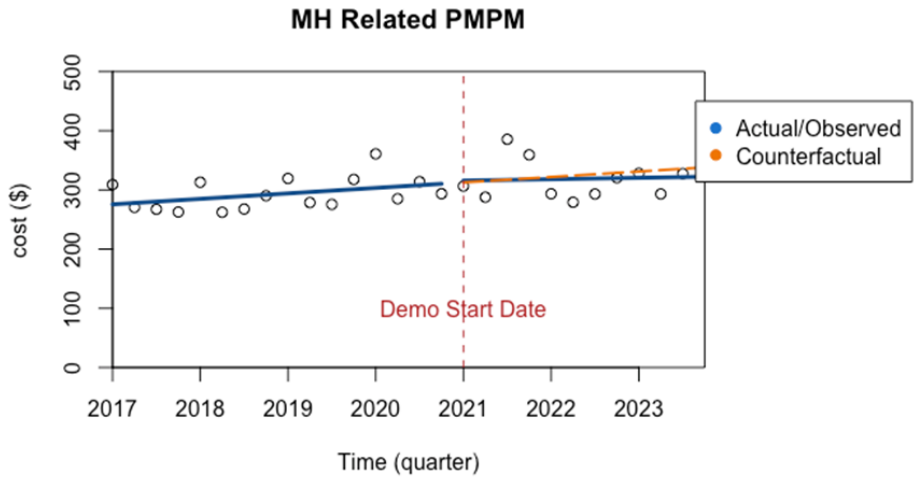
Hypothesis 1. ***N/A***

Measure Description: The sum of all Medicaid payments made for mental health-related health care, with breakouts for mental health-IMD, divided by the total number of member months.

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

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

Findings: There were no statistically significant trends in mental health-related PMPM observed.



MH-Related PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	9.25	6.49	None
Immediate Effect of Demonstration Start	4.80	23.32	None
Sustained Effect (Time since demo start)	-1.72	2.98	None
Constant	-18,389.18	13,110.60	None

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. GLM allows us to explain the variation in utilization

attributable to individual demographic factors, as well as temporal factors such as the Demonstration start date.

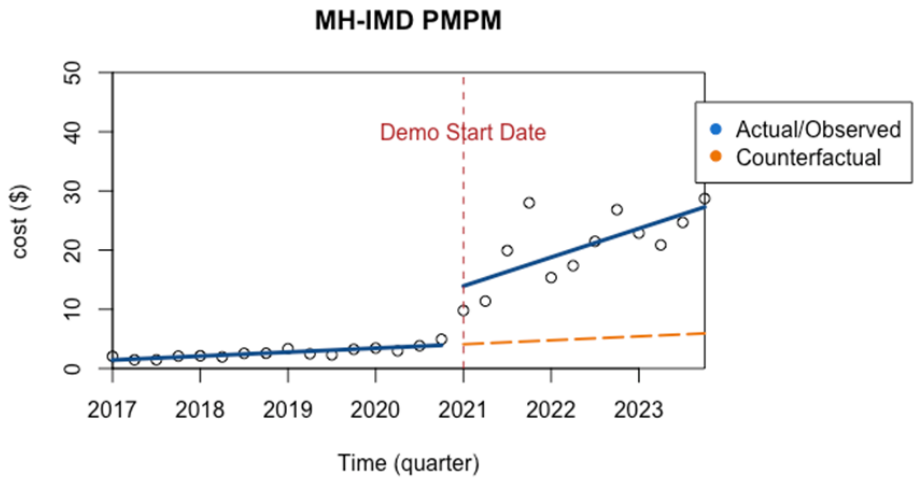
There was a statistically significant increase in mental health-related PMPM in the general trend but a sustained decrease associated with the Demonstration period.

Older members, members in the expansion and non-ABD child group and members residing in rural areas were associated with higher mental health-related expenditures. Women and members in the non-ABD Adult group were associated with lower mental health-related expenditures.

GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	10.581	1.339	p<0.01
Immediate Effect of Demo Start	6.390	4.749	None
Sustained Effect	-2.064	0.601	p<0.01
Age	4.423	0.073	p<0.01
Gender (Female)	-31.826	2.410	p<0.01
Expansion Group	37.134	4.047	p<0.01
Non-ABD Adult	-29.664	4.241	p<0.01
Non-ABD Child	207.861	5.089	p<0.01
Rural	9.967	2.293	p<0.01
Constant	-21,280.870	2,704.108	p<0.01

Mental Health-IMD PMPM

There was a statistically significant increase in the mental health-IMD PMPM associated with the Demonstration start and during the Demonstration period.



MH-IMD PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.67	0.65	None
Immediate Effect of Demonstration Start	8.79	2.33	p<0.01
Sustained Effect (Time since demo start)	1.05	0.30	p<0.01
Constant	-1,343.23	1,309.39	None

GLM was used to control for member demographics. Coefficient estimates are presented below. There was a statistically significant increase in the mental health-IMD PMPM over time and associated with the Demonstration start time and period.

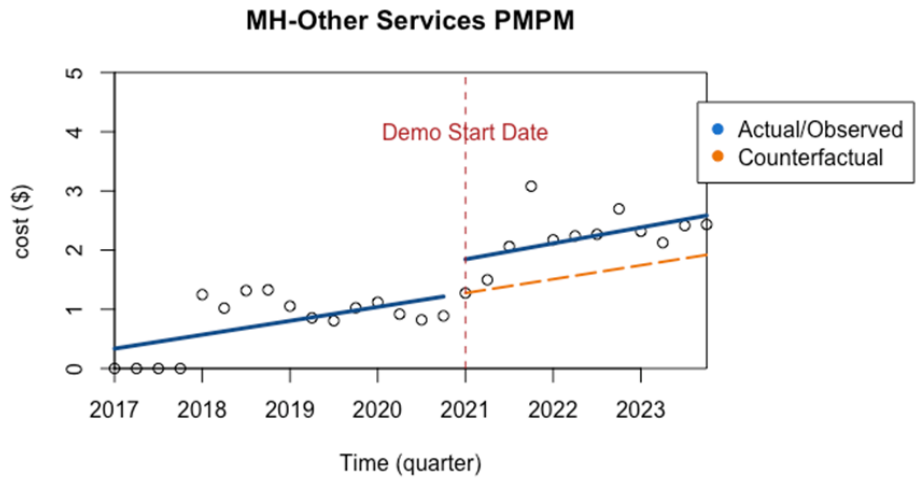
Older members, women, members residing in rural areas and members in the non-ABD Adult group were associated with a lower IMD PMPM. Members in the expansion and non-ABD child group were associated with higher mental health-IMD expenditures.

MH-IMD PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.477	0.199	p<0.05
Immediate Effect of Demo Start	3.472	0.706	p<0.01
Sustained Effect	0.546	0.089	p<0.01
Age	-0.203	0.011	p<0.01
Gender (Female)	-2.153	0.358	p<0.01
Expansion Group	28.465	0.602	p<0.01
Non-ABD Adult	-0.387	0.631	p<0.01
Non-ABD Child	3.002	0.757	p<0.01

MH-IMD PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Rural	-5.252	0.341	p<0.01
Constant	-947.973	402.050	p<0.05

Other Mental Health Service PMPM

There was a statistically significant increase in the PMPM for other mental health-related services over time. No other significant trends were observed.



Other MH Services PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.23	0.09	p<0.05
Immediate Effect of Demonstration Start	0.56	0.33	None
Sustained Effect (Time since demo start)	0.01	0.04	None
Constant	-473.26	185.01	p<0.05

GLM was used to control for member demographics. Coefficient estimates are presented on the following page. There was a statistically significant increase in the PMPM for other mental health services over time, although the Demonstration period was associated with a slight decrease in PMPM expenditures.

Older members, women, members residing in rural areas and members in the non-ABD adult group were associated with lower PMPM expenditures for other mental health services. Expansion group and members in the non-ABD child group were associated with higher PMPM expenditures for other mental health services.

Other MH Services GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.222	0.028	p<0.01
Immediate Effect of Demo Start	0.122	0.100	None
Sustained Effect	-0.034	0.013	p<0.01
Age	-0.032	0.002	p<0.01
Gender (Female)	-0.087	0.051	None
Expansion Group	1.954	0.085	p<0.01
Non-ABD Adult	-0.486	0.089	p<0.01
Non-ABD Child	2.728	0.107	p<0.01
Rural	-0.458	0.048	p<0.01
Constant	-445.134	56.759	p<0.05

Measure 9.1.3 – PMPM cost of physical health care for individuals who have an SMI/SED

Question 9. ***How does the cost of care change over time?***

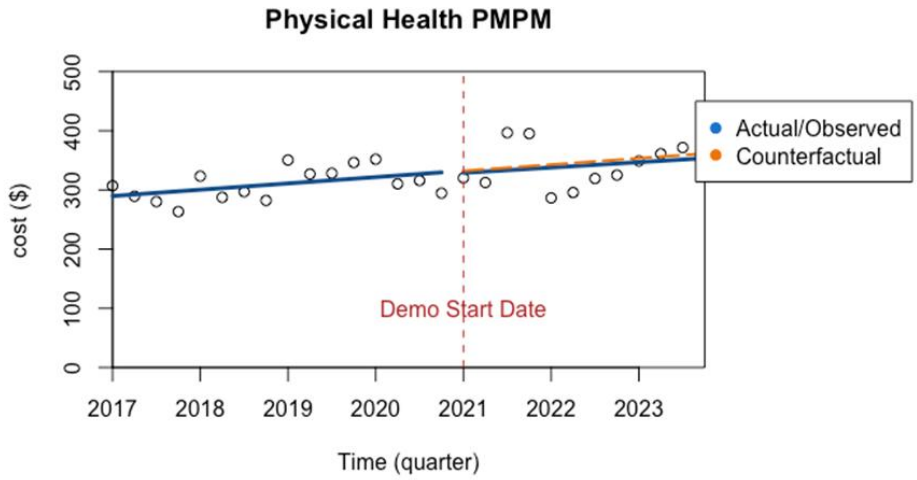
Hypothesis 1. ***N/A***

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

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

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

Findings: There were no statistically significant trends in the physical health related expenditures observed.



Physical Health PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	10.64	6.63	None
Immediate Effect of Demonstration Start	-3.09	23.81	None
Sustained Effect (Time since demo start)	-0.40	3.05	None
Constant	-21,179.12	13,388.35	None

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

There was a statistically significant increase in physical health expenditures over time. Older members, women and members in the expansion and non-ABD adult group (Adult and Child) were associated with fewer physical health related expenditures. Members residing in rural areas were associated with more physical health related expenditures.

Physical Health PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	11.361	1.556	p<0.01
Immediate Effect of Demo Start	-5.199	5.516	None
Sustained Effect	-0.480	0.698	None
Age	-1.000	0.085	p<0.01
Gender (Female)	-18.261	2.800	p<0.01
Expansion Group	-47.606	4.701	p<0.01
Non-ABD Adult	-131.172	4.927	p<0.01
Non-ABD Child	-164.232	5.911	p<0.01
Rural	1.271	2.663	None
Constant	-22,533.790	3,140.950	p<0.01

State Expenditures for Behavioral Health

Evaluation Question 9 includes a subsidiary review of State behavioral health expenditures. General Fund spending by the Oklahoma Department of Mental Health and Substance Abuse Services is reported by the OHCA as part of its annual report to CMS.

Behavioral Health Homes were sunset as the delivery system transitioned to integrated CCBHCs. CCBHC designations were completed in year two of the Demonstration. State investments in behavioral health services increased in each year of the Demonstration.

	State Dollars				
	SFY 2020 (Pre-Demo)	SFY 2021 (Demo-6mos)	SFY 2022	SFY2023	Change From Pre-Demo
Regular TXIX	$54,898,648	$55,115,363	$43,071,740	$48,105,475	($6,793,173)
CHIP	$2,608,734	$7,481,445	$11,373,731	$16,129,667	$13,520,933
Health Homes	$6,614,172	$4,002,923	$632,255	-	-
CCBHC	$17,505,607	$23,352,812	$31,288,545	$55,400,740	$37,895,133
Total	**$81,627,161**	**$89,952,543**	**$86,366,271**	**$119,635,883**	**$38,008,722**

Note: Table replicates data presented in SUD portion of report.

Evaluation Question 9 Summary

A summary of the findings related to evaluation Question 9 is presented below. Findings are summarized related both to the general trend and the sustained effect of the Demonstration period, and to address the potential effect of the expansion group on outcomes.

Expansion group members were associated with an increase in the PMPM costs associated with total cost of care (physical and mental health) seen in quarters three and four of Demonstration Year 1, which coincided with the start of expansion. Expenditures in these categories then leveled off for expansion members over time and showed no significant differences from the aggregate analysis. Expansion group members were associated with higher mental health-IMD expenditures throughout the Demonstration period (see Attachment 7).

No differences were seen in expenditures related to other mental health (non-IMD) services when the expansion group was removed from the aggregate analysis.

	Interrupted Time Series		
Measure	**General Trend**	**Sustained Effect**	**Significant Change without Expansion Pop**
Expenditure Analyses – Total Cost			
9.1.1. Total PMPM	-	-	*
9.1.2(a) MH PMPM	-	-	*
9.1.2(b) MH IMD PMPM	-	↑	Yes
9.1.2(c) MH Other PMPM	↑	-	No
9.1.3. Physical Health PMPM	-	-	*

- No statistically significant trend
↑Statistically significant increase in trend
* Increases in PMPM were seen in DY1 quarter 3 and 4, immediately following the expansion start date

SUD Evaluation Question 10 – What are the cost drivers?

Evaluation Question 10 is an exploratory analysis to examine costs drivers for expenditures related to SMI/SED. There are two subsidiary questions and no hypothesis. The subsidiary questions are:

a. Does increased community-based service utilization have an association with lower ED costs?

b. Does increased community-based service utilization have an association with lower inpatient costs?

The measures examined are:

Measure Number	Description
10.1.1	PMPM Medicaid cost of outpatient (non-ED) for individuals who have an SMI/SED
10.1.2	PMPM cost of pharmacy for individuals who have an SMI/SED
10.1.3	PMPM cost of outpatient ED for individuals who have an SMI/SED
10.1.4	PMPM cost of inpatient care for individuals who have an SMI/SED
10.1.5	PMPM cost of long term care for individuals who have an SMI/SED

Measure 10.1 – PMPM cost of outpatient (non-ED) for individuals who have an SMI/SED

Question 10. ***What are the cost drivers?***

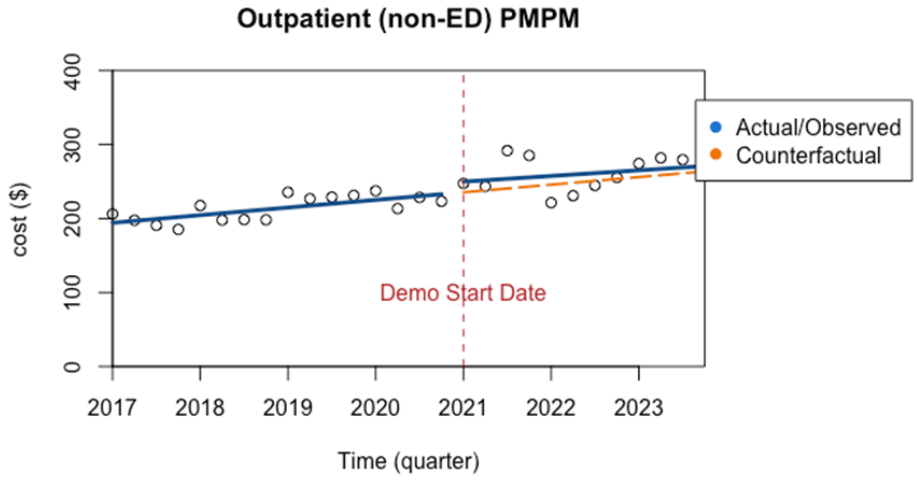
Hypothesis 1. ***N/A***

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

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

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

Findings: There was a statistically significant increase in outpatient PMPM expenditures over time. No other statistically significant trends were observed.



Outpatient PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	10.29	3.83	p<0.05
Immediate Effect of Demonstration Start	15.07	13.75	None
Sustained Effect (Time since demo start)	-0.66	1.76	None
Constant	-20,570.47**	7,732.19	p<0.05

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. GLM allows us to explain the variation in utilization

attributable to individual demographic factors, as well as temporal factors such as the Demonstration start date.

There was a statistically significant increase in outpatient PMPM expenditures over time and associated with the Demonstration start date, although the Demonstration period was associated with a sustained decrease in outpatient PMPM expenditures.

Members residing in rural areas were associated with more outpatient PMPM expenditures. Older members, women and members in the expansion, non-ABD (Adult and Child) groups were associated with lower PMPM expenditures.

Outpatient PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	10.089	0.801	p<0.01
Immediate Effect of Demo Start	8.846	2.839	p<0.01
Sustained Effect	-0.988	0.359	p<0.01
Age	-3.157	0.044	p<0.01
Gender (Female)	-6.684	1.441	p<0.01
Expansion Group	-38.983	2.419	p<0.01
Non-ABD Adult	-113.308	2.536	p<0.01
Non-ABD Child	-187.308	3.042	p<0.01
Rural	13.059	1.371	p<0.01
Constant	-19,971.920	1,616.534	p<0.01

Measure 10.1.2 – PMPM cost of pharmacy for individuals who have an SMI/SED

Question 10. ***What are the cost drivers?***

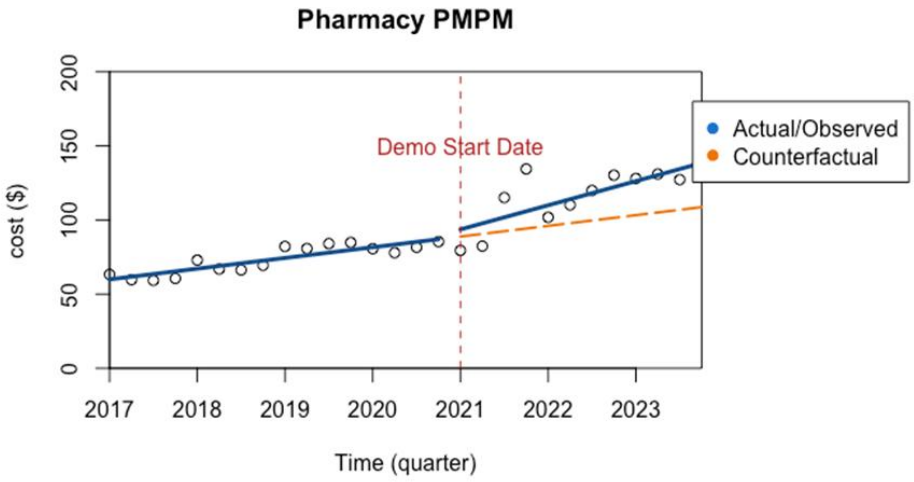
Hypothesis 1. ***N/A***

Measure Description: The sum of all Medicaid payments made for pharmacy services, divided by the total number of member months.

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

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

Findings: There was a statistically significant increase in pharmacy related expenditures over time and associated with the Demonstration period. No other significant trends were observed.



Pharmacy PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	7.22	1.97	p<0.01
Immediate Effect of Demonstration Start	2.55	7.08	None
Sustained Effect (Time since demo start)	2.27	0.91	p<0.05
Constant	-14,504.50	3,978.58	p<0.01

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. GLM allows us to explain the variation in utilization

attributable to individual demographic factors, as well as temporal factors such as the Demonstration start date.

There was a statistically significant increase in pharmacy related expenditures over time and associated with the Demonstration period, although the start date of the Demonstration was associated with a decrease.

Older members and members in the non-ABD group (Adult and Child) were associated with fewer pharmacy related expenditures. Women, expansion group members, and members residing in rural areas were associated with higher pharmacy expenditures.

Pharmacy PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	6.806	0.568	p<0.01
Immediate Effect of Demo Start	-7.047	2.015	p<0.01
Sustained Effect	1.466	0.255	p<0.01
Age	-2.074	0.031	p<0.01
Gender (Female)	4.981	1.023	p<0.01
Expansion Group	16.665	1.717	p<0.01
Non-ABD Adult	-58.026	1.800	p<0.01
Non-ABD Child	-130.438	2.159	p<0.01
Rural	8.149	0.973	p<0.01
Constant	-13,554.120	1,147.489	p<0.01

Measure 10.1.3 – PMPM cost of outpatient ED for individuals who have an SMI/SED

Question 10. ***What are the cost drivers?***

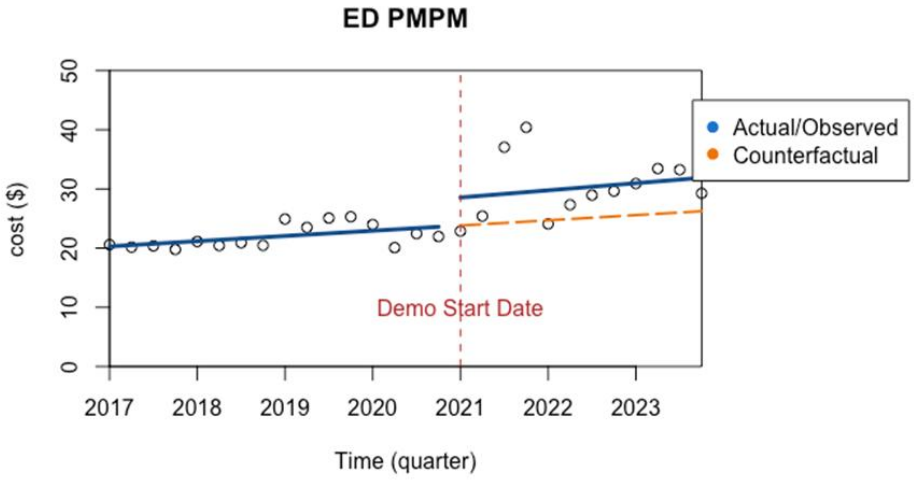
Hypothesis 1. ***N/A***

Measure Description: The sum of all Medicaid payments made for ED care, divided by the total number of member months.

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

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

Findings: There were no statistically significant trends related to ED PMPM expenditures observed.



ED PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	0.88	0.80	None
Immediate Effect of Demonstration Start	4.66	2.87	None
Sustained Effect (Time since demo start)	0.08	0.37	None
Constant	-1,756.26	1,612.76	None

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. GLM allows us to explain the variation in utilization

attributable to individual demographic factors, as well as temporal factors such as the Demonstration start date.

There was a statistically significant increase in ED PMPM expenditures over time. However, the Demonstration period was associated with a slight decrease in ED expenditures.

Older members, members residing in rural areas and members in the non-ABD Child group were associated with fewer ED expenditures. Women, expansion and non-ABD Adult group members were associated with increased ED expenditures.

ED PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	0.676	0.171	p<0.01
Immediate Effect of Demo Start	-0.078	0.608	None
Sustained Effect	-0.356	0.077	p<0.01
Age	-0.413	0.009	p<0.01
Gender (Female)	4.747	0.309	p<0.01
Expansion Group	24.726	0.518	p<0.01
Non-ABD Adult	3.896	0.543	p<0.01
Non-ABD Child	-17.506	0.652	p<0.01
Rural	-6.017	0.294	p<0.01
Constant	-1,322.126	346.232	p<0.01

Community-Based Service Utilization and ED Expenditures

Results show that for each CCBHC service utilized, the ED PMPM increases by approximately $0.70. The regression formula is presented below. While statistically significant, the correlation is very small, approximately one percent, with zero being uncorrelated.

$$EDpmpm = 25.399 + 0.711 * CCBHCunit$$

Inpatient $ Variable	Coefficient
CCBHC Service Count (Standard Error)	0.711*** (0.059)
Constant (Standard Error)	25.399*** (0.147)

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

Measure 10.1.4 – PMPM cost of inpatient care for individuals who have an SMI/SED

Question 10. ***What are the cost drivers?***

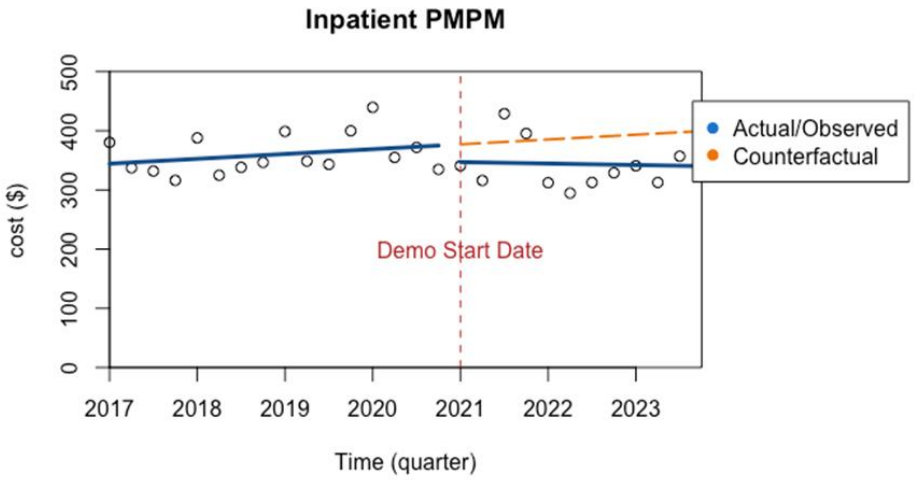
Hypothesis 1. ***N/A***

Measure Description: The sum of all Medicaid payments made for inpatient care, divided by the total number of member months.

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

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

Findings: There were no statistically significant trends in inpatient PMPM observed.



Inpatient PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	8.17	8.11	None
Immediate Effect of Demonstration Start	-27.34	29.11	None
Sustained Effect (Time since demo start)	-2.66	3.73	None
Constant	-16,127.32	16,369.65	None

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

There was an increase in inpatient PMPM expenditures over time and a slight decrease associated with the Demonstration period.

Older members, members residing in rural areas and members in the non-ABD child group were associated with more inpatient PMPM expenditures. Women, members in the expansion and non-ABD Adult group were associated with fewer inpatient expenditures.

Inpatient PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	10.755	1.801	p<0.01
Immediate Effect of Demo Start	-11.877	6.385	None
Sustained Effect	-1.824	0.808	p<0.05
Age	7.053	0.099	p<0.01
Gender (Female)	-45.553	3.241	p<0.01
Expansion Group	-24.021	5.441	p<0.01
Non-ABD Adult	-49.489	5.703	p<0.01
Non-ABD Child	241.047	6.842	p<0.01
Rural	10.182	3.083	p<0.01
Constant	-21,683.250	3,635.838	p<0.01

Community-Based Service Utilization and Inpatient Expenditures

Results show that for each CCBHC service billed, the Inpatient PMPM decreases by $9.545. The regression formula is presented below.

$$IPpmpm = 355.650 + (-9.545) * CCBHCunits$$

Inpatient $ Variable	Coefficient
Community Based Units (Standard Error)	-9.545*** (0.615)
Constant (Standard Error)	355.650*** (1.548)

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

Measure 10.1.5 – PMPM cost of Long-term care for individuals who have an SMI/SED

Question 10. ***What are the cost drivers?***

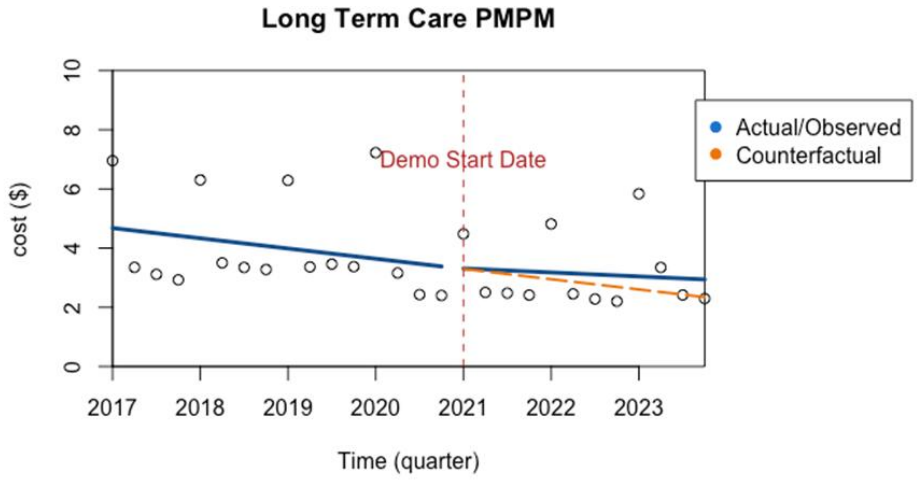
Hypothesis 1. ***N/A***

Measure Description: The sum of all Medicaid payments made for long term care, divided by the total number of member months.

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

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

Findings: There were no statistically significant trends associated with long term care expenditures observed.



LTC PMPM ITS Model (Aggregate)	Coefficient Estimate	Standard Error	Significance Level
General Trend (Time)	-0.35	0.33	None
Immediate Effect of Demonstration Start	-0.03	1.17	None
Sustained Effect (Time since demo start)	0.05	0.15	None
Constant	702.23	656.63	None

A generalized linear model was used to control for member demographics. Coefficient estimates are presented on the following page. GLM allows us to explain the variation in utilization

attributable to individual demographic factors, as well as temporal factors such as the Demonstration start date.

There was a statistically significant decrease in long term care expenditures over time, while an increase was observed during the Demonstration period (immediate and sustained).

Older members and members in the Non-ABD Group (Adult and Child) were associated with more long term care expenditures. Women, members residing in rural areas and members in the expansion group were associated with fewer long term care expenditures.

LTC PMPM GLM - Variable	Coefficient Estimate	Standard Error	Significance Level
Quarter (Time)	-0.277	0.061	p<0.01
Immediate Effect of Demo Start	0.707	0.217	p<0.01
Sustained Effect	0.112	0.027	p<0.01
Age	0.175	0.003	p<0.01
Gender (Female)	-0.357	0.110	p<0.01
Expansion Group	-2.613	0.185	p<0.01
Non-ABD Adult	1.062	0.194	p<0.01
Non-ABD Child	1.666	0.232	p<0.01
Rural	-0.276	0.105	p<0.01
Constant	555.742	123.517	p<0.01

Evaluation Question 10 Summary

A summary of the findings related to evaluation Question 10 is presented below. Findings are summarized related to both the general trend and the sustained effect of the Demonstration period, and to address the potential effect of the expansion group on outcomes.

When expansion group members were removed from the analysis, there was an increase in the inpatient care, suggesting that the remaining members were associated with overall higher expenditures. Expansion group members were associated with an increase in outpatient expenditures in DY1 quarters three and four. Pharmacy and ED expenditures also showed an initial increase and continued to show an increase through the Demonstration period. The expansion group was not associated with substantial changes in the long term care PMPM.

A subsidiary analysis of service utilization relative to ED and inpatient expenditures showed that each CCBHC service was associated with lower inpatient expenditures, while CCBHC services showed a weak association with a small increase in ED PMPM costs.

	Interrupted Time Series		
Measure	**General Trend**	**Sustained Effect**	**Significant Change Without Expansion**
Expenditure Analyses –Cost Drivers			
9.1.1. Outpatient (non-ED) PMPM	↑	-	Yes
9.1.2. Pharmacy PMPM	↑	↑	Yes
9.1.3 ED PMPM	-	-	Yes
9.1.4 Inpatient PMPM	-	-	Yes
9.1.5 LTC PMPM	-	-	No

- No statistically significant trend

5. SMI/SED Summary and Conclusions

Trends were examined for 2017 – 2020 as the pre-Demonstration period and 2021 – 2023 as the Demonstration period. The interim evaluation findings should be interpreted with caution. The interim evaluation findings should be interpreted with caution, as the Demonstration coincided with the ongoing novel coronavirus PHE. In addition, Medicaid expansion began in Oklahoma effective July 2021.

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:

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

For measures studied using coarsened exact matching, hypotheses were deemed supported when the treatment group showed statistically significant improvements over the comparison in the majority of the years studied.

Evaluation Question 1 – ED Use

Although utilization declined slightly, there were no statistically significant changes in ED use for mental health-related diagnoses during the Demonstration period (i.e., sustained effect). ***The hypothesis: The Demonstration will contain or reduce mental health-related ED use for adults with an SMI,*** **was supported, with the ED utilization maintaining previous trends**.

Evaluation Question 1	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. The Demonstration will contain or reduce mental health-related ED use for adults with an SMI			
1.1.1. Percent of members with SMI/SED using the ED for mental health	ITS	Yes	-

Evaluation Question 2 – Readmissions

Although there was a slight decline in readmissions, there were no statistically significant changes during the Demonstration period (i.e., sustained effect). ***The hypothesis: The Demonstration will contain or reduce readmissions to acute care hospitals or residential settings for adults with an SMI*, was supported, with the rate of readmission maintaining prior performance.**

Evaluation Question 2	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. The Demonstration will contain or reduce readmissions to acute care hospitals or residential settings for adults with an SMI			
2.1.1. Rate of 30-day all-cause unplanned readmissions following psychiatric hospitalization	ITS	Yes	-

Evaluation Question 3 – Treatment for Comorbid Conditions

Although there was a slight improvement in treatment post-discharge, there were no statistically significant changes during the Demonstration period (i.e., sustained effect). The hypothesis: ***The Demonstration will maintain or increase access to physical health and/or SUD treatment post-discharge for adults with an SMI*, was supported, with treatment rates maintaining prior performance.**

Evaluation Question 3	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. The Demonstration will maintain or increase access to physical health and/or SUD treatment post-discharge for adults with an SMI			
3.1.1. Percentage of members who receive outpatient treatment for an SUD and/or physical health conditions within 30 days of IMD discharge	ITS	Yes	-

Evaluation Question 4 – Crisis Outreach and Mobile Response Services

The number of crisis call centers maintained baseline levels, while the number of crisis response teams increased by seven percent. However, the number of members identified with an SMI/SED also rose. Thus, the ratio of members-to-outreach service providers did not improve during the Demonstration.

It should be noted that mobile crisis response teams have the ability to respond to several emergency calls at a given time, especially in more populated areas with larger response teams. Using a member-to-team ratio therefore is likely to undercount the availability of services. Metrics related to response time may be better suited to assessing need and availability.

The hypothesis: ***The Demonstration will maintain or improve the availability of crisis outreach and response services throughout the state,*** **was not supported*.***

Evaluation Question 4	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. The Demonstration will maintain or improve the availability of crisis outreach and response services throughout the state			
4.1.1. The annual ratio of crisis outreach and response services to Medicaid members who have an SMI/SED	Descriptive	No	*

Evaluation Question 5 – Non-hospital Based Crisis Stabilization Services

During the Demonstration period the State expanded the number of crisis observation/assessment centers from five to 25 and crisis stabilization units from 11 to 17. This resulted in improved ratios of members-to-providers. ***The hypothesis: The Demonstration will maintain or improve the availability of non-residential, non-hospital crisis outreach and response services,*** **was supported*.***

Evaluation Question 5	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. The Demonstration will maintain or improve the availability of non-residential, non-hospital crisis outreach and response services			
5.1.1. The annual ratio of non-residential and non-hospital crisis outreach and response services to Medicaid members who have an SMI/SED	Descriptive	Yes	*

Evaluation Question 6 – Community Based Services

The number of psychiatrists and providers authorized to prescribe increased by seven percent under the Demonstration. Ninety-nine percent of psychiatrists and providers authorized to prescribe were enrolled in the Medicaid program in DY3.

The number of licensed mental health practitioners enrolled in Medicaid fell by over 65 percent, despite an increase in licensed practitioners.

However, this may be an artifact of data collection and the date of the assessment period. The ODMHSAS staff noted that licensure data is compiled from multiple independent entities across the State, each with separate data collection processes. This may contribute to variation in results year to year.

In addition, the annual assessment period occurs during the provider reenrollment period. At the time of the count, Medicaid enrollment may not be complete, resulting in an undercounting of availability.

Hypothesis 1: The Demonstration will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED, was not supported.

In examining the difference between a treatment (CCBHC) and comparison group, there were no significant differences in the use of first-line psychosocial care for youth on antipsychotics. However, CCBHC members did show improved performance over the comparison group with respect to medication continuation for adults who were discharged from psychiatric inpatient care. In a separate analysis of performance before and after CCBHC designation, the overall rate for continuation of medications improved in the time period following CCBHC designation. ***Hypothesis 2: Expanding CCBHCs statewide will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED, was supported, with two of the three analysis showing improvement.***

Evaluation Question 6	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. The Demonstration will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED			
6.1.1. The annual ratio of Medicaid enrolled Psychiatrists and licensed MH practitioners to Medicaid members who have an SMI/SED	Descriptive	No	*
Hypothesis 2. Expanding CCBHCs statewide will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED			
6.2.1. Use of first-line psychosocial care for youth on antipsychotics	CEM	No	-
6.2.1. Medication Continuation Following Inpatient Psychiatric Discharge (Performance Post CCBHC Designation)	CEM	Yes	Yes
	Welch two sample t-test	Yes	Yes

Evaluation Question 7 – Integration of Primary and Behavioral Health Care

In examining the difference between a treatment (CCBHC) and comparison group, there were no significant differences in metabolic monitoring for youth on antipsychotics. Along these lines, performance did not improve post CCBHC designation.

However, CCBHC members showed improved performance over the comparison group with respect to having ambulatory/preventive care visits during the measurement period. In a separate analysis of performance before and after CCBHC designation, ambulatory/preventive care improved in the time period following CCBHC designation. ***Hypothesis 1: Expanding CCBHCs statewide will maintain or improve the integration of primary and behavioral health care to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED, was supported, with two of the four analysis showing improvement.***

Evaluation Question 7	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. Expanding CCBHCs statewide will maintain or improve the integration of primary and behavioral health care to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED			
7.1.1. Access to Preventive/Ambulatory Health Services for members who have an SMI	CEM	Yes	Yes
(Performance Post CCBHC Designation)	Welch two sample t-test	Yes	Yes
7.1.2. Metabolic monitoring for youth on antipsychotics	CEM	No	No
(Performance Post CCBHC Designation)	Welch two sample t-test	No	No

Evaluation Question 8 – Care Coordination

CCBHC members ages 6 – 16 showed improved performance over the comparison group with respect to having follow-up after hospitalization for mental health care. Follow-up within 7 and 30 days was stronger in the CCBHC group than the comparison group. In addition, in a separate analysis of performance before and after CCBHC designation, follow-up improved in the time period following CCBHC designation for both metrics studied.

CCBHC members who were 18 years or older also outperformed the comparison group on follow-up after the use of ED for mental health care. Follow-up after an ED visit within 7 and 30 days was stronger in the CCBHC group than the comparison group.

However, in a separate analysis of performance before and after CCBHC designation, follow-up rates declined in the time period following CCBHC designation, which also coincided with the novel coronavirus pandemic. It is possible that the PHE response strained ED department resources and also limited the availability of community based staff to gain access to clients and discharge planning during their ED visit.

***The hypothesis: Expanding CCBHCs statewide will maintain or improve the care coordination for members with an SMI/SED*, was supported, with six of the eight analysis showing improvement.**

Evaluation Question 8	Analytic Approach	Hypothesis Supported	Statistically Significant Improvement
Hypothesis 1. Expanding CCBHCs statewide will maintain or improve the care coordination for members with an SMI/SED			
8.1.1. Follow-up within 7 days after hospitalization for MH for members ages 6-17 (Performance Post CCBHC Designation)	CEM	Yes	Yes
	Welch two sample t-test	Yes	Yes
8.1.2. Follow-up within 30-days after hospitalization for MH for members ages 6-17 (Performance Post CCBHC Designation)	CEM	Yes	Yes
	Welch two sample t-test	Yes	Yes
8.1.3. Follow-up within 7-days after ED visit for MH for members ages 18 and older (Performance Post CCBHC Designation)	CEM	Yes	Yes
	Welch two sample t-test	No	No
8.1.4. Follow-up within 30-days after ED visit for MH members ages 18 and older (Performance Post CCBHC Designation)	CEM	Yes	Yes
	Welch two sample t-test	No	No

Exploratory Expenditure Analyses

An exploratory analysis was performed to examine changes in expenditures over time (evaluation Question 9) and cost drivers (evaluation Question 10). There were no significant changes in the PMPM trend related to total cost of care during the Demonstration period, apart from the mental health-IMD PMPM. As expected, there was a significant increase in IMD-related PMPM cost associated with the Demonstration start and during the Demonstration period.

When the impact of the expansion group was examined, expansion group members were associated with an increase in the total cost of care (physical and mental health) seen in quarters three and four of Demonstration Year 1, which coincided with the start of expansion. Expenditures in these categories then leveled off for expansion members and showed no significant differences from the aggregate analysis. Expansion group members were associated with higher mental health-IMD expenditures throughout the Demonstration period.

In examining cost drivers, there were no statistically significant trends associated with outpatient, inpatient, ED or long term care expenditures. Pharmacy-related expenditures showed a statistically significant sustained increase during the Demonstration period.

When expansion group members were removed from the analysis, there was an increase in inpatient care, suggesting that the remaining members were associated with overall higher expenditures. Expansion group members were associated with an increase in outpatient expenditures in DY1 quarters three and four. Pharmacy and ED expenditures also showed an initial increase and continued to show an increase through the Demonstration period. The expansion group was not associated with substantial changes in the long term care PMPM.

A subsidiary analysis of service utilization relative to ED and inpatient expenditures showed that each CCBHC service was associated with lower inpatient expenditures, while CCBHC services showed a weak association with a small increase in ED PMPM.

Interim Conclusion

When 50 percent or more of the measures studied maintained or improved performance, the evaluation question was considered supported. Overall findings by evaluation question are presented below.

Evaluation Question	Measures Maintaining or Improving Performance	Interim Finding
Evaluation Question 1. Does the Demonstration result in reductions in emergency department utilization among members with an SMI?	100% (1/1)	Supported
Evaluation Question 2. Does the Demonstration result in reductions in preventable readmissions to acute care hospitals or residential settings for members with an SMI?	100% (1/1)	Supported
Evaluation Question 3. Does the Demonstration result in increased treatment for comorbid SUD and physical health conditions after IMD discharge?	100% (1/1)	Supported
Evaluation Question 4. Does the Demonstration result in improved availability of crisis outreach and response services?	0% (0/1)	Not Supported

Evaluation Question	Measures Maintaining or Improving Performance	Interim Finding
Evaluation Question 5. Does the Demonstration result in improved availability of non-residential, non-hospital crisis outreach and response services?	100% (1/1)	Supported
Evaluation Question 6. Does the Demonstration result in improved availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED?	50% (2/4)	Supported
Evaluation Question 7. Does the Demonstration improve the integration of primary and behavioral health care to address the chronic mental health care needs of members with SMI/SED?	100% (4/4)	Supported
Evaluation Question 8. Does the Demonstration result in improved care coordination for members with SMI/SED?	75% (6/8)	Supported

G. INTERPRETATIONS, POLICY IMPLICATIONS, AND INTERACTIONS WITH OTHER STATE INITIATIVES

The OHCA and ODMHSAS work collaboratively to provide a wide array of behavioral health services for Oklahomans. In advance of its application to CMS for the IMD Demonstration authority in 2019, the State had been engaged in extensive assessment and planning for the integration of behavioral health services across the publicly funded continuum of care.

In October 2016, Oklahoma was one of eight states selected by SAMHSA and CMS to pilot Certified Community Behavioral Health Clinics. Care coordination underpins all aspects of behavioral health care in the CCBHC model. CCBHCs are expected to provide a broad array of services and care coordination across settings and providers on a full spectrum of health, including acute, chronic, and behavioral health needs. The CCBHC model also requires integrating mental health, substance use disorder, and physical health services at one location. Three CMHCs participated in the pilot.

Oklahoma adopted the CCBHC model for statewide expansion. At the time of its request to CMS for the IMD Demonstration, six of the 13 CMHCs in Oklahoma achieved CCBHC designation. Under the Demonstration's SMI/SED Implementation Plan, the remaining CMHCs were expected to achieve CCBHC designation by the end of Demonstration Year 3; however, all designations were complete in 2022, over a year ahead of schedule.

SUD treatment services are also available statewide through approximately 70 contracted SUD treatment providers, including nine State-certified Comprehensive Community Addiction Recovery Centers. CCARCs operate across 10 counties, with 21 site locations. Twenty-one opioid treatment program locations cover 13 counties in the State. (Oklahoma has 77 counties in total.)

ODMHSAS supports 13 Community Based Structured Crisis Centers located throughout the State, including three operated by the State (two serving adults and one serving children and adolescents). Ten of these CBSCCs also operate behavioral health urgent recovery clinics that provide 23-hour respite and observation to help prevent psychiatric emergencies and admission to inpatient or crisis beds, with another 11 stand-alone URCs operating across the State. These facilities also address substance abuse emergencies.

It is likely that embedding the IMD Demonstration in the existing treatment continuum allowed the State to maintain services across all levels of care during the novel coronavirus PHE. Improvements were seen in several SUD-related metrics (provider availability, follow-up after the ED for SUD, initiation in treatment, and utilization of withdrawal management and MAT services).

In addition, members receiving CCBHC services outperformed those of the comparison group related to: medication continuation following inpatient psychiatric discharge; access to

ambulatory/preventive care; follow-up after psychiatric hospitalization for youth 6-17 years old (both 7- and 30-day follow-up rates); and follow-up after the ED for mental health for adults (both 7- and 30-day follow-up rates).

The inclusion of the expansion population beginning in July 2021 resulted in a slight uptick in SMI/SED related expenditures in the first year of the Demonstration. However, trends for SMI/SED expenditures largely aligned with the total population thereafter. It is likely that the majority of members with the SMI/SED designation are accessing Medicaid coverage as part of the ABD eligibility group, resulting in the minimal increases in expenditures associated with expansion.

The reverse was seen for expansion group members related to SUD expenditures. There were statistically significant increases in the trend for total PMPM, as well as breakouts for SUD-related, SUD-IMD, SUD-Other, and physical health care associated with start of the Demonstration. The expansion population was associated with increases in all breakouts, apart from the PMPM cost related to physical health care. When expansion members were removed from the analysis, there was a significant reduction in PMPM expenditures for all cost drivers, with the exception of long term care, which showed a very slight increase.

H. LESSONS LEARNED AND RECOMMENDATIONS

Maintaining pre-Demonstration utilization levels for SUD treatment during the pandemic should be considered a success under the Demonstration. In many cases, trends analyzed as part of the Interrupted Time Series approach showed no significant change. Overall, there were no statistically significant declines in performance for any SUD-related measure during the Demonstration period. SMI-related results maintained or improved performance in all but five of the measures studied (76 percent).

The inclusion of 2024 data under the Demonstration will be important to understand if utilization and engagement in SUD and psychiatric treatment begin to show further improvements following the end of the public health emergency.

ATTACHMENTS

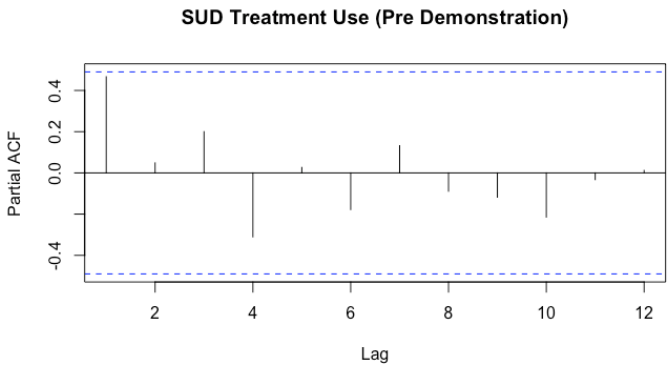
1. SUD Evaluation Measures and Changes

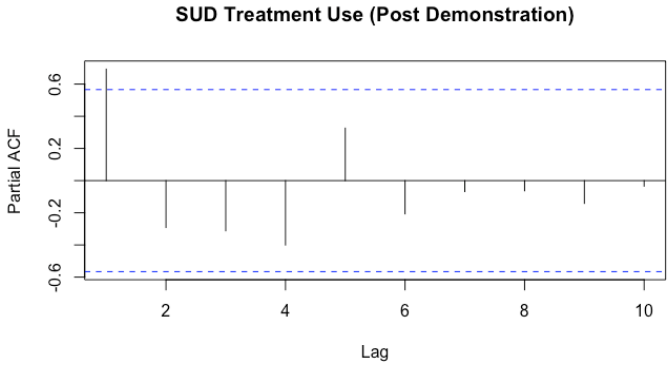
Measure/Steward	Data Source	Analytic Approach	Interim Report Changes
Evaluation Question 1. Does the Demonstration maintain or improve identification, initiation, and engagement in treatment for SUD? a. How does service utilization vary by age, race, aid category code? b. How does service utilization vary by geographic areas (e.g., urban v rural)?			
Hypothesis 1. The Demonstration will maintain or increase utilization of SUD treatment services. a. Utilization will maintain or improve by sub-population (e.g., age, race, aid categories) b. Inpatient utilization will maintain or improve in both urban and rural areas			
Percentage of members receiving any SUD treatment service (SUD MP #6)	Claims	ITS	None
Percentage of members receiving SUD outpatient treatment services (SUD MP #8)			
Percentage of members receiving intensive outpatient (IOP) treatment and partial hospitalization (PH) services (SUD MP #9)			
Percentage of members receiving residential and inpatient treatment services (SUD MP #10)			
Percentage of members receiving withdrawal management services (SUD MP #11)			
Percentage of members receiving medication-assisted treatment (MAT) (SUD MP #12)			
Hypothesis 2. The Demonstration will maintain or increase SUD provider availability.			
Percentage of providers enrolled in Medicaid and qualified to deliver SUD services (SUD MP #13)	Licensing Records; Enrollment Files	ITS	Detailed information on the number of licensed providers statewide was not available. Data reported for SUD MP Metric 13 (Number of Medicaid enrolled SUD providers) was used. Data collection for SUD MP #13 and 14 began in 2021, test for proportionality of change from baseline was used in place of an ITS analysis
Percentage of providers enrolled in Medicaid and qualified to deliver MAT services (SUD MP #1)			
Hypothesis 3. The Demonstration will maintain or increase follow-up after ED visit for alcohol or other drug 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	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))			
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	None
Percentage of members with a new episode of alcohol and other drug abuse or dependence who engage in SUD treatment (SUD MP #15b)			

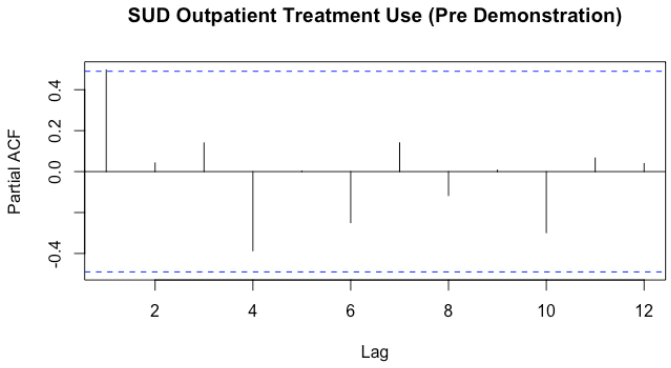
Measure/Steward	Data Source	Analytic Approach	Interim Report Changes
Evaluation Question 2. Does the Demonstration maintain or increase adherence to and retention in treatment for alcohol or other drug use?			
Hypothesis 1. The Demonstration will maintain or increase continuity of pharmacotherapy for OUD.			
Percentage of members 18 years old and older with pharmacotherapy for OUD who have at least 180 days of continuous treatment (SUD MP #22)	Claims	ITS	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 18 years old 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	ITS	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.
Evaluation Question 4. Does the Demonstration contain or reduce overdose deaths?			
Hypothesis 1. 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; Vital Statistics	ITS	Opioid-related death data is not available. Reporting to CMS on overall overdose deaths is accomplished through the State's SUD Monitoring Protocol (MP). The measure was suspended from evaluation. Reporting to CMS will continue through the MP.
Evaluation Question 5. Does the Demonstration contain or reduce ED visits and inpatient hospitalizations for individuals with an SUD? a. How does utilization vary by age, race, and aid category code? b. How does utilization vary by geographic areas (e.g., urban versus rural)?			
Hypothesis 1. The Demonstration will contain or reduce the rate of ED visits. a. ED utilization will maintain or improve by sub-population (e.g., age, race, aid categories) b. ED utilization will maintain or improve in both urban and rural areas			
Total number of ED visits per 1,000 members	Claims	ITS	None
Hypothesis 2. The Demonstration will contain or reduce inpatient admissions a. Inpatient utilization will maintain or improve by sub-population (e.g., age, race, aid categories) b. Inpatient utilization will maintain or improve in both urban and rural areas			
Total number of inpatient stays per 1,000 members	Claims	ITS	None
Evaluation Question 6. 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 for enrollees with an SUD.			
Percentage of readmission to the same or higher level of residential care (SUD #25)		ITS	None

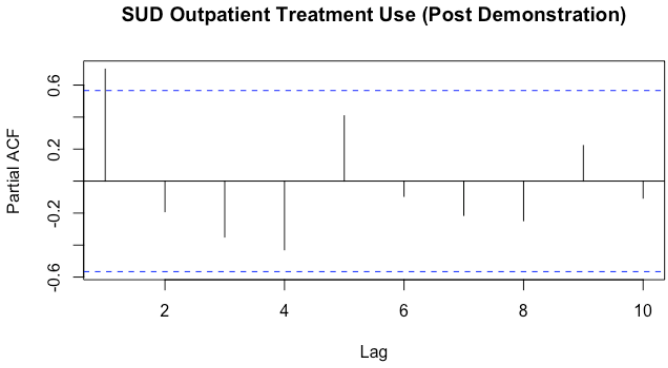
Measure/Steward	Data Source	Analytic Approach	Interim Report Changes
Evaluation Question 7. Does the Demonstration maintain or improve access to care for physical health conditions?			
Hypothesis 1. The Demonstration will maintain or increase access to care for physical health conditions for enrollees with an SUD.			
Percentage of members with an SUD who had an ambulatory or preventive health care visit (SUD MP #32)	Claims	ITS	None
Evaluation Question 8. How does the cost of care change over time? a. How does the Medicaid eligibility expansion impact cost over time? b. Does increased federal share for IMD services have an association with increased State investments in behavioral health services?			
Hypothesis N/A Exploratory			
PMPM Medicaid cost for individuals who have an SUD	Claims	ITS	None
PMPM cost of SUD-Related treatment for individuals who have an SUD			
PMPM cost of physical health care for individuals who have an SUD			
Evaluation Question 9. What are the cost drivers? a. Does increased community-based service utilization have an association with lower ED costs? b. Does increased community-based service utilization have an association with lower inpatient costs?			
Hypothesis N/A Exploratory			
PMPM cost of outpatient (non-ED) for individuals who have an SUD	Claims	ITS	None
PMPM cost of pharmacy for individuals who have an SUD			
PMPM cost of outpatient ED for individuals who have an SUD			
PMPM cost of inpatient care for individuals who have an SUD			
PMPM cost of Long-term care for individuals who have an SUD			

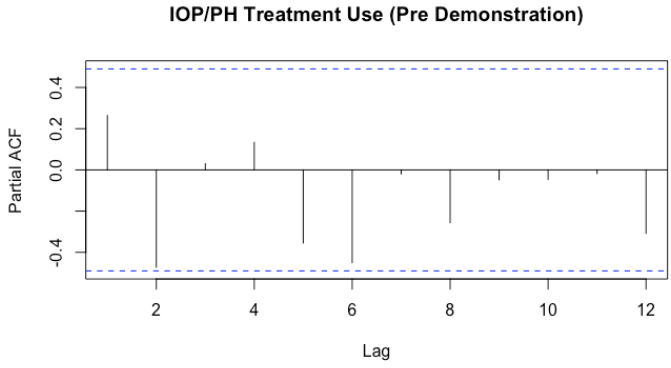
2. Plot of Partial Autocorrelation – SUD Interrupted Time Series

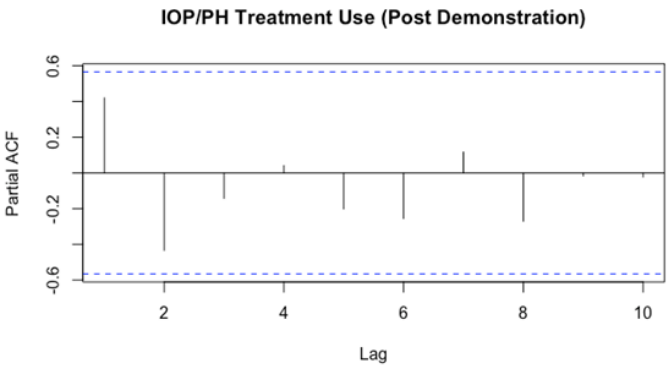


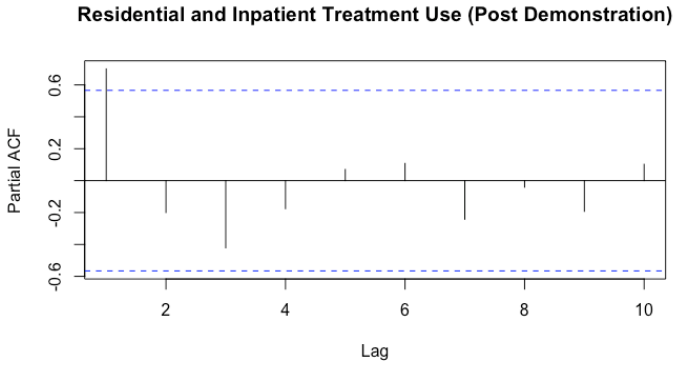


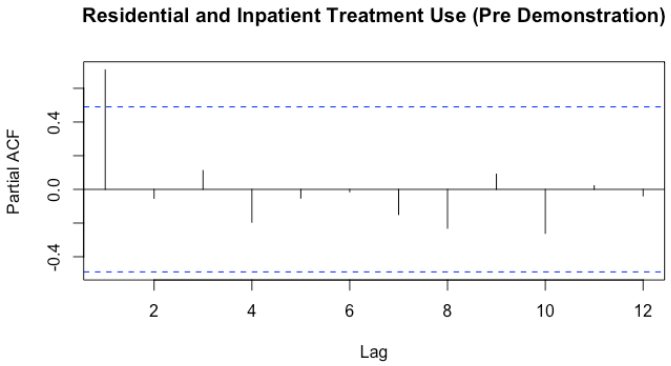









Residential and Inpatient Treatment Use (Post Demonstration)
Partial ACF
-0.6
-0.2
0.2
0.6
2
4
6
8
10
Lag


Residential and Inpatient Treatment Use (Pre Demonstration)
Partial ACF
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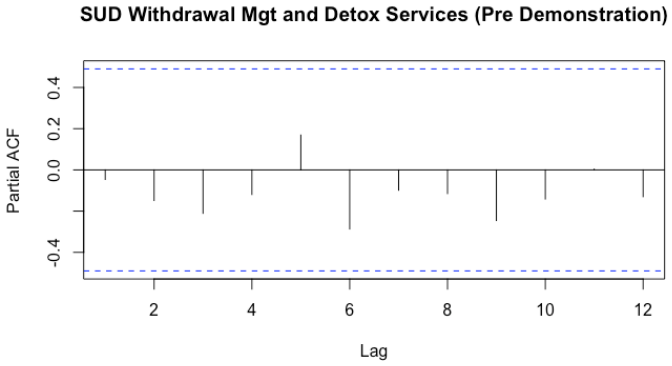
0.0
0.4
2
4
6
8
10
12
Lag


SUD Withdrawal Mgt and Detox Services (Pre Demonstration)
Partial ACF
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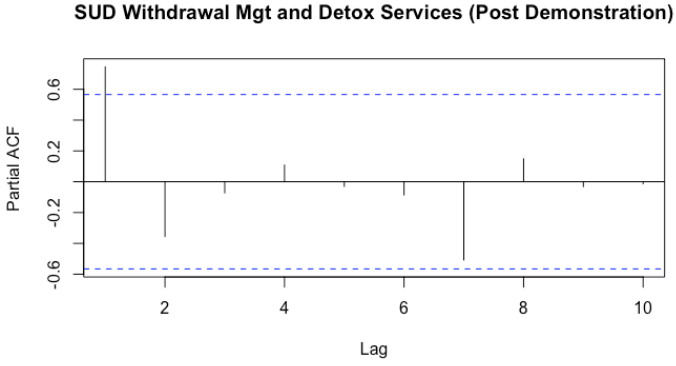
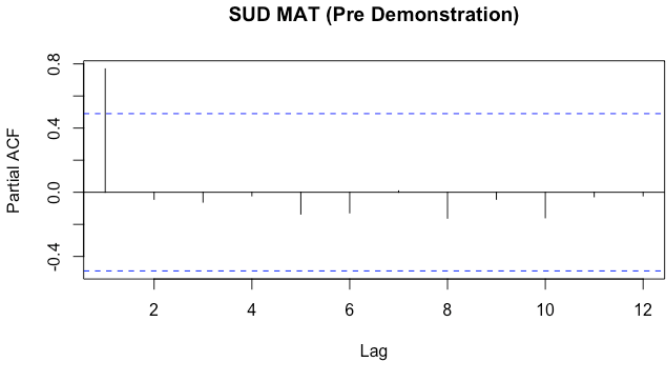
0.0
0.2
0.4
2
4
6
8
10
12
Lag


SUD Withdrawal Mgt and Detox Services (Post Demonstration)
Partial ACF
-0.6
-0.2
0.2
0.6
2
4
6
8
10
Lag


SUD MAT (Pre Demonstration)
Partial ACF
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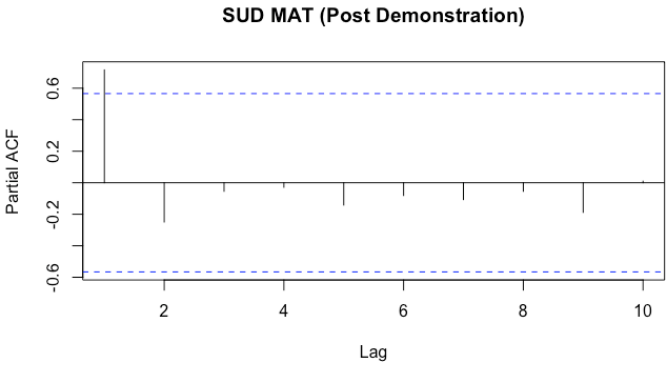
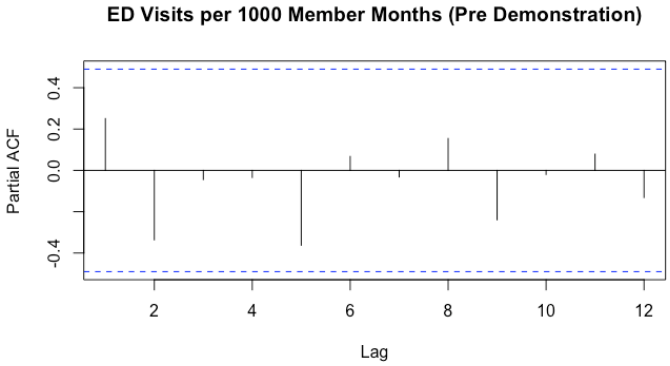
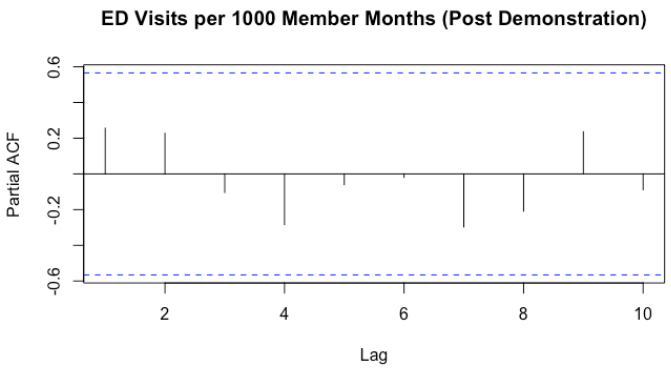
0.0
0.4
0.8
2
4
6
8
10
12
Lag


SUD MAT (Post Demonstration)
Partial ACF
-0.6
-0.2
0.2
0.6
2
4
6
8
10
Lag


ED Visits per 1000 Member Months (Pre Demonstration)
Partial ACF
-0.4
0.0
0.2
0.4
2
4
6
8
10
12
Lag


ED Visits per 1000 Member Months (Post Demonstration)
Partial ACF
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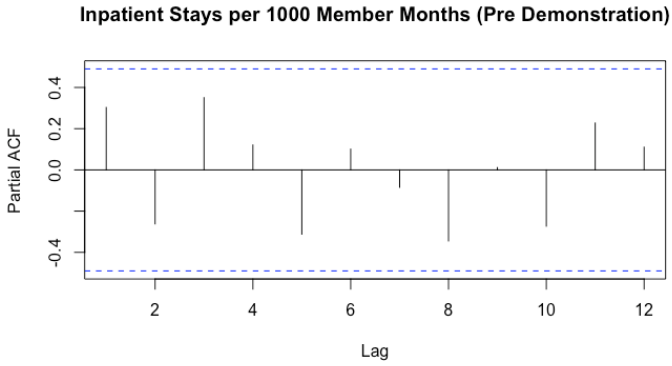
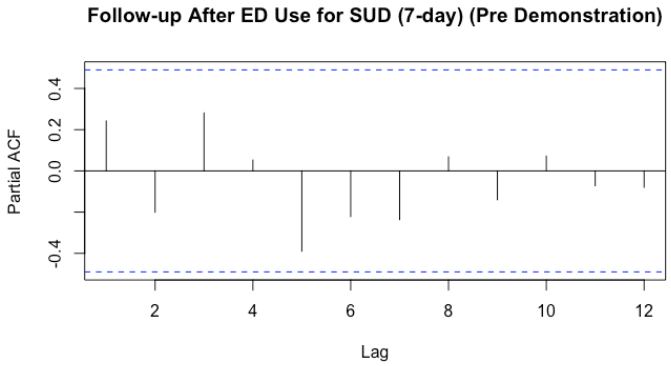
-0.2
0.2
0.6
2
4
6
8
10
Lag


Inpatient Stays per 1000 Member Months (Pre Demonstration)
Partial ACF
-0.4
0.0
0.2
0.4
2
4
6
8
10
12
Lag


Inpatient Stays per 1000 Member Months (Post Demonstration)
Partial ACF
-0.6
-0.2
0.2
0.6
2
4
6
8
10
Lag


Follow-up After ED Use for SUD (7-day) (Pre Demonstration)
Partial ACF
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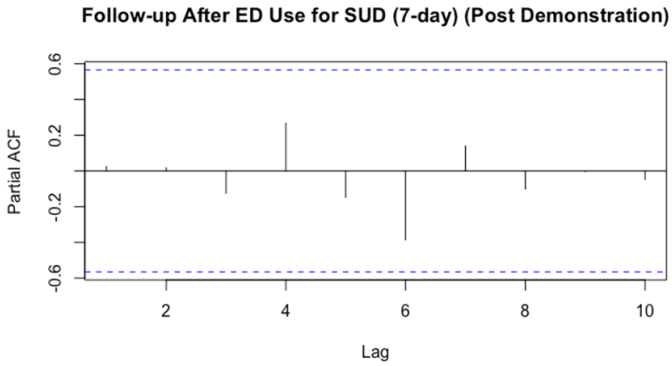
0.2
0.4
2
4
6
8
10
12
Lag


Follow-up After ED Use for SUD (7-day) (Post Demonstration)
Partial ACF
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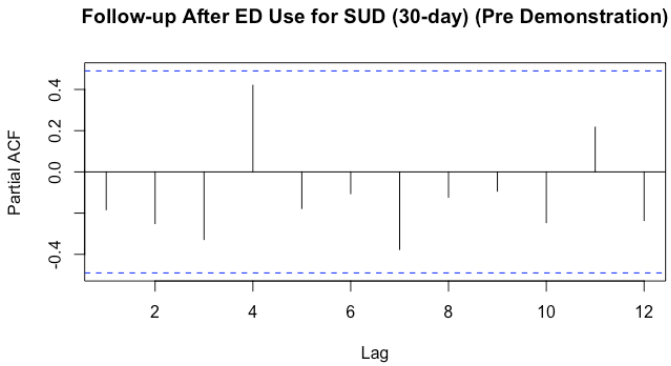
-0.2
0.2
0.6
2
4
6
8
10
Lag


Follow-up After ED Use for SUD (30-day) (Pre Demonstration)
Partial ACF
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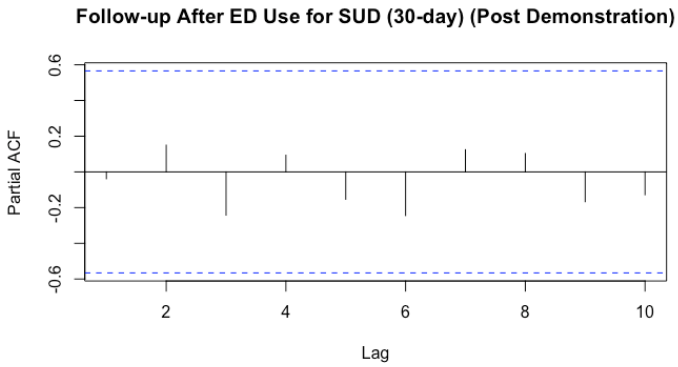
0.4
2
4
6
8
10
12
Lag


Follow-up After ED Use for SUD (30-day) (Post Demonstration)
Partial ACF
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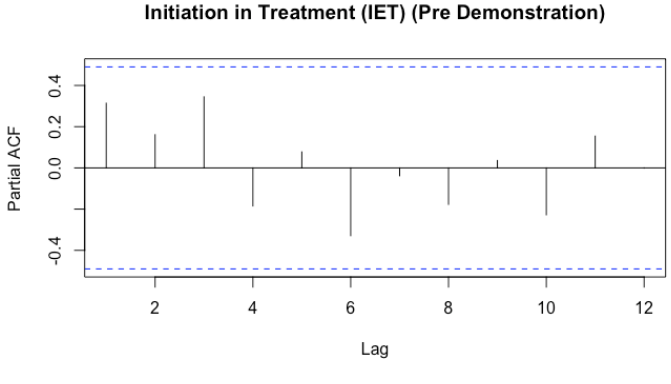
-0.2
0.2
0.6
2
4
6
8
10
Lag


Initiation in Treatment (IET) (Pre Demonstration)
Partial ACF
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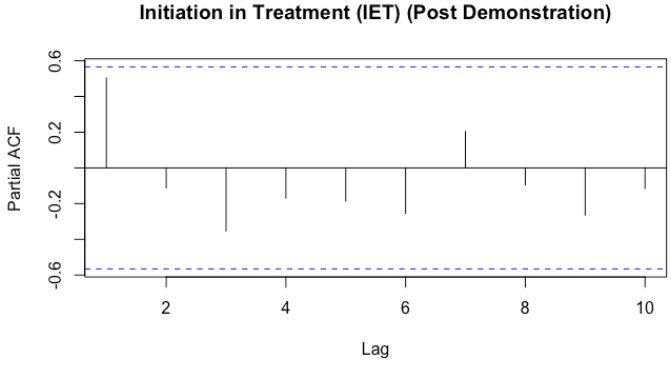
0.2
0.4
2
4
6
8
10
12
Lag


Initiation in Treatment (IET) (Post Demonstration)
Partial ACF
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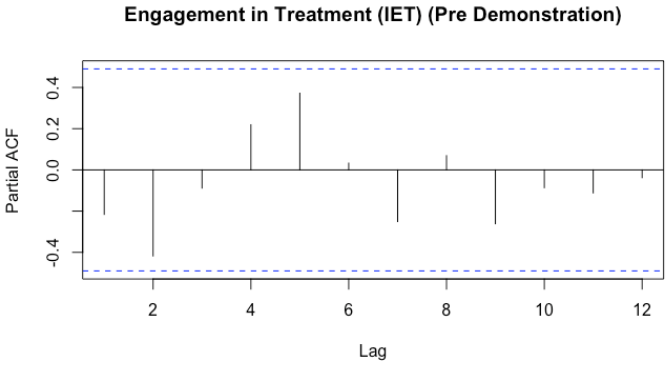
-0.2
0.2
0.6
2
4
6
8
10
Lag


Engagement in Treatment (IET) (Pre Demonstration)
Partial ACF
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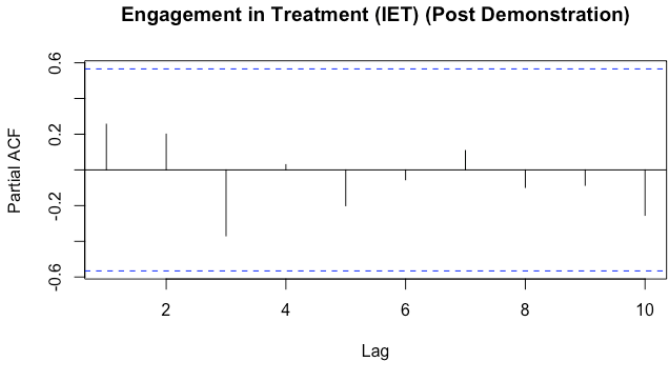
0.0
0.2
0.4
2
4
6
8
10
12
Lag


Engagement in Treatment (IET) (Post Demonstration)
Partial ACF
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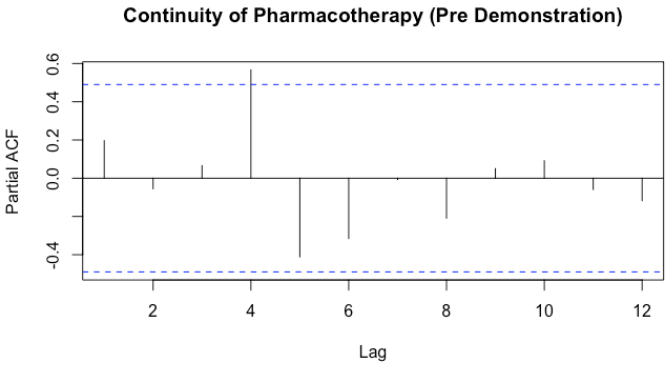
-0.2
0.2
0.6
2
4
6
8
10
Lag


Continuity of Pharmacotherapy (Pre Demonstration)
Partial ACF
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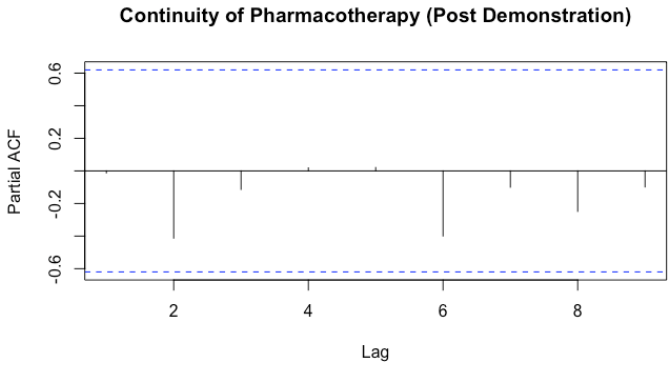
0.2
0.4
0.6
2
4
6
8
10
12
Lag


Continuity of Pharmacotherapy (Post Demonstration)
Partial ACF
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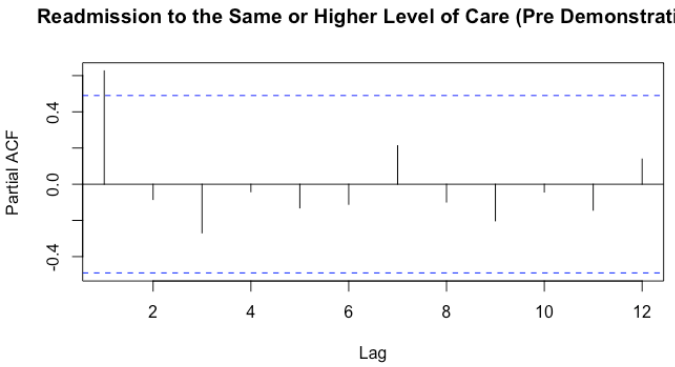
-0.2
0.2
0.6
2
4
6
8
Lag


Readmission to the Same or Higher Level of Care (Pre Demonstration)
Partial ACF
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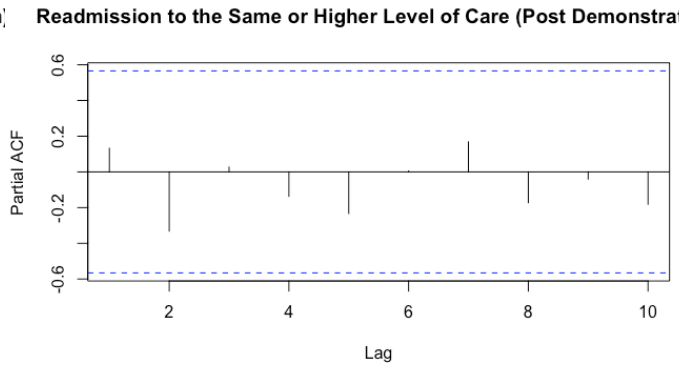
0.0
0.4
2
4
6
8
10
12
Lag


Readmission to the Same or Higher Level of Care (Post Demonstration
Partial ACF
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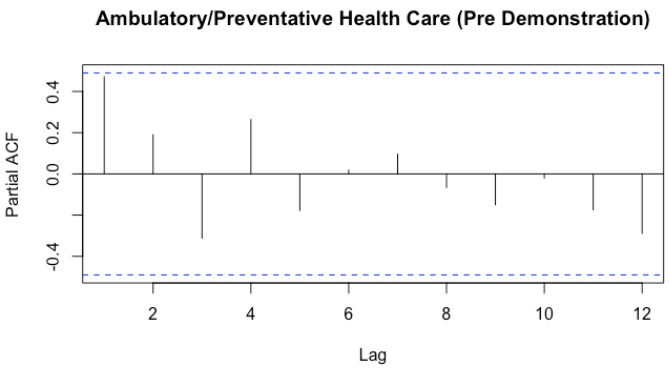
-0.2
0.2
0.6
2
4
6
8
10
Lag


Ambulatory/Preventative Health Care (Pre Demonstration)
Partial ACF
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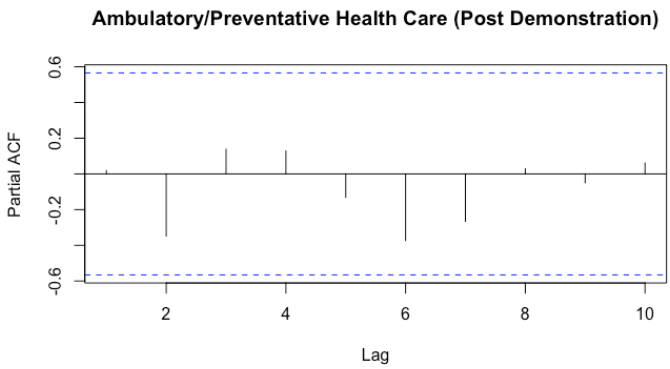
0.4
2
4
6
8
10
12
Lag


Ambulatory/Preventative Health Care (Post Demonstration)
Partial ACF
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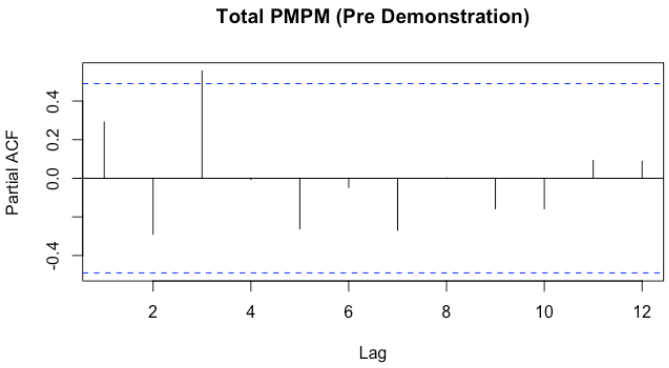
0.2
0.6
2
4
6
8
10
Lag


Total PMPM (Pre Demonstration)
Partial ACF
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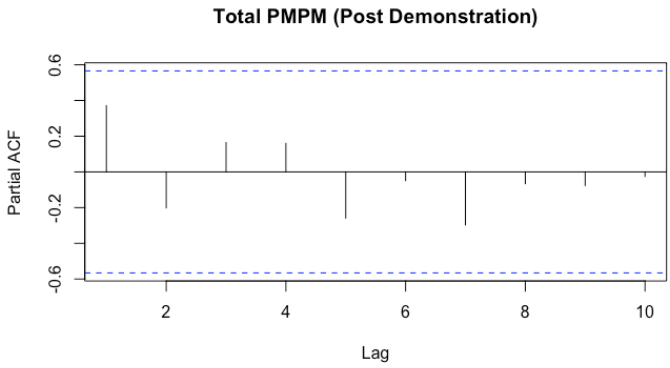
0.0
0.2
0.4
2
4
6
8
10
12
Lag


Total PMPM (Post Demonstration)
Partial ACF
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-0.2
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2
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6
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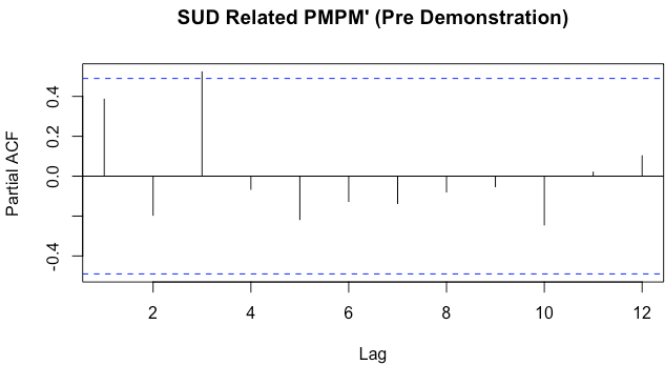
10
Lag


SUD Related PMPM' (Pre Demonstration)
Partial ACF
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0.2
0.4
2
4
6
8
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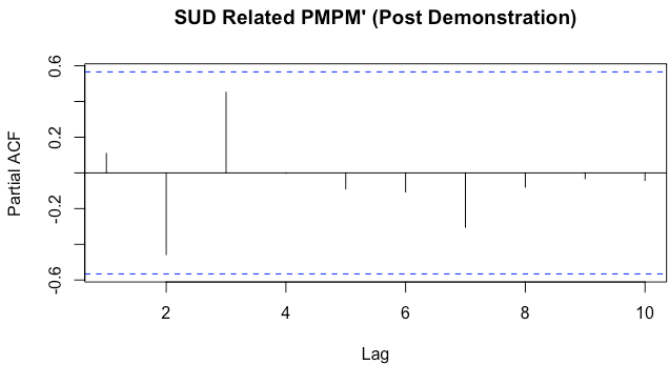
12
Lag


SUD Related PMPM' (Post Demonstration)
Partial ACF
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-0.2
0.2
0.6
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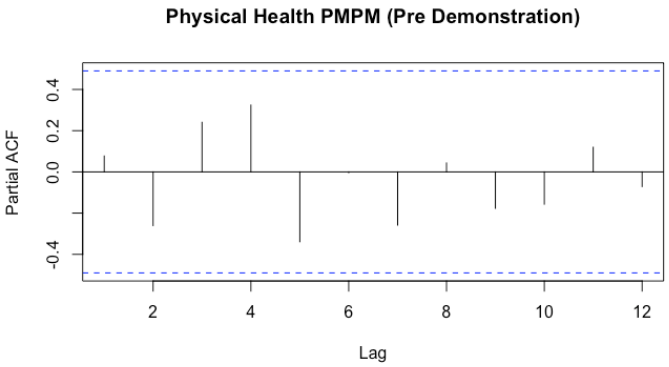
Lag


Physical Health PMPM (Pre Demonstration)
Partial ACF
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0.0
0.2
0.4
2
4
6
8
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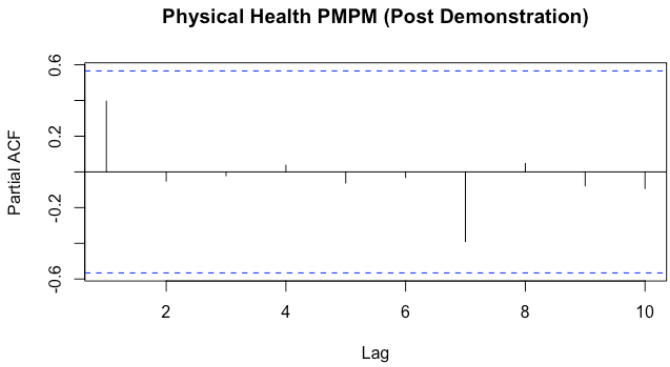
12
Lag


Physical Health PMPM (Post Demonstration)
Partial ACF
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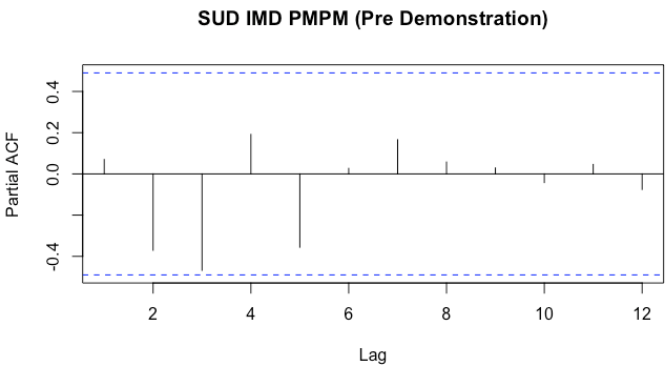
-0.2
0.2
0.6
2
4
6
8
10
Lag


SUD IMD PMPM (Pre Demonstration)
Partial ACF
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0.2
0.4
2
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6
8
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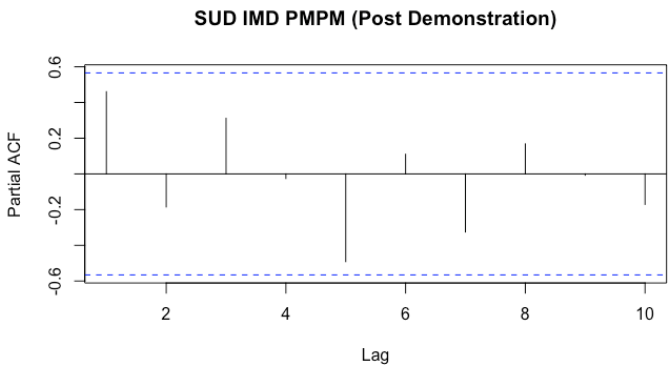
12
Lag


SUD IMD PMPM (Post Demonstration)
Partial ACF
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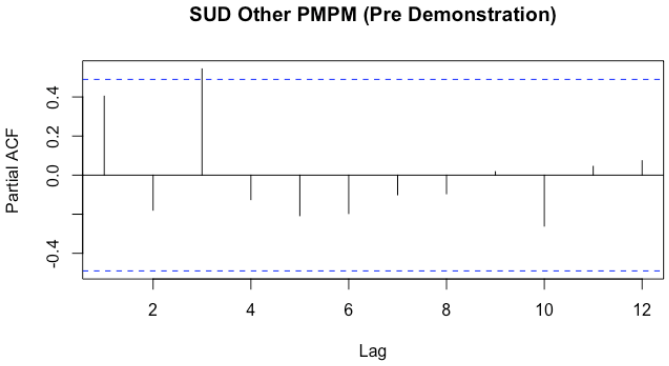
-0.2
0.2
0.6
2
4
6
8
10
Lag


SUD Other PMPM (Pre Demonstration)
Partial ACF
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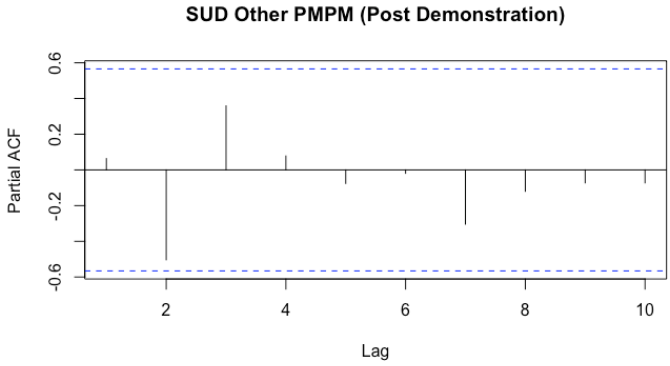
0.0
0.2
0.4
2
4
6
8
10
12
Lag


SUD Other PMPM (Post Demonstration)
Partial ACF
-0.6
-0.2
0.2
0.6
2
4
6
8
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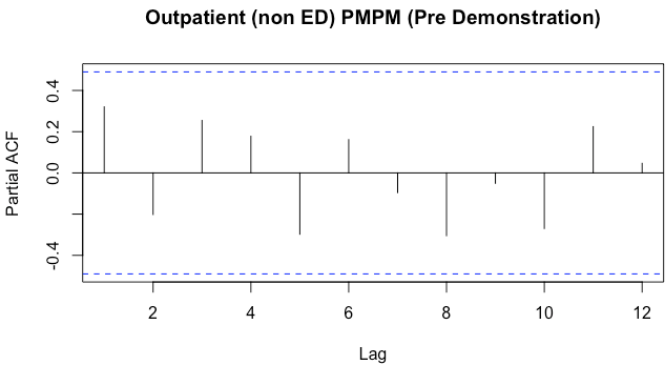
Lag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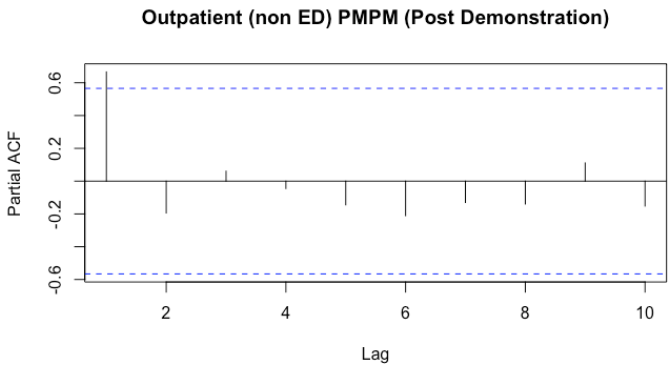
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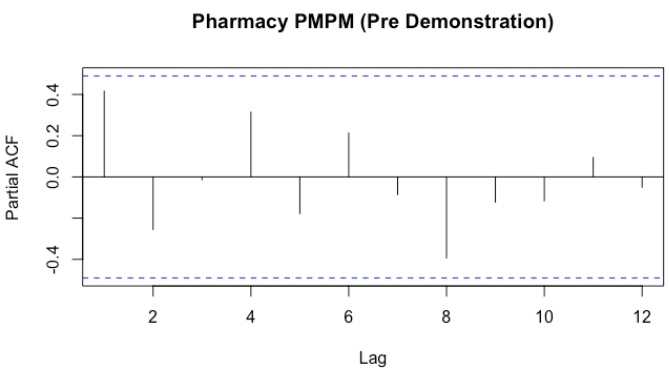
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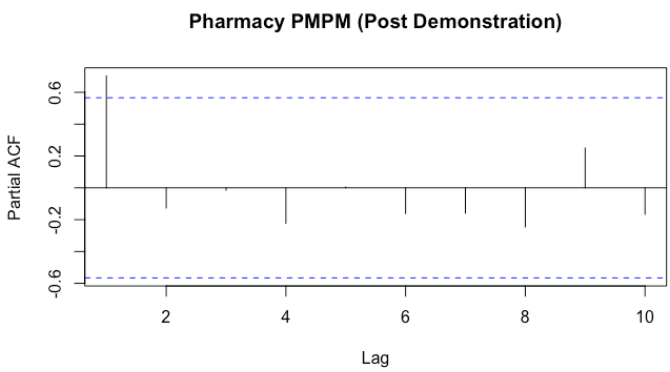
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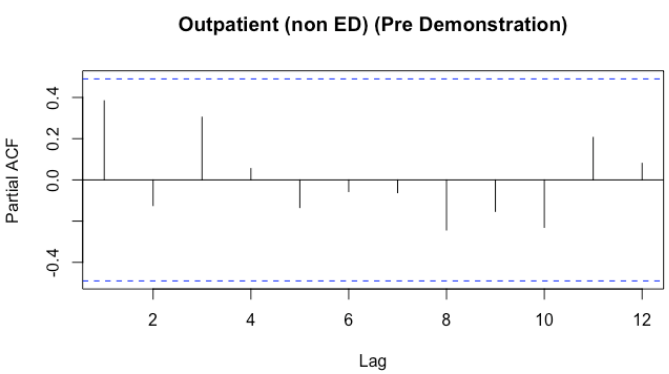
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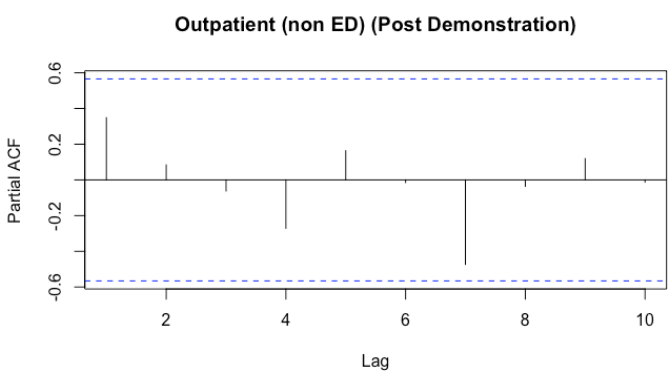
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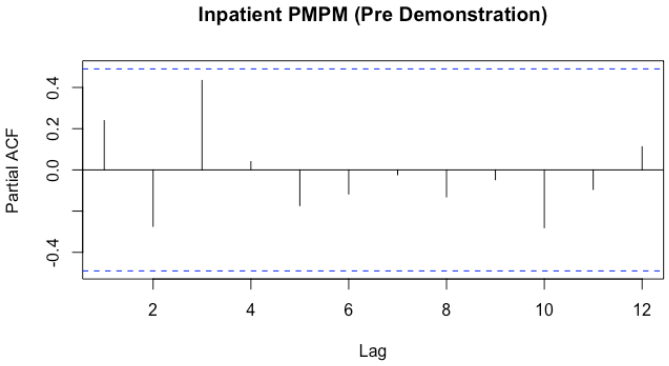
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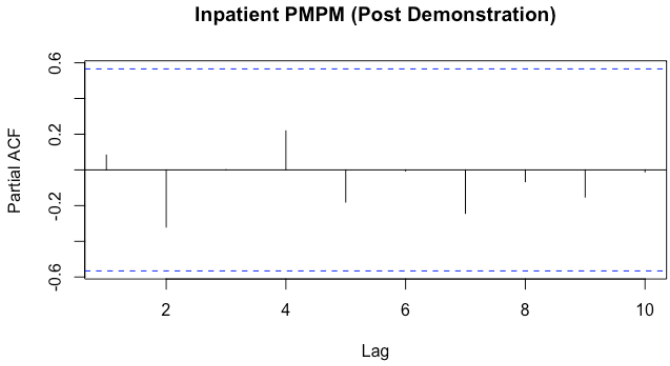
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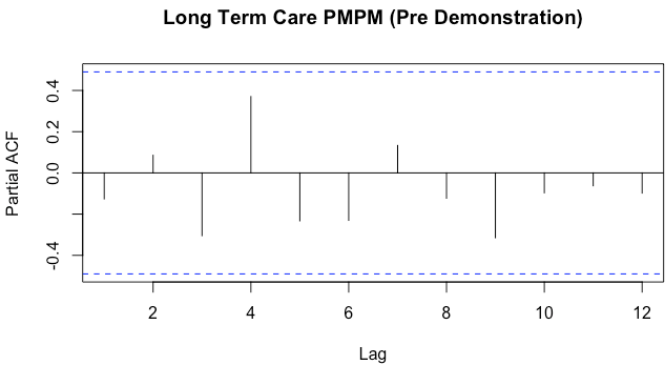
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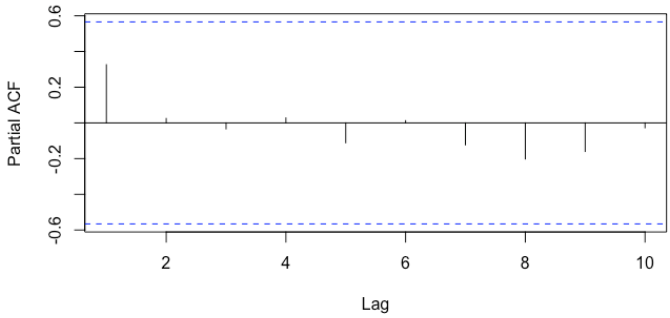
Long Term Care PMPM (Post Demonstration)
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3. SUD-Related ITS Results Without Expansion Population Members

The SUD-related ITS results are presented without the inclusion of members in the expansion group for those outcomes where the results showed a difference from those of the aggregate population analysis.

The coefficient estimate from the generalized linear model analysis is also presented to illustrate the variation in the data that may be explained, in part, by the expansion population. (Note: In all tables **p<0.05; ***p<0.01.)

Measure 1.1.2 Outpatient Treatment Use

Outpatient ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	0.01** (0.01)	0.01 (0.01)	0.016*** (0.002)
Immediate Effect of Demonstration Start (Standard Error)	-0.06*** (0.02)	-0.04 (0.02)	
Sustained Effect (Time since demo start) (Standard Error)	0.001 (0.003)	-0.001 (0.003)	
Constant (Standard Error)	-27.39** (11.41)	-27.39 (13.99)	

Measure 1.1.4 Inpatient/Residential Treatment Use

Inpatient/Residential ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	0.01*** (0.002)	0.01*** (0.001)	-4.255*** (0.328)
Immediate Effect of Demonstration Start (Standard Error)	0.01 (0.01)	0.01 (0.004)	
Sustained Effect (Time since demo start) (Standard Error)	0.0005 (0.001)	-0.002*** (0.001)	
Constant (Standard Error)	-13.45*** (3.35)	-13.45*** (2.44)	

Measure 1.1.6 MAT use

MAT ITS Model (Aggregate)	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	0.01*** (0.002)	0.01*** (0.002)	0.143*** (0.001)
Immediate Effect of Demonstration Start (Standard Error)	0.01 (0.01)	0.01 (0.01)	
Sustained Effect (Time since demo start) (Standard Error)	0.01*** (0.001)	0.001 (0.001)	
Constant (Standard Error)	-25.57*** (4.68)	-25.57*** (3.52)	

Measure 1.3.1 Follow-up After ED visits for SUD (within 7 days)

Follow-up After ED (7-day) ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	0.001 (0.001)	0.001 (0.001)	0.032*** (0.002)
Immediate Effect of Demonstration Start (Standard Error)	-0.004 (0.004)	-0.001 (0.004)	
Sustained Effect (Time since demo start) (Standard Error)	0.001** (0.001)	-0.001 (0.0005)	
Constant (Standard Error)	-1.71 (2.26)	-1.71 (2.16)	

Measure 5.1.1 ED visits per 1,000 Member Months

ED Visits ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	-0.44 (0.82)	-0.44 (0.34)	4.524*** (0.365)
Immediate Effect of Demonstration Start (Standard Error)	7.79** (2.96)	-0.16 (1.24)	
Sustained Effect (Time since demo start) (Standard Error)	-0.11 (0.38)	0.29 (0.16)	
Constant (Standard Error)	920.25 (1,662.64)	920.25 (695.10)	

Measure 5.2.1 Inpatient Stays per 1,000 Member Months

Inpatient Stays ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	0.65 (0.44)	0.65** (0.27)	-4.255*** (0.328)
Immediate Effect of Demonstration Start (Standard Error)	1.64 (1.60)	0.90 (0.96)	
Sustained Effect (Time since demo start) (Standard Error)	-0.32 (0.20)	0.25 (0.12)	
Constant (Standard Error)	-1,300.24 (897.82)	-1,300.24** (542.02)	

Measure 6.1.1 Readmissions to the Same or Higher Level of Care

Readmissions ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	0.01** (0.004)	0.01** (0.004)	-0.038*** (0.005)
Immediate Effect of Demonstration Start (Standard Error)	-0.01 (0.01)	0.002 (0.01)	
Sustained Effect (Time since demo start) (Standard Error)	-0.002 (0.002)	-0.004** (0.002)	
Constant (Standard Error)	-18.23** (7.17)	18.23** (7.85)	

Measure 8.1.1 Total PMPM

Total PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time)	108.42	108.42**	739.901*** (50.405)
(Standard Error)	(93.60)	(42.67)	
Immediate Effect of Demonstration Start	744.14**	61.03	
(Standard Error)	(336.09)	(153.23)	
Sustained Effect (Time since demo start)	-19.01	18.32	
(Standard Error)	(43.01)	(19.61)	
Constant	-216,770.70	-216,770.78**	
(Standard Error)	(188,965.70)	(86,155.48)	

Measure 8.1.2 (a) SUD-Related PMPM

SUD-Related PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time)	69.92	69.92**	855.616*** (31.659)
(Standard Error)	(50.34)	(21.44)	
Immediate Effect of Demonstration Start	398.84**	-5.32	
(Standard Error)	(180.77)	(77.00)	
Sustained Effect (Time since demo start)	-9.64	-3.28	
(Standard Error)	(23.13)	(9.85)	
Constant	-140,292.40	-140,292.40***	
(Standard Error)	(101,639.400	(43,291,84)	

Measure 8.1.2 (b) SUD-IMD PMPM

SUD-IMD PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time)	2.06	2.06	159.234*** (3.983)
(Standard Error)	(4.12)	(2.00)	
Immediate Effect of Demonstration Start	40.63**	-18.43**	
(Standard Error)	(14.79)	(7.19)	
Sustained Effect (Time since demo start)	2.21	1.92**	
(Standard Error)	(1.89)	(0.92)	
Constant	-4,116.52	-4,116.52	
(Standard Error)	(8,315.05)	(4,045.16)	

Measure 8.1.2 (c) Other SUD-Related PMPM

Other SUD PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time)	67.86	67.86***	696.382*** (31.403)
(Standard Error)	(47.11)	(20.56)	
Immediate Effect of Demonstration Start	358.20**	13.11	
(Standard Error)	(169.15)	(73.82)	
Sustained Effect (Time since demo start)	-11.85	-5.20	
(Standard Error)	(21.64)	(9.45)	
Constant	-136,175.90	-136,175.90***	
(Standard Error)	(95,102.86)	(41,508.11)	

Measure 8.1.3 Physical Health PMPM

Physical Health PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	38.50 (46.20)	38.50 (26.04)	
Immediate Effect of Demonstration Start (Standard Error)	345.30** (165.89)	66.35 (93.52)	-115.715*** (33.611)
Sustained Effect (Time since demo start) (Standard Error)	-9.37 (21.23)	21.60 (11.97)	
Constant (Standard Error)	-76,478.33 (93,273.00)	-76,478.33 (52,580.83)	

Measure 9.1.1 Outpatient PMPM

Outpatient PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	57.42 (45.53)	57.42*** (20.51)	
Immediate Effect of Demonstration Start (Standard Error)	462.25*** (163.47)	-60.10 (73.64)	558.057*** (19.784)
Sustained Effect (Time since demo start) (Standard Error)	-4.32 (20.92)	29.56*** (9.42)	
Constant (Standard Error)	-114,584.70 (91,911.96)	-114,584.70 (41,404.50)	

Measure 9.1.2 Pharmacy PMPM

Pharmacy PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	11.72 (8.03)	11.72** (4.42)	
Immediate Effect of Demonstration Start (Standard Error)	38.23 (28.82)	-52.49*** (15.86)	85.599*** (10.509)
Sustained Effect (Time since demo start) (Standard Error)	7.11 (3.69)	12.83*** (2.03)	
Constant (Standard Error)	-23,376.85 (16,201.71)	-23,376.85 (8.916.57)	

Measure 9.1.3 ED PMPM

ED PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	8.91 (6.85)	8.91*** (2.55)	
Immediate Effect of Demonstration Start (Standard Error)	76.00*** (24.59)	1.25 (9.15)	105.074*** (3.438)
Sustained Effect (Time since demo start) (Standard Error)	-2.19 (3.15)	-0.28 (1.17)	
Constant (Standard Error)	-17,850.22 (13,825.08)	-17,850.22*** (5,143.24)	

Measure 9.1.4 Inpatient PMPM

Inpatient PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	60.45 (54.81)	60.45** (28.92)	
Immediate Effect of Demonstration Start (Standard Error)	278.25 (196.82)	87.14 (103.86)	111.546*** (42.048)
Sustained Effect (Time since demo start) (Standard Error)	-9.70 (25.18)	-0.72 (13.29)	
Constant (Standard Error)	-121,037.70 (110,660.11)	-121,037.70** (58,393.43)	

Measure 9.1.5 LTC PMPM

LTC PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	0.20 (0.30)	0.20 (0.32)	
Immediate Effect of Demonstration Start (Standard Error)	1.23 (1.08)	-0.07 (1.14)	-3.337*** (0.618)
Sustained Effect (Time since demo start) (Standard Error)	-0.09 (0.14)	0.38** (0.15)	
Constant (Standard Error)	-408.66 (609.98)	-408.66 (641.29)	

4. SMI/SED Evaluation Measures and Changes

Evaluation Question 8 includes four subsidiary questions that will be addressed in the final year of the Demonstration through stakeholder interviews. Results for the following subsidiary questions will be presented in the Summative Evaluation Report

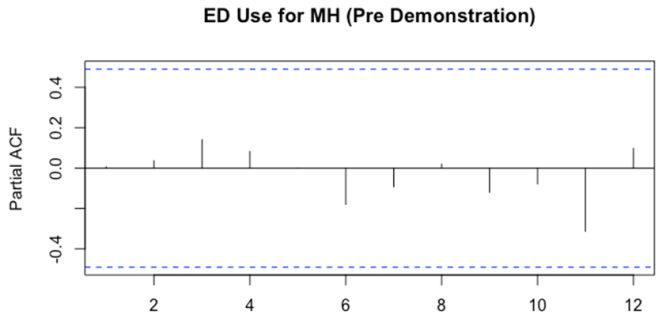
- Has the CCBHC model of care contributed to decreased length of stay in the ED among members awaiting mental health treatment in specialized settings?
- How does the CCBHC model of care contribute to reductions in utilization and lengths of stays in ED?
- What CCBHC components or characteristics are most effective in reducing utilization and lengths of stays in EDs?
- Are there any obstacles that hinder the effectiveness of the demonstration in reducing utilization and lengths of stays in EDs?

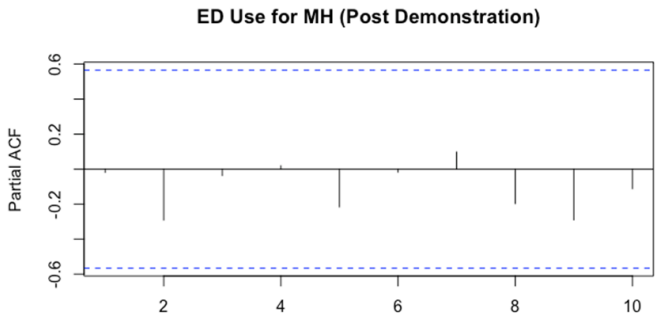
Measure/Steward	Data Source	Analytic Approach	Interim Report Changes
Evaluation Question 1. Does the Demonstration result in reductions in emergency department utilization among members with an SMI? a. How does utilization vary by age, race, and aid category code? b. How does utilization vary by geographic area (e.g., urban versus rural)?			
Hypothesis 1. The Demonstration will contain or reduce mental health-related ED use for adults with an SMI a. ED utilization will maintain or improve by sub-population (e.g., age, race, aid categories) b. ED utilization will maintain or improve in both urban and rural areas			
Percent of members using the ED for mental health (MP #16)	Claims	ITS	None
Evaluation Question 2. Does the Demonstration result in reductions in preventable readmissions to acute care hospitals or residential settings for members with an SMI?			
Hypothesis 1. The Demonstration will contain or reduce readmissions to acute care hospitals or residential settings for adults with an SMI.			
Rate of 30-day all-cause unplanned readmissions following psychiatric hospitalization (MP #4)	Claims	ITS	None
Evaluation Question 3. Does the Demonstration result in increased treatment for comorbid SUD and physical health conditions after IMD discharge?			
Hypothesis 1. The Demonstration will maintain or increase access to physical health and/or SUD treatment post-discharge for adults with an SMI.			
Percentage of members who receive outpatient treatment for an SUD and/or physical health conditions within 30 days of IMD discharge (HEDIS® TRC-modified)	Claims	ITS	None
Evaluation Question 4. Does the Demonstration result in improved availability of crisis outreach and response services?			
Hypothesis 1. The Demonstration will maintain or improve the availability of crisis outreach and response services throughout the state.			
The annual ratio of crisis outreach and response services to Medicaid members who have an SMI/SED	Assessment of the Availability of MH Services	Longitudinal (Descriptive)	None

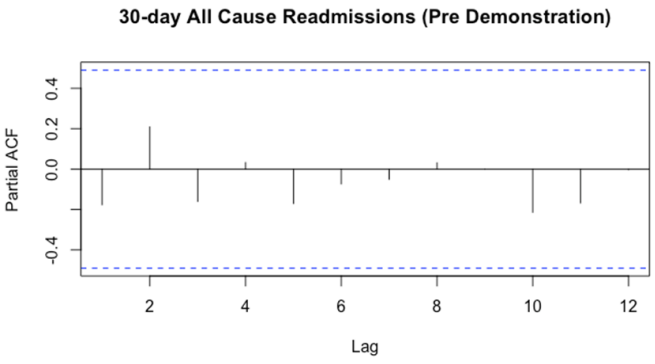
Measure/Steward	Data Source	Analytic Approach	Interim Report Changes
Evaluation Question 5. Does the Demonstration result in improved availability of non-residential, non-hospital crisis outreach and response services?			
Hypothesis 1. The Demonstration will maintain or improve the availability of non-residential, non-hospital crisis outreach and response services.			
The annual ratio of non-residential and non-hospital crisis outreach and response services to Medicaid members who have an SMI/SED	Assessment of the Availability of MH Services	Longitudinal (Descriptive)	None
Evaluation Question 6. Does the Demonstration result in improved availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED? a. How does access differ for members receiving CCBHC services? b. How does access differ following the provider's CCBHC designation?			
Hypothesis 1. The Demonstration will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED			
The annual ratio of Medicaid enrolled Psychiatrists and licensed Mental Health practitioners to Medicaid members who have an SMI/SED	Assessment of the Availability of MH Services	Longitudinal (Descriptive)	None
Hypothesis 2. Expanding CCBHCs statewide will maintain or improve the availability of community-based services needed to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED.			
Use of first-line psychosocial care for youth on antipsychotics (MP #2)	Claims	(a) PSM w/t-test; (b) Within-Subject Time Series	CEM was a better fit with the data
Medication Continuation Following Inpatient Psychiatric Discharge (MP #6)			
Evaluation Question 7. Does the Demonstration improve the integration of primary and behavioral health care to address the chronic mental health care needs of members with SMI/SED? a. How does integration differ for members receiving CCBHC services? b. How does integration differ following the provider's CCBHC designation?			
Hypothesis 1. Expanding CCBHCs statewide will maintain or improve the integration of primary and behavioral health care to comprehensively address the chronic mental health needs of beneficiaries with SMI/SED.			
Access to Preventive/Ambulatory Health Services for members who have an SMI (MP #26)	Claims	(a) PSM w/t-test; (b) Within-Subject Time Series	CEM was a better fit with the data
Metabolic monitoring for youth on antipsychotics (MP #29)			
Evaluation Question 8. Does the Demonstration result in improved care coordination for members with SMI/SED? a. How does care coordination differ for members receiving CCBHC services? b. How does care coordination differ following the provider's CCBHC designation?			
Hypothesis 1. Expanding CCBHCs statewide will maintain or improve care coordination for members with an SMI/SED.			
Follow-up within 7 days after hospitalization for MH (MP #7)	Claims	(a) PSM w/t-test;	CEM was a better fit with the data
Follow-up within 30 days after hospitalization for MH (MP #7)			

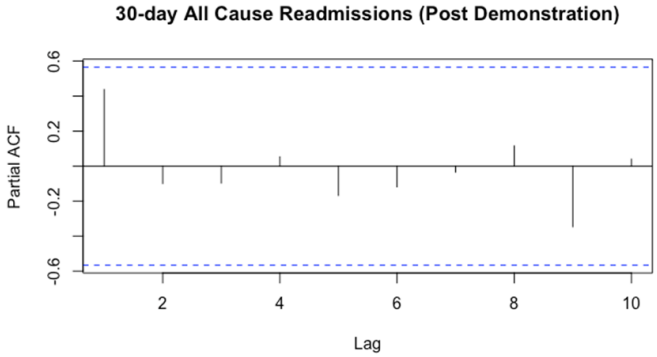
Measure/Steward	Data Source	Analytic Approach	Interim Report Changes
Follow-up within 7-days after ED visit for MH (MP #10)		(b) Within-Subject Time Series	
Follow-up within 30-days after ED visit for MH (MP #10)			
Hypothesis 2. Expanding CCBHCs statewide will contribute to maintaining or reducing length of stay in the ED among members awaiting mental health treatment in specialized settings.			
ED Length of Stay	HIE data extract	t-test	Data is not yet available
Evaluation Question 9. How does the cost of care change over time? a. How does the Medicaid eligibility expansion impact cost over time? b. Does increased federal share for IMD services have an association with increased State investments in behavioral health services?			
Hypothesis N/A Exploratory			
PMPM Medicaid cost for individuals who have an SMI/SED	Claims	ITS	None
PMPM cost of MH-Related treatment for individuals who have an SMI/SED			
PMPM cost of physical health care for individuals who have an SMI/SED			
Evaluation Question 10. What are the cost drivers? a. Does increased community-based service utilization have an association with lower ED costs? b. Does increased community-based service utilization have an association with lower inpatient costs?			
Hypothesis N/A Exploratory			
PMPM cost of outpatient (non-ED) for individuals who have an SMI/SED	Claims	ITS	None
PMPM cost of pharmacy for individuals who have an SMI/SED			
PMPM cost of outpatient ED for individuals who have an SMI/SED			
PMPM cost of inpatient care for individuals who have an SMI/SED			
PMPM cost of Long-term care for individuals who have an SMI/SED			

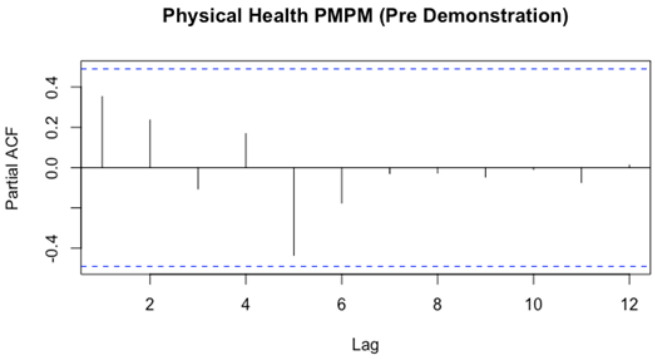
5. Plot of Partial Autocorrelation – SMI Interrupted Time Series

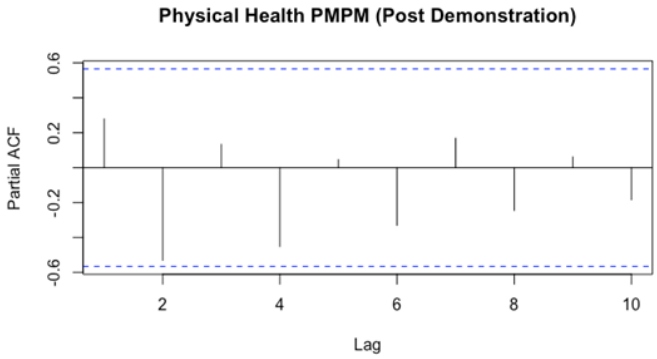


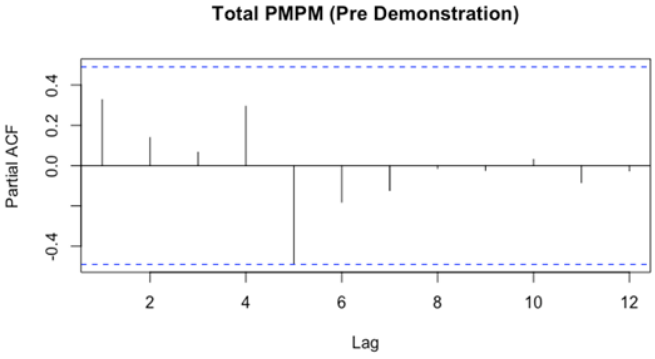


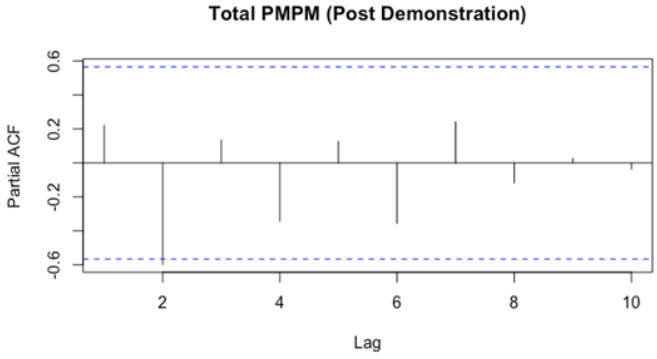


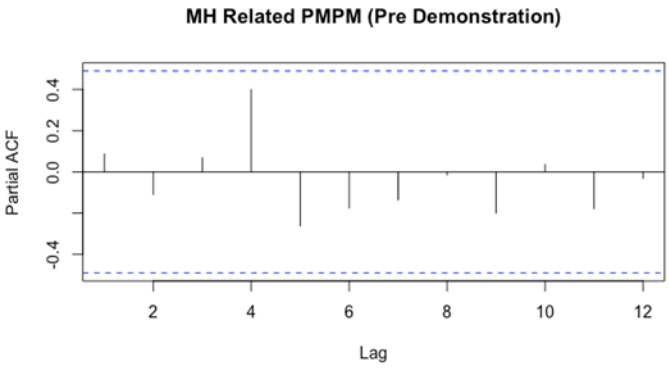











MH Related PMPM (Pre Demonstration)
Partial ACF
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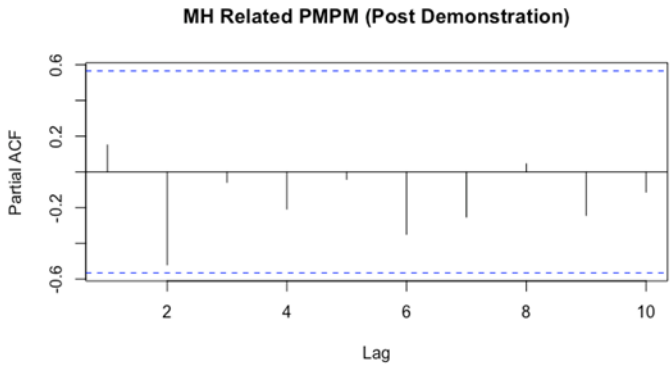
0.0
0.2
0.4
2
4
6
8
10
12
Lag


MH Related PMPM (Post Demonstration)
Partial ACF
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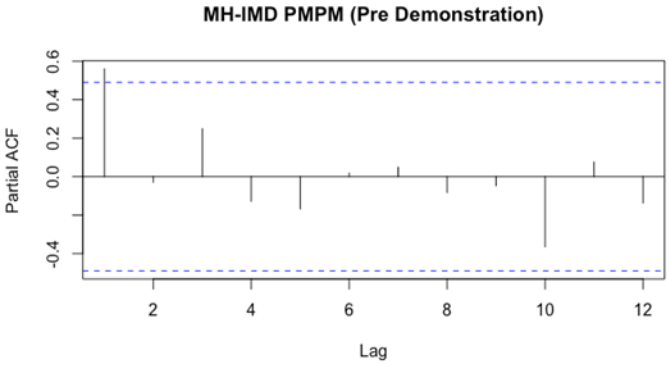
0.6
2
4
6
8
10
Lag


MH-IMD PMPM (Pre Demonstration)
Partial ACF
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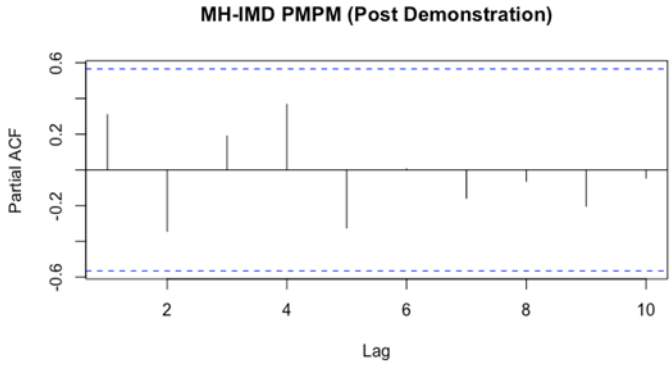
0.4
0.6
2
4
6
8
10
12
Lag


MH-IMD PMPM (Post Demonstration)
Partial ACF
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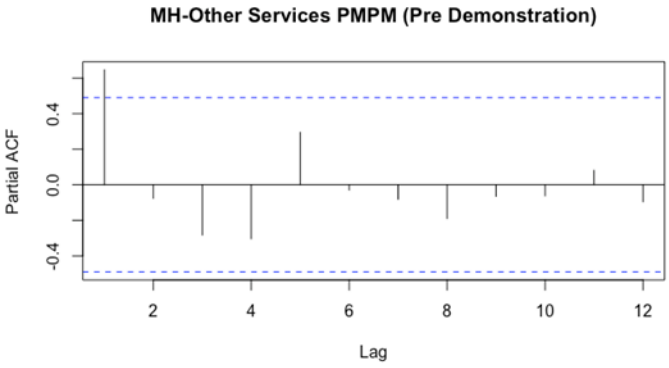
0.2
0.6
2
4
6
8
10
Lag


MH-Other Services PMPM (Pre Demonstration)
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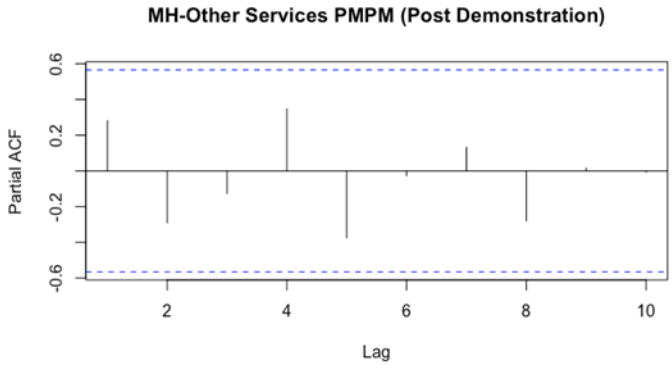
2
4
6
8
10
12
Lag


MH-Other Services PMPM (Post Demonstration)
Partial ACF
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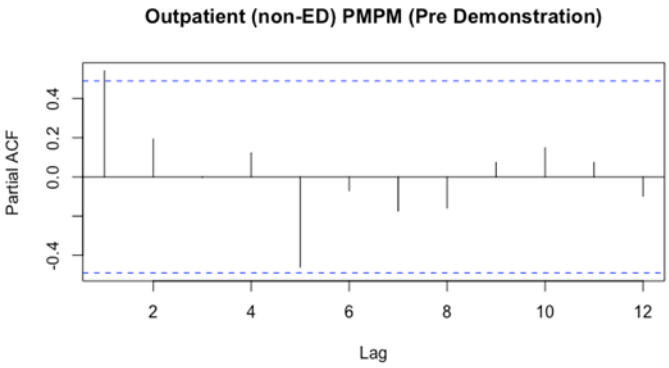
2
4
6
8
10
Lag


Outpatient (non-ED) PMPM (Pre Demonstration)
Partial ACF
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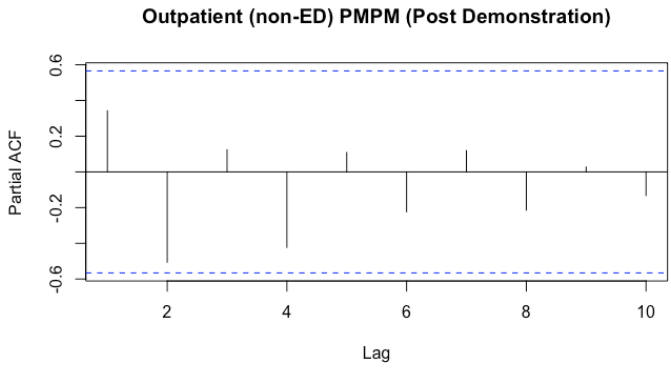
0.0
0.2
0.4
2
4
6
8
10
12
Lag


Outpatient (non-ED) PMPM (Post Demonstration)
Partial ACF
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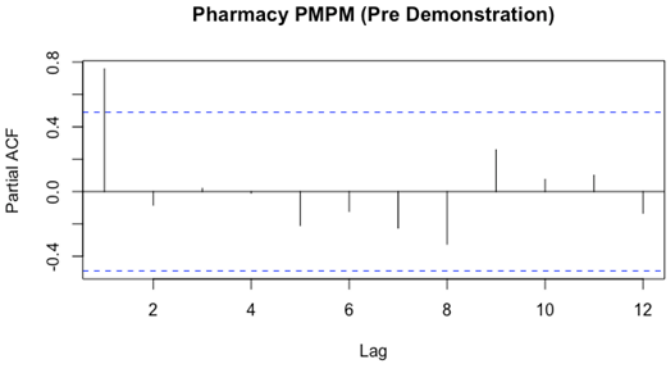
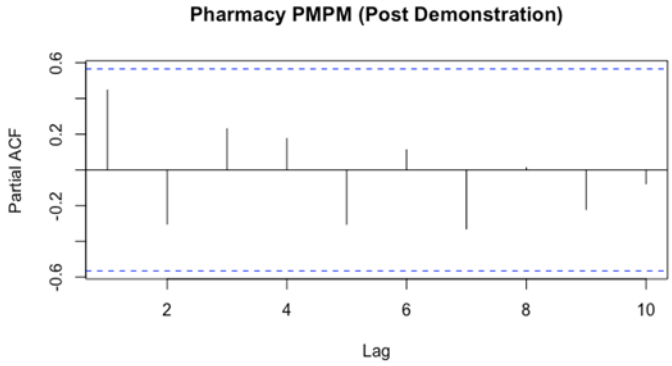
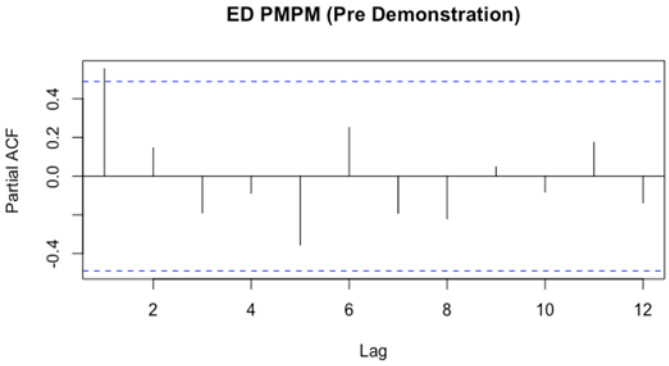
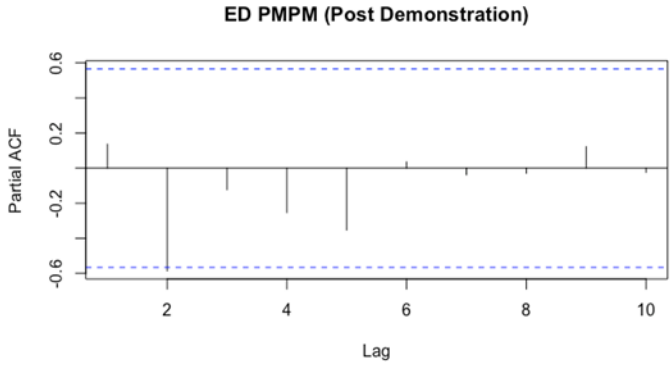
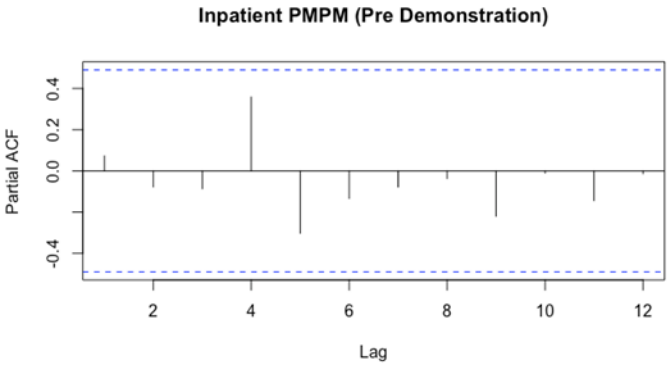
-0.2
0.2
0.6
2
4
6
8
10
Lag

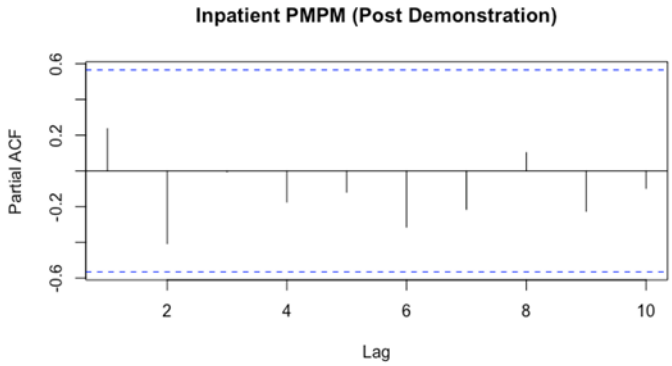

Pharmacy PMPM (Pre Demonstration)
Partial ACF
Lag

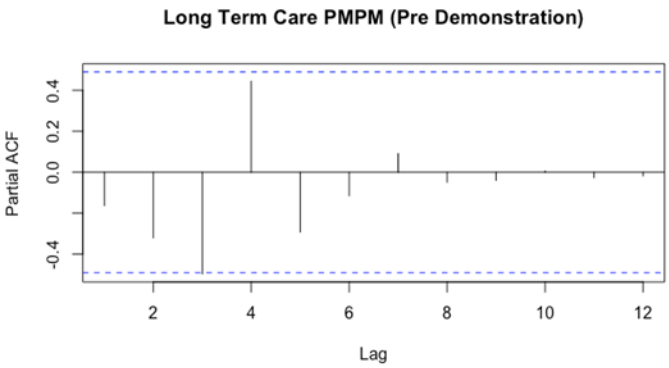

Pharmacy PMPM (Post Demonstration)
Partial ACF
Lag

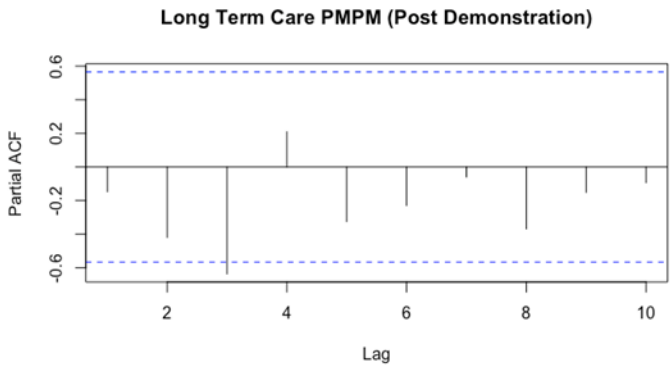

ED PMPM (Pre Demonstration)
Partial ACF
Lag


ED PMPM (Post Demonstration)
Partial ACF
Lag


Inpatient PMPM (Pre Demonstration)
Partial ACF
Lag


Inpatient PMPM (Post Demonstration)
Partial ACF
Lag


Long Term Care PMPM (Pre Demonstration)
Partial ACF
Lag


Long Term Care PMPM (Post Demonstration)
Partial ACF
Lag

6. Coarsened Exact Matching Balance Tables – SMI Measures

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 examined using the Coarsened Exact Matching, are presented on the following pages.

Measure 6.2.1. First Line Psychosocial Care for Youth on Antipsychotics

2021	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	114	999	-	113	873	-
Age	13.4386	13.8498	-0.1387	13.4956	13.4905	0.0017
Gender	0.5526	0.5846	-0.0643	0.5487	0.5487	0.0000
Geography	0.3860	0.4284	-0.0872	0.3894	0.3894	0.0000
ABD	0.1579	0.1351	0.0624	0.1593	0.1593	0.0000
Non-ABD	0.8421	0.8649	-0.0624	0.8407	0.8407	0.0000

2022	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	195	935	-	192	837	-
Age	13.9846	13.8267	0.0619	14.0729	14.0431	0.0117
Gender	0.5846	0.6032	-0.0377	0.5938	0.5938	0.0000
Geography	0.3949	0.4428	-0.0980	0.3906	0.3906	
ABD	0.0872	0.1380	-0.1800	0.0781	0.0781	0.0000
Non-ABD	0.9128	0.8620	0.1800	0.9219	0.9219	0.0000

2023	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	203	994	-	199	934	-
Age	13.6453	13.8883	-0.0906	13.6884	13.7242	-0.0133
Gender	0.5665	0.5926	-0.0526	0.5628	0.5628	0.0000
Geography	0.4039	0.4567	-0.1076	0.4020	0.4020	0.0000
ABD	0.0985	0.1127	-0.0475	0.0804	0.0804	0.0000
Non-ABD	0.9015	0.8873	0.0475	0.9196	0.9196	0.0000

Measure 6.2.2. Medication Continuation Following Inpatient Psychiatric Discharge

2021	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	560	10,044	-	560	9,357	-
Age	41.3857	49.1401	-0.5220	41.3857	41.4561	-0.0047
Gender	0.5571	0.6059	-0.0982	0.5571	0.5571	0.000
Geography	0.4554	0.4371	0.0367	0.4554	0.4554	0.000
ABD	0.6429	0.7290	-0.1798	0.6429	0.6429	0.000
Expansion	0.2679	0.1806	0.1970	0.2679	0.2679	0.000
Non-ABD	0.0893	0.0904	-0.0039	0.0893	0.0893	0.000

2022	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	1,469	9,237		1,468	9,040	
Age	41.6004	47.2122	-0.4058	41.5947	41.5891	0.0004
Gender	0.4976	0.5495	-0.1038	0.4980	0.4980	0.0000
Geography	0.3063	0.4471	-0.3054	0.3059	0.3059	0.0000
ABD	0.5017	0.3748	0.2538	0.4332	0.4332	0.0000
Expansion	0.0654	0.0595	0.0235	0.5020	0.5020	0.0000
Non-ABD	0.4329	0.5657	-0.2678	0.0647	0.0647	0.0000

2023	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	1,478	8,957	-	1,475	8,626	-
Age	41.0345	46.7408	-0.4057	41.0495	41.0901	-0.0029
Gender	0.4959	0.5571	-0.1223	0.4969	0.4969	0.0000
Geography	0.2855	0.4440	-0.3509	0.2854	0.2854	0.0000
ABD	0.3890	0.5347	-0.2987	0.3898	0.3898	0.0000
Expansion	0.5535	0.4078	0.2929	0.5546	0.5546	0.0000
Non-ABD	0.0575	0.0575	0.0001	0.0556	0.0556	0.0000

Measure 7.1.1. Ambulatory/Preventive Care

2021	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	5,293	137,799	-	5,293	130039	-
Age	37.7557	45.5242	-0.4673	37.7557	37.8526	-0.0058
Gender	0.5477	0.6137	-0.1326	0.5477	0.5477	0.0000
Geography	0.3968	0.4761	-0.1623	0.3968	0.3968	0.0000
ABD	0.5708	0.6278	-0.1153	0.5708	0.5708	0.0000
Expansion	0.2210	0.1962	0.0598	0.2210	0.2210	0.0000
Non-ABD Adult	0.0663	0.0921	-0.1034	0.0663	0.0663	0.0000
Non-ABD Child	0.1419	0.0839	0.1663	0.1419	0.1419	0.0000

2022	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	15,040	123,164	-	15,040	119,840	-
Age	39.3388	43.9703	-0.3044	39.3388	39.3386	0.9933
Gender	0.5205	0.5809	-0.1210	0.5205	0.5205	0.0000
Geography	0.3070	0.4884	-0.3931	0.3070	0.3070	0.0000
ABD	0.4687	0.5415	-0.1459	0.4687	0.4687	0.0000
Expansion	0.3963	0.3073	0.1820	0.3963	0.3963	0.0000
Non-ABD Adult	0.0472	0.0599	-0.0600	0.0472	0.0472	0.0000
Non-ABD Child	0.0878	0.0913	-0.0122	0.0878	0.0878	0.0000

2023	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	16,490	129,094	-	16,490	126,254	-
Age	39.1417	43.7944	-0.3045	39.1417	39.1760	-0.0022
Gender	0.5169	0.5806	-0.1276	0.5169	0.5169	0.0000
Geography	0.3099	0.4796	-0.3668	0.3099	0.3099	0.0000
ABD	0.4385	0.5119	-0.1478	0.4385	0.4385	0.0000
Expansion	0.4285	0.3417	0.1754	0.4285	0.4285	0.0000
Non-ABD Adult	0.0425	0.0552	-0.0629	0.0425	0.0425	0.0000
Non-ABD Child	0.0905	0.0913	-0.0027	0.0905	0.0905	0.0000

Measure 7.1.2. Metabolic Monitoring For Youth

2021	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	854	13,170	-	854	12,946	-
Age	13.8044	14.1223	-0.1287	13.8044	13.8021	0.0009
Gender	0.6756	0.6295	0.0985	0.6756	0.6756	0.0000
Geography	0.4286	0.4342	-0.0113	0.4286	0.4286	0.0000
ABD	0.1206	0.1228	-0.0067	0.1206	0.1206	0.0000
Non-ABD	0.8794	0.8772	0.0067	0.8794	0.8794	0.0000

2022	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	1,505	12,615	-	1,501	12,471	-
Age	14.0286	14.1222	-0.0401	14.0526	14.0526	0.0000
Gender	0.6292	0.6273	0.0041	0.6309	0.6309	0.0000
Geography	0.3601	0.4415	-0.1696	0.3611	0.3611	0.0000
ABD	0.1223	0.1088	0.0412	0.1226	0.1226	0.0000
Non-ABD	0.8777	0.8912	-0.0412	0.8774	0.8774	0.0000

2023	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	1,640	13,012	-	1,640	12,792	-
Age	13.8506	14.0154	-0.0642	13.8506	13.8506	0.0000
Gender	0.6335	0.6247	0.0183	0.6335	0.6335	0.0000
Geography	0.3945	0.4240	-0.0603	0.3945	0.3945	0.0000
ABD	0.0902	0.0947	-0.0155	0.0902	0.0902	0.0000
Non-ABD	0.9098	0.9053	0.0155	0.9098	0.9098	0.0000

Measure 8.1.1. Follow-up Within 7 days after MH hospitalization (6-17 years old)
Measure 8.1.2. Follow-up Within 30 after MH hospitalization (6-17 years old)

2021	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	421	3,834	-	421	3705	-
Age	13.7007	13.9327	-0.0977	13.7007	13.7007	0.0000
Gender	0.6770	0.6273	0.1062	0.6770	0.6770	0.0000
Geography	0.4893	0.4139	0.1508	0.4893	0.4893	0.0000
ABD	0.1330	0.1275	0.0161	0.1330	0.1330	0.0000
Non-ABD	0.8670	0.8725	-0.0161	0.8670	0.8670	0.0000

2022	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	728	3,599	-	727	3,521	-
Age	13.9959	13.8569	0.0606	14.0055	14.0055	0.0000
Gender	0.6126	0.6257	-0.0269	0.6135	0.6135	0.0000
Geography	0.4217	0.4257	-0.0080	0.4209	0.4209	0.0000
ABD	0.1044	0.1123	-0.0257	0.1032	0.1032	0.0000
Non-ABD	0.8956	0.8877	0.0257	0.8968	0.8968	0.0000

2023	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	766	3,702	-	764	3,609	-
Age	13.7990	13.9006	-0.0401	13.8037	13.8037	0.0000
Gender	0.6214	0.6234	-0.0042	0.6204	0.6204	0.0000
Geography	0.4608	0.4073	0.1073	0.4594	0.4594	0.0000
ABD	0.0796	0.0964	-0.0621	0.0772	0.0772	0.0000
Non-ABD	0.9204	0.9036	0.0621	0.9228	0.9228	0.0000

Measure 8.1.3. Follow-up Within 7 days after ED Visit for MH (18 years and older)
Measure 8.1.4. Follow-up Within 30 days after ED Visit for MH (18 years and older)

2021	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	970	17,386	-	970	16,220	-
Age	40.0546	45.5387	-0.4030	40.0546	40.1012	-0.0034
Gender	0.5474	0.6238	-0.1535	0.5474	0.5474	0.0000
Geography	0.4165	0.4302	-0.0279	0.4165	0.4165	0.0000
ABD	0.6629	0.6730	-0.0213	0.6629	0.6629	0.0000
Expansion	0.2454	0.2105	0.0810	0.2454	0.2454	0.0000
Non-ABD	0.0918	0.1165	-0.0858	0.0918	0.0918	0.0000

2022	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	3,035	15,496	-	3,035	15,102	-
Age	40.3071	44.2013	-0.3102	40.3071	40.4134	-0.0085
Gender	0.5015	0.5572	-0.1115	0.5015	0.5015	0.0000
Geography	0.3160	0.4401	-0.2670	0.3160	0.3160	0.0000
ABD	0.4471	0.5109	-0.1283	0.4471	0.4471	0.0000
Expansion	0.4946	0.4200	0.1490	0.4946	0.4946	0.0000
Non-ABD	0.0583	0.0691	-0.0458	0.0583	0.0583	0.0000

2023	Pre-Matching			Post-Matching		
	Treatment	Control	Std. Mean Difference	Treatment	Control	Std. Mean Difference
Sample Size	3,362	16,310	-	3,362	15,781	-
Age	40.2751	44.5112	-0.3336	40.2751	40.2462	0.0023
Gender	0.5027	0.5694	-0.1335	0.5027	0.5027	0.0000
Geography	0.2855	0.4393	-0.3404	0.2855	0.2855	0.0000
ABD	0.4250	0.4987	-0.1490	0.4250	0.4250	0.0000
Expansion	0.5259	0.4387	0.1745	0.5259	0.5259	0.0000
Non-ABD	0.0491	0.0625	-0.0623	0.0491	0.0491	0.0000

7. SMI-Related ITS Results Without Expansion Population Members

The SMI-related ITS results are presented without the inclusion of members in the expansion group for those outcomes where the results showed a difference from those of the aggregate population analysis. The coefficient estimate from the generalized linear model analysis is also presented to illustrate the variation in the data that may be explained, in part, by the expansion population.

(Note: In all tables **p<0.05; ***p<0.01.)

Measure 9.1.1 PMPM Medicaid cost for individuals who have an SMI/SED

Total PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	27.12 (13.75)	26.96** (9.93)	
Immediate Effect of Demonstration Start (Standard Error)	4.27 (49.38)	-49.62 (35.67)	6.194 (7.207)
Sustained Effect (Time since demo start) (Standard Error)	0.14 (6.32)	8.17 (4.56)	
Constant (Standard Error)	-54,072.80 (27,762.16)	-53,743.69** (20,056.74)	

Measure 9.1.2 PMPM cost of MH-Related treatment for individuals who have an SMI/SED

MH-Related Total PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	9.25 (6.49)	9.06 (5.29)	
Immediate Effect of Demonstration Start (Standard Error)	4.80 (23.32)	-15.65 (18.99)	37.134*** (4.047)
Sustained Effect (Time since demo start) (Standard Error)	-1.72 (2.98)	3.32 (2.43)	
Constant (Standard Error)	-18,389.18 (13,110.60)	-17,989.92 (10,679.49)	

Measure 9.1.2 (a) PMPM cost of MH-IMD services

MH-IMD PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	0.67 (0.65)	0.64*** (0.18)	
Immediate Effect of Demonstration Start (Standard Error)	8.79*** (2.33)	4.48*** (0.65)	28.465*** (0.602)
Sustained Effect (Time since demo start) (Standard Error)	1.05*** (0.30)	0.35*** (0.08)	
Constant (Standard Error)	-1,343.23 (1,309.39	-1,286.44*** (365.01)	

Measure 9.1.3 PMPM cost of physical health care for individuals who have an SMI/SED

Physical Health PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	10.64 (6.63)	10.72 (5.32)	
Immediate Effect of Demonstration Start (Standard Error)	-3.09 (23.81)	-26.61 (19.12)	-47.606*** (4.701)
Sustained Effect (Time since demo start) (Standard Error)	-0.40 (3.05)	3.54 (2.45)	
Constant (Standard Error)	-21,179.12 (13,388.35)	-21,325.41 (10,748.90)	

10.1.1. PMPM cost of outpatient (non-ED) for individuals who have an SMI/SED

Outpatient PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	10.29** (3.83)	10.18*** (2.99)	
Immediate Effect of Demonstration Start (Standard Error)	15.07 (13.75)	-16.33 (10.75)	-38.983*** (2.419)
Sustained Effect (Time since demo start) (Standard Error)	-0.66 (1.76)	3.43** (1.38)	
Constant (Standard Error)	-20,570.47** (7.732.19)	-20,339.73*** (6,042.51)	

10.1.2. PMPM cost of pharmacy for individuals who have an SMI/SED

Pharmacy PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	7.22*** (1.97)	7.18*** (0.98)	
Immediate Effect of Demonstration Start (Standard Error)	2.55 (7.08)	-7.36** (3.52)	16.665*** (1.717)
Sustained Effect (Time since demo start) (Standard Error)	2.27** (0.91)	1.31*** (0.45)	
Constant (Standard Error)	-14,504.50*** (3,978.58)	-14,428.36*** (1,980.05)	

10.1.3. PMPM cost of ED services for individuals who have an SMI/SED

ED PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	0.88 (0.80)	0.76** (0.34)	
Immediate Effect of Demonstration Start (Standard Error)	4.66 (2.87)	-2.65** (1.24)	24.726*** (0.518)
Sustained Effect (Time since demo start) (Standard Error)	0.08 (0.37)	-0.05 (0.16)	
Constant (Standard Error)	-1,756.26 (1,612.76)	-1,517.96** (696.31)	

10.1.4. PMPM cost of inpatient care for individuals who have an SMI/SED

Inpatient PMPM ITS Model	Coefficient Estimate		
	Aggregate	W/O Expansion	GLM-Expansion Effect
General Trend (Time) (Standard Error)	8.17 (8.11)	8.30 (6.82)	-24.021*** (5.441)
Immediate Effect of Demonstration Start (Standard Error)	-27.34 (29.11)	-28.73 (24.48)	
Sustained Effect (Time since demo start) (Standard Error)	-2.66 (3.73)	3.02 (3.13)	
Constant (Standard Error)	-16,127.32 (16,369.65)	-16,396.75 (13,761.55)	

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