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

State Demonstrations Group

November 4, 2024

Jennifer Strohecker
State Medicaid Director
Division of Integrated Healthcare
Department of Health & Human Services
PO Box 143101
Salt Lake City, UT 84101

Dear Director Strohecker:

The Centers for Medicare & Medicaid Services (CMS) completed its review of the Summative Evaluation Report, which is required by the Special Terms and Conditions (STCs), specifically STC 92 "Summative Evaluation Report" of the state's section 1115 demonstration, "Utah Primary Care Network" (Project Nos: 11-W00145/8 and 21-W-00054/8). This report covers the demonstration period from November 2017 through June 2022. CMS determined that the evaluation report, submitted on March 31, 2024 and revised on July 16, 2024 is in alignment with the approved evaluation design and the requirements set forth in the STCs, and therefore, approves the state's Summative Evaluation Report.

The report presents many evaluation findings, but key results can be categorized into the following four domains. One, implementation of the demonstration was associated with improved self-reported access to health care across multiple target populations. In comparison to other states, following implementation of the demonstration, Utahns became more likely to report having a personal doctor or usual source of care, had a primary care appointment in the past year, and had a preventive care screening. Utahns also increasingly reported receiving mental health services and reduced unmet needs for SUD treatment. Two, most demonstration target populations experienced improved health outcomes. Both the Adult Expansion and the Targeted Adult Medicaid populations experienced declines in acute care utilization. Three, enrollment for all three dental populations grew over the course of the demonstration. Four, results on other measures of utilization and engagement were mixed. For example, the Adult Expansion population experienced increases in measures of anti-depression medication management and follow-up after psychiatric hospitalization, but no change in the use of ambulatory care or chronic disease management. We look forward to future analysis as the state continues to refine demonstration programs during the current approval period.

In accordance with STC 94, the approved evaluation report may now be posted to the state's Medicaid website within 30 days. CMS will also post the evaluation report on Medicaid.gov.

We look forward to our continued partnership on the Utah Medicaid Reform section 1115 demonstration. If you have any questions, please contact your CMS demonstration team.

Sincerely,

Danielle Daly -S

Digitally signed by Danielle Daly -S
Date: 2024.11.04 05:36:43 -05'00'

Danielle Daly
Director
Division of Demonstration Monitoring and Evaluation

cc: Tyler Deines, State Monitoring Lead, CMS Medicaid and CHIP Operations Group

Utah 1115 Demonstration Summative Evaluation Report

Report prepared by the Public Consulting Group

Draft Summative Report Submittal Date: March 31, 2024

Final Summative Report Submittal Date: July 19, 2024

Project Nos. 11-W-00145/8 and 21-W-00054/8

PUBLIC CONSULTING GROUP

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A. EXECUTIVE SUMMARY

A.1 DEMONSTRATION

Utah's Medicaid Reform 1115 Demonstration Waiver, originally known as Primary Care Network (PCN) was first implemented in 2002 to provide a limited package of preventive and primary care benefits to certain adults who were otherwise ineligible. The demonstration effective from November 1, 2017, through June 30, 2022, covers the Adult Expansion (AE) population, consisting of adults 19-64 with incomes up to 133 percent of the FPL, and the Targeted Adult Medicaid (TAM) members, vulnerable adults ages 19-64, whose incomes are at or below 5 percent of the FPL, and who meet the detailed eligibility criteria including the need for Substance Use Disorder treatment.

Waiver amendments added services for SUD (approved in 2017) and SMI (2020). These components expand access to IMD services, support state efforts to enhance provider capacity, improve the availability of Medication Assisted Treatment (MAT) and improve access to a continuum of SUD and SMI evidence-based services at varied levels of intensity, including crisis stabilization services.

In December 2019, Utah received authority to move a subset of their plans into integrated care models. The Utah Medicaid Integrated Care (UMIC) plan amendment enrolled beneficiaries in four new integrated plans that manage both physical and behavioral health benefits for the Adult Expansion population. Prior to this time, Utah had separate physical health and behavioral health plans only. The intent of the carve-in is for the UMIC plans to provide more holistic care to the beneficiaries.

Other benefits under the current 1115 Demonstration include dental coverage for vulnerable populations and premium assistance for individuals with access to employer-sponsored insurance.

The demonstration also provides for multiple small populations, including Former Foster Care Youth from another state (FFCYAS), and intensive stabilization services (ISS) to Medicaid eligible children and youth under age 21 in state custody or at risk of being placed in state custody who are experiencing significant emotional and/or behavioral challenges.

A.2 FINDINGS

Multiple indicators showed improved access among low-income Utah residents.

Evidence of progress towards the states' goal of improving access to coverage and health care services was found in a quasi-experimental analysis of national survey data. Analysis comparing Utah to other states found that over the course of the Demonstration, low-income Utahns became more likely to report that they have a personal doctor or usual source of care, had a primary care appointment in the last year, and had a preventive screening. Similar improvement was seen for BH services. Compared to other states, Utahns increasingly reported receiving mental health services, and reduced unmet needs for SUD treatment. Most of this improvement occurred prior to the PHE, though it was sustained through the Demonstration period. The cost of uncompensated care, another indicator of poor access to coverage, decreased in Utah relative to comparison states over the course of the Demonstration.

Qualitatively, stakeholders described organizational actions in response to adult expansion, such as hiring staff and adding capacity, which suggest that the Demonstration supported systemic changes to improve access.

Complex patterns of utilization were seen in the Adult Expansion and TAM populations.

The state hypothesized that the benefits provided through Adult Expansion and TAM would lead to an increase in those members receiving primary and ambulatory care, and behavioral health care, and a corresponding decrease in the need for inpatient treatment and ED visits. The observed pattern of utilization in both populations was more complex. Rates of both inpatient stays and ED visits decreased, but the intended increase in engagement with primary, ambulatory, and preventive services was not seen.

The mixed results seen for engagement in care during this time period are consistent with national trends, particularly during the PHE.

One key marker of progress towards demonstration goals is the increase in initiation and engagement in treatment for SUD seen in the TAM population. A goal of the Demonstration is to engage these vulnerable members in treatment, and the increased participation in treatment of this difficult-to-reach population is a meaningful success. The engagement of TAM members in treatment likely contributed to the observed reduction in ED visits for this population, and is a foundation for supporting members in stable recovery in the longer term. Moreover, the dental benefit provided to TAM members was utilized by approximately one-third of TAM members, an unusually high rate for individuals with SUD and housing instability or other social risk factors. This engagement in dental care probably avoided ED visits - no ED visits for dental conditions occurred among TAM members during the Demonstration.

While coordination of BH care is an intended benefit of UMIC plans, mental health follow up among UMIC members did not increase following hospitalization for BH conditions. Stakeholders offered mixed observations about the early stages of UMIC plans' care coordination for BH services; the challenges in the developing interface of health plans and PMHPs may have inhibited efforts to improve and integrate care delivery for members with BH conditions.

The reduction in hospitalization and ED visits, including ED visits for BH conditions, suggests that AE and TAM members did experience improved outcomes during the Demonstration period. However, the improvement is not attributable to widespread increases in non-acute care for these members, with the exception of TAM members who engaged in SUD treatment at higher rates. A possible explanation is that although rates of primary and other routine care fell overall (in the reference population as well as AE and TAM), care coordination and services were delivered to the subset of individuals most likely to experience a hospital admission or ED visit, thus improving their health and reducing the need for acute care.

Observations of a strengthening care continuum for SMI and SUD

During the 2017-2022 demonstration period, the number of members with SUD and SMI diagnoses grew by 45%, with most of the increase in members with SUD diagnoses. The fraction of these members who received any SUD treatment in the measurement year increased about 5% per year through DY3, and then showed smaller increases in DY4-5. The number receiving IMD services increased each year.

In comparison to other states, low-income UT residents reported improved access to both SUD and SMI services over the course of the Demonstration period. However, the improvement was most significant in the early years of the Demonstration. During the PHE, these relative gains were maintained, but further progress was not observed. This timing suggests that the improvement can be attributed both to systemic improvement in BH care delivery, and the addition of SUD IMD services.

Within the overall UT Medicaid population, a majority of surveyed members reported they had good access to mental health services, but the percent decreased from 2020 to 2022. Given the national trends of increased demand for BH services, reduced provider availability, and unprecedented stress on the health care system, the decrease is unsurprising.

A.3 RECOMMENDATIONS

(1) Move from integrated payment to deeper integration of BH care

With the introduction of UMIC plans, the state took a step to promote stronger collaboration and incentivize outcomes-based care delivery. Engaging more BH providers, particularly specialty providers, should be prioritized; the state should consider strategies to educate providers about reimbursement rates and to streamline administrative processes. Additionally, efforts to support common Electronic Health Records (EHR), enhance data access, and facilitate Health Information Exchange (HIE) to streamline communication will improve care coordination across providers.

(2) Leverage VBP opportunities to address BH and HRSNs

Interviews with leaders at health plans and PMHPs found that stakeholders expressed interest in VBP arrangements in order to support a wider range of services for members with BH needs. Stakeholders reported a history of cooperation among organizations and with the state, which indicates a good environment for the state to act as a convener to explore possible models.

The institutional interface of health plans and PMHPs will be especially critical if the state incorporates the TAM population into VBP arrangements. In creating the TAM waiver population, the state established a foundation for serving individuals with high needs for BH and HRSN services, recognizing the need for enhanced care coordination and HSRN referrals. Utah could build on this foundation by developing specialized VBP plans to further address the unique needs of these members. Strong oversight mechanisms are essential to monitor service delivery and outcomes associated with HRSN-inclusive plans. An effective oversight strategy depends on developing and adopting appropriate measures, and on consistent data collection. Moreover, outcome measures should be stratified in order to identify disparities and develop health equity strategies.

3) Support workforce development

Amidst the ongoing challenges in the healthcare landscape, workforce shortages in the field of behavioral health have intensified, exacerbated by the stresses of the COVID-19 PHE. As demands for mental health and substance abuse services escalate, the shortage of qualified BH providers becomes increasingly pronounced, posing significant barriers to accessing essential care. Utah, like many states, is grappling with these workforce challenges, highlighting the urgent need for a concerted effort towards workforce development. Utah can look to examples of states that have implemented innovative workforce development strategies, emphasizing the importance of loan forgiveness and training programs to attract and retain BH providers. Such programs could be tailored to improve availability specifically of BH providers, and could target rural and underserved geographic areas. Additionally, Utah can prioritize initiatives to support BH providers in enrolling in Medicaid, educating them about increased reimbursement rates, and assisting with the enrollment process to ensure adequate access to BH services for Medicaid beneficiaries.

4) Promote best practices in telehealth

Utah has historically been a leader in incorporating telehealth into care delivery. This report shared perspectives from multiple Utah providers and health plans, all of whom agreed that telehealth is an important tool for expanding access to services, while noting some concerns about the need to identify which patients and services are appropriate for telehealth. Promoting best practices in telehealth will require prioritizing the guidance and standards set forth by CMS, including ensuring patient privacy and security and providing clear communication and informed consent procedures. Monitoring telehealth utilization will also be crucial to ensure that telehealth services are being utilized effectively and efficiently, and to identify trends, patterns, and potential areas for improvement, enabling healthcare providers to refine their telehealth programs and address emerging needs. The state should consider sponsoring webinars and workgroups to enable Medicaid providers to share experiences and best practices as they emerge. With these considerations in place, Utah can maximize the benefits of telehealth while upholding standards of care and patient safety.

B. GENERAL BACKGROUND INFORMATION

B.1. DEMONSTRATION NAME AND TIMING

On October 31, 2017, the Centers for Medicare & Medicaid Services (CMS) approved a five-year extension of Utah's section 1115 Primary Care Network (PCN) Demonstration (hereafter, "the Demonstration"), effective from November 1, 2017, through June 30, 2022. This is the Demonstration period under evaluation. A series of amendments were approved during the Demonstration; they are summarized in General Background Information (Section B.3).

B.2. DEMONSTRATION GOALS

The Utah Department of Health and Human Services (DHHS), Division of Integrated Healthcare (DIH) administers the Utah Medicaid program and is responsible for the implementation of adult Medicaid expansion.

DHHS outlined the following goals in their Demonstration application:

1. Provide health care coverage for low-income Utahns eligible under the Demonstration who would not otherwise have access to, or be able to afford, health care coverage;
2. Improve beneficiary health outcomes and quality of life;
3. Lower the uninsured rate of low income Utahns;
4. Provide continuity of coverage for individuals eligible under the Demonstration;
5. Increase access to primary care;
6. Reduce uncompensated care provided by Utah hospitals;
7. Reduce barriers to health care and housing, an important social determinant of health;
8. Increase the utilization of preventive dental services, while reducing emergency dental procedure costs;
9. Improve access to services across the continuum of care;
10. Provide for better care coordination for individuals transitioning to community-based care;
11. Reduce the utilization of emergency departments and inpatient hospital settings for treatment where utilization is preventable or medically inappropriate; and
12. Reduce the overdose death rate.

With the addition of the Substance Use Disorder (SUD) and Serious Mental Illness (SMI) Institution for Mental Diseases (IMD) amendment approvals, the state has expanded its objectives to include the following for individuals with SUD and/or SMI:

1. Improve access to services across the continuum of care;
2. Provide for better care coordination for individuals transitioning to community-based care;
3. Reduce the utilization of emergency departments and inpatient hospital settings for treatment, where utilization is preventable or medically inappropriate;
4. Reduce the overdose death rate; and
5. Improve access to care for physical health conditions for these individuals.

B.3. DESCRIPTION

Utah's 1115 Demonstration was first implemented in 2002 and has transformed over the last twenty years through extensions and amendments that have added new authorities and Demonstration populations.

The original PCN Demonstration focused on providing a limited package of preventive and primary care benefits (the PCN benefit) to adults ages 19-64 with household incomes up to 150 percent of the Federal Poverty Level (FPL) and a slightly reduced benefit package to Parent/Caretaker Relatives (PCR) who comprised the Current Eligibles population. With Medicaid expansion in April 2019, PCN program

participants became eligible for full state plan benefits, and the PCN benefit was phased out. The Current Eligible population will phase out by December 31, 2023, eliminating disparities in benefit packages by parental status, and most relics of the original waiver.

The 1115 Demonstration has historically served as a vehicle to provide premium assistance to adults with household incomes above Medicaid eligibility requirements. In 2006, the Utah Department of Health (and Human Services DHHS) amended the 1115 Demonstration to establish the Health Insurance Flexibility and Accountability Employer Sponsored Insurance (HIFA-ESI) program, which provides premium assistance to adults with household incomes up to and including 150 percent of the FPL and CHIP-eligible children with family incomes up to 200 percent of the FPL. This was later amended to include adults with incomes up to 200 percent of the FPL and programmatically eligible adults and children obtaining coverage through COBRA[1]. Under the current 1115 Demonstration, premium assistance helps pay the individual's or family's share of monthly premium costs of ESI or COBRA and is aggregated under Utah's Premium Partnership for Health Insurance Program (UPP). Individuals in the Adult Expansion population with access to employer-sponsored insurance are required to enroll, with few exceptions. The state also increased the maximum assistance reimbursement amount in July 2021 making this program more substantial and potentially increasing the number of individuals covered by UPP.

In recent years, Utah's Demonstration has emphasized improving the behavioral health (BH) continuum of care. In November 2017, during the previous waiver period, the state received approval to provide Demonstration coverage to the Targeted Adult Medicaid (TAM) population. The TAM population consists of vulnerable adults ages 19-64, whose incomes are at or below 5 percent of the FPL, and who meet the detailed eligibility criteria within one of three targeted categories: chronically homeless, involved in the justice system and in need of BH treatment, or simply are in need of BH treatment. As of June 2022, enrollment in TAM was 9,384 individuals.

In March 2022, CMS approved the Housing Related Services and Supports (HRSS) amendment, allowing Utah to provide housing support services, such as tenancy supports, community transition services, and supportive living services to TAM individuals who meet additional eligibility criteria and exhibit one of seven risk factors. Since the HRSS amendment was approved at the end of the current Demonstration period, it is not the subject of this evaluation report.

The 1115 Demonstration also includes components that focus on individuals with SUD and/or SMI, and youth with significant emotional disorder (SED) and/or behavioral challenges. Utah received approval of the SUD Implementation plan in November 2017. The Opioid Use Disorder (OUD) and SUD Program provides state plan behavioral health benefits to Demonstration participants. The state also received authority to provide residential and inpatient OUD/SUD treatment services to all Medicaid beneficiaries while they are short term residents in treatment settings that qualify as IMDs.

The SMI/SED Implementation plan was approved in December 2020, and is similar in expenditure authority to the OUD/SUD program. The state is taking action to meet key milestones of the SMI/SED program including, ensuring quality of care in psychiatric hospitals and residential settings, improving care coordination and transitions to community-based care, increasing access to the continuum of care including crisis stabilization services, and earlier identification and engagement in treatment and increased integration. Together, the SUD and SMI components expand access to mental health services, opioid use disorder (OUD) and other substance use disorder (SUD) services. The 1115 Demonstration supports state efforts to enhance provider capacity, improve the availability of Medication Assisted Treatment (MAT) and improve access to a continuum of SMI evidence-based services at varied levels of intensity, including crisis stabilization services.

[1] Consolidated Omnibus Reconciliation Act of 1986

In February 2019, Utah received CMS approval to provide state plan Medicaid coverage to Former Foster Care Youth from another state (FFCYAS) who were ever enrolled in Medicaid in another state and are not otherwise Medicaid eligible in Utah. State plan coverage is provided to this population until 26 years of age.

In November 2019, Utah received CMS approval for the provision of intensive stabilization services (ISS) to Medicaid eligible children and youth under age 21 in state custody or at risk of being placed in state custody who are experiencing significant emotional and/or behavioral challenges. The ISS program provides both state plan BH services and home and community-based services (HCBS) that are not currently authorized through the state plan.

In December 2019, Utah received authority to move a subset of their plans into integrated care models. The Utah Medicaid Integrated Care (UMIC) plan amendment enrolled beneficiaries in four new Integrated Managed Care Plans that manage both physical and behavioral health benefits for the Adult Expansion population. Prior to this time, Utah had separate physical health and behavioral health plans only. The intent is for the UMIC plans to provide more holistic care to the beneficiaries.

Other benefits under the current 1115 Demonstration include dental coverage for vulnerable populations and premium assistance for individuals with access to employer-sponsored insurance. The PCN Demonstration first provided an adult dental benefit to the Current Eligibles population in November 2006. CMS approved dental benefits for adults with disabilities or blindness in 2017. In 2019, the state chose to provide comprehensive dental benefits to TAM adults receiving SUD treatment because research showed that dental coverage could increase initiation and engagement in treatment for individuals living with SUD. Finally, in 2020 dental benefits were extended to Medicaid eligible individuals aged 65 and older and to TAM adults in need of porcelain or porcelain-to-metal crowns.

The Demonstration coincided with the Medicaid Continuous Enrollment requirement associated with the Covid-19 pandemic beginning in 2020. Enrollment in Medicaid remained high as states were required to keep current Medicaid beneficiaries enrolled. During the Demonstration, the state prepared an unwinding plan. The date of the unwinding of continuous eligibility for Medicaid was uncertain, and eventually was set for March 1, 2023[2].The redetermination process will likely affect enrollment numbers in the years following this Demonstration, as some individuals move from one eligibility category to another, and individuals above income limits are transitioned off Medicaid coverage.

Larger populations covered in the current 1115 Demonstration period are the Current Eligibles (CE), the Adult Expansion (AE) population, consisting of adults 19-64 with incomes up to 133 percent of the FPL, and the AE members enrolled in integrated care plans authorized under the Utah Medicaid Integrated Care (UMIC) amendment. The UMIC members are a sub-group of the AE population. These, and the smaller Demonstration populations listed in Exhibit 1, are the subject of the current evaluation. The independent evaluator (IE) will include research questions and hypotheses and measures for each of these populations in this design.

B.4. POPULATIONS

Exhibit 1 provides a summary of the populations covered during the Demonstration period that are the subjects of the current evaluation.

[2] 10 Things to Know About the Unwinding of the Medicaid Continuous Enrollment Provision | KFF

Exhibit 1: Summary of Demonstration Populations Under Evaluation

Demonstration Population	Eligibility[3]	Benefits[2]	Number of Annual Enrollees[4]
Current Eligibles (CE)	Adults aged 19-64 who are medically needy and not aged, blind, or disabled. Individuals who are pregnant are excluded, through the 60th day postpartum.	Individuals enrolled in this eligibility category receive most of the benefits covered under Utah's state plan according to limitations specified in the state plan. Current Eligibles also receive benefits that are the equivalent of (b)(3) services under the state's 1915(b) PMHP waiver, which include; psychoeducational services, personal services, respite care and supportive living services (mental health services in residential treatment settings)	39,721
Adult Expansion (AE)	Adults, age 19 through 64, who are not Current Eligibles, who are U.S. citizens/qualified non-citizens, are residents of Utah, and have household income at or below 133 percent of the FPL.	Expansion adults will receive state plan benefits. Expansion adults also receive benefits that are the equivalent of (b)(3) services under the state's 1915(b) PMHP waiver, which include; psychoeducational services, personal services, respite care and supportive living services (mental health services in residential treatment settings).	115,584
Utah Medicaid Integrated Care (UMIC-subset of Adult Expansion Population)	Adult Expansion members enrolled in the Utah Medicaid Integrated Care program, which operates in Utah's most populous counties: Davis, Salt Lake, Utah, Washington, and Weber.	Expansion adults will receive state plan benefits and benefits that are the equivalent of (b)(3) services under the state's 1915(b) PMHP waiver, which include; psychoeducational services, personal services, respite care and supportive living services.	82,110
Utah Premium Partnership	**Demonstration Population III**- includes working adults, age 19 through 64, their spouses, and their	Individuals in this eligibility category are eligible to receive premium assistance (through ESI or	1,288

[3] Utah 1115 Waiver Renewal.pdf
[4] The annual enrollment numbers are those reported in the Annual Monitoring Report for the period July 2021 – June 2022, DY20 Annual Report FINAL with revised SUD data (medicaid.gov)

Demonstration Population	Eligibility[3]	Benefits[2]	Number of Annual Enrollees[4]
Program (UPP)	children who are ages 19 through 26, with countable gross family incomes up to and including 200 percent of the FPL and participate in Utah's Premium Partnership for Health Insurance (UPP). **Demonstration Population V-** includes adults aged 19 through 64 with countable gross family income up to and including 200 percent of FPL, and the individual or custodial parent/caretaker is able to enroll in COBRA continuation coverage. **Current Eligible CHIP Children-** includes children up to age 19 with family income up to and including 200 percent of the FPL who would meet the definition of a targeted low-income child. These children are eligible for the CHIP, but the children's parents have elected to receive premium assistance for the employee's share of the cost of ESI instead of receiving CHIP direct coverage. **Demonstration Population VI-**includes children up to age 19 with family income up to 200 percent of the FPL who would meet the definition of a low-income child.	COBRA) in paying the employee's, individual's, or family's share of the monthly premium cost of qualifying insurance plans.	
Targeted Adult Medicaid (TAM)	Includes adults, ages 19 through 64, with incomes below five percent of the FPL and no dependent children, who meet detailed criteria in one of three major categories: ● Chronic homelessness ● Involved in the criminal justice system and in need of BH treatment. ● In need of BH treatment	Individuals enrolled in this eligibility category receive full Medicaid state plan benefits.	9,384
Aged, Blind, Disabled	**Dental Benefits for Aged Individuals**- includes individuals who are age 65 and older, and are eligible	Individuals that are enrolled in this eligibility category will receive state plan dental benefits that	Blind/ Disabled

Demonstration Population	Eligibility[3]	Benefits[2]	Number of Annual Enrollees[4]
Dental (ABD Dental)	for Medicaid, who are eligible to enroll in the state plan under Section 1902(a)(10)(C) of the Act and 42 CFR 435.320 and 435.330. They receive dental benefits that are defined in the Utah Medicaid Provider Manual, Dental Services, and if needed, porcelain or porcelain-to-metal crowns. **Dental Benefits for Individuals with Blindness or Disabilities**- includes individuals who are blind or disabled, 18 and older, who are enrolled in the state plan under Section 1902(a)(10)(C) of the Act and 42 CFR 435.322, 435.324 and 435.330. They receive dental benefits that are defined in the Utah Medicaid Provider Manual, Dental Services, and if needed, porcelain or porcelain-to-metal crowns.	are defined in the Utah Medicaid Provider Manual, Dental Services, and if needed, porcelain or porcelain-to-metal crowns.	Dental 45,306 Aged Dental 398
TAM Dental	Individuals who are eligible for the Targeted Adult Medicaid program and are receiving SUD treatment, to receive state plan dental benefits, as well as porcelain or porcelain-to metal crowns.	Individuals enrolled in TAM who are receiving SUD treatment will receive state plan dental benefits that are defined in the Utah Medicaid Provider Manual, Dental Services, and if needed, porcelain or porcelain-to-metal crowns.	262
Serious Mental Illness (SMI)	Medicaid recipients, age 21 through 64 receiving SMI services in IMD treatment settings.	Individuals will receive state plan services, including mental health treatment services provided in residential and inpatient treatment settings that qualify as an IMD.	8
Substance Use Disorder (SUD)	Medicaid recipients, receiving OUD/SUD treatment services provided in a residential or IMD treatment setting.	Individuals will receive state plan services, including SUD treatment services provided in residential treatment settings that qualify as an IMD.	767
Intensive Stabilizations Services (ISS)	Medicaid eligible children and youth under age 21, who are in state custody, or at risk of state custody, and experiencing significant emotional and/or behavioral challenges.	Individuals eligible for this category will receive state plan and home community-based services.	719 claims for ISS submitted

C. EVALUATION QUESTIONS AND HYPOTHESES

The Utah Department of Health requested that PCG develop a single comprehensive Summative Report for the Utah Medicaid Reform 1115 Demonstration (formerly "Utah Primary Care Network"), based on our previously approved evaluation design for the Utah Medicaid Integrated Care (UMIC) component of the Demonstration. We reviewed the previously approved evaluation designs for the Adult Expansion (AE), Current Eligible (CE), Targeted Adult Medicaid (TAM), Targeted Adult Dental (TAM-Dental), Blind and Disabled Dental (BDD), Aged Dental (AD), Employer-Sponsored Insurance (ESI), Utah Premium Partnership (UPP), and Intensive Stabilization Services (ISS) populations of the 1115 waiver, as well as for the Serious Mental Illness (SMI) and Substance Use Disorder (SUD) components. We noted that these plans were prepared at different times, and the measures are not fully aligned with each other. The various evaluation designs use different measures for similar outcomes, which would result in an inefficient analytic process and a fragmented Summative Report.

We designed a comprehensive evaluation plan that simplifies and aligns research questions and measures across the populations being studied, resulting in coherent and useful Summative Report. The plan prioritizes understanding access to and engagement in care across populations, in particular behavioral health care. The approach retains the quasi-experimental approach we described for the AE/UMIC evaluation and uses a subset of the same measures for each of the other populations. For smaller populations where regression analysis is not feasible, the evaluation focuses on trends over time in service delivery. CMS approved the comprehensive design in December 2022, the memo outlining the approved design is provided in Attachments (Section J.1).

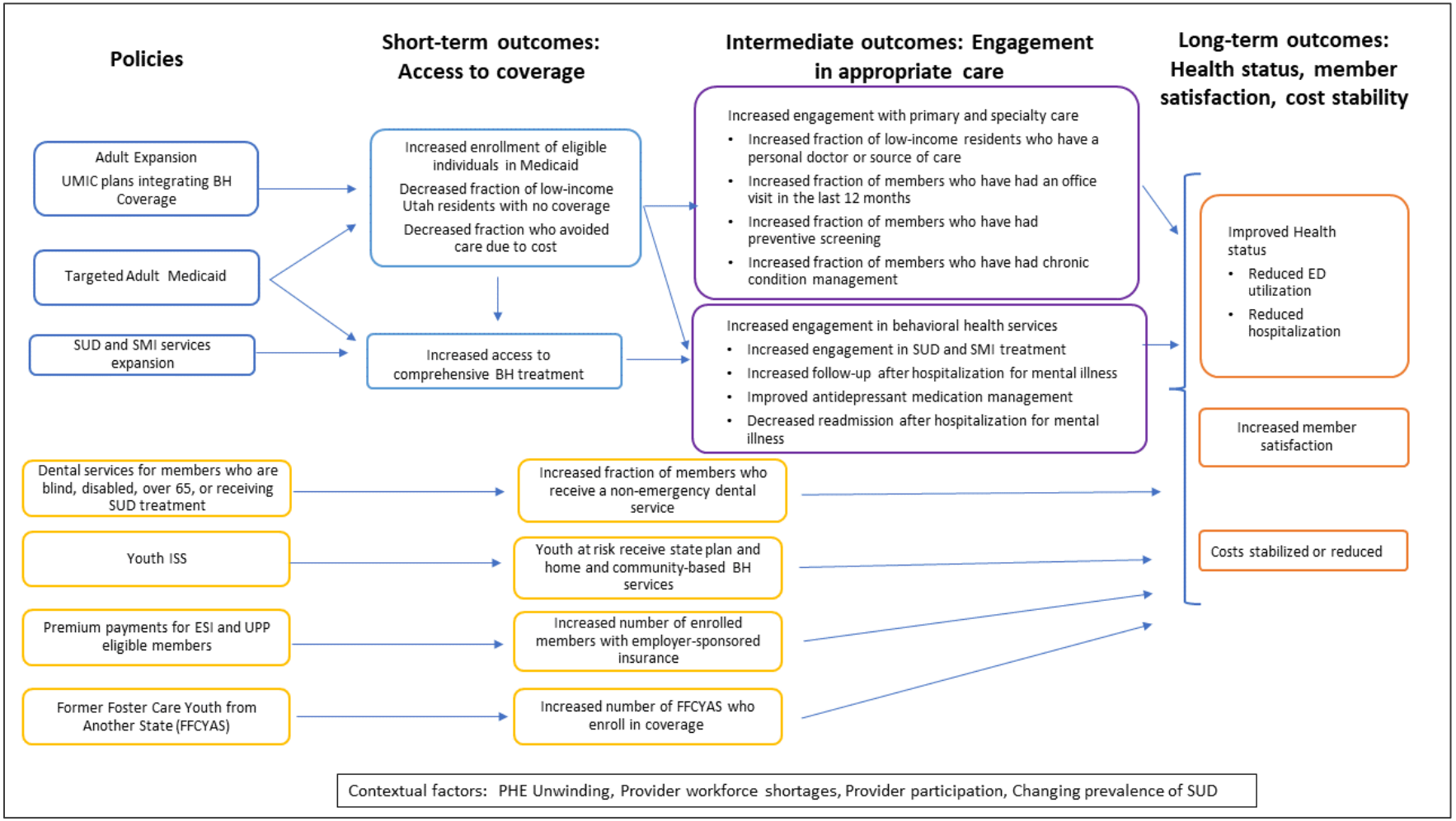
The overarching research questions addressed in this evaluation are:

- Does the 1115 Demonstration overall improve access to coverage and engagement in health care for low-income UT residents? (Hypothesis 1)
- Does the 1115 Demonstration improve healthcare access and engagement for the Adult Expansion, and TAM populations? (Hypotheses 2 and 3)
- Do the SUD and SMI Demonstrations increase access to appropriate treatment? (Hypothesis 5) And how are the costs of care and drivers of cost changing over time for the SMI/SUD populations? (Hypothesis 6)
- Is the 1115 Demonstration delivering coverage/ services appropriately to individuals in the smaller populations? (Hypothesis 7)

The evaluation also examines member experience and satisfaction with care (Hypothesis 4).

C.1. LOGIC MODEL

Exhibit 2: Logic Model



C.2. HYPOTHESES AND RESEARCH QUESTIONS

The logic model (Exhibit 2) above illustrates how the Demonstration objectives are expected to be achieved by program activities, following a natural progression from proximate to distal outcomes as the Demonstration goes on. Each outcome is represented by a testable hypothesis, listed below, with corresponding research questions.

The hypotheses are organized by population, and the evaluator was focused on the broad themes of increasing health care coverage, improving health outcomes and quality of life, increasing access to primary care, reducing utilization of the emergency department (ED) and inpatient utilization, and reducing the cost of uncompensated care.

The first objective of the 1115 Demonstration, providing health care coverage for low-income Utahns eligible under the Demonstration who would not otherwise have access to healthcare coverage, is achieved through enrollment in a number of the Demonstration populations and programs, including AE, TAM, UPP, and ISS. Individuals in these populations would not otherwise be eligible for Medicaid without the presence of the Demonstration in Utah.[5] The first hypothesis is thus focused on the impact of the 1115 Demonstration overall on the population of low-income UT residents. A larger fraction of low-income UT residents is expected to report having access to coverage and will demonstrate engagement in healthcare through national survey data, relative to reported access and engagement in other states. Similarly, the cost of uncompensated care is expected to go down relative to comparison states, as more low-income individuals in the state gain access to Medicaid. Engagement in care is expected to improve member satisfaction and lead to reductions in inappropriate care utilizations.

The second hypothesis is similar to the first hypothesis, but it focuses on the AE population, specifically. The second hypothesis is that the Demonstration will improve healthcare access and engagement for the AE population. The state hypothesizes that providing coverage to members covered under Medicaid expansion will cause members to engage in acute care, which will subsequently lead to a reduction in inpatient care and ED utilization. The Utah Medicaid Integrated (UMIC) population, which is a subpopulation of the Adult Expansion population, enrolls members in Utah's five-most populous counties in integrated care plans that integrate care for both their physical and behavioral health needs. Thus, the UMIC research questions are specific to the outcomes produced when members gain access to behavioral health care that is managed by managed care plans. It is anticipated that UMIC will reduce ED utilization and improve engagement in BH services among UMIC members.

The third hypothesis focuses on the TAM population. TAM members are eligible for Medicaid under the Demonstration, and thus the state hypothesizes that the Demonstration will continue to improve healthcare access and engagement for this population.

The fourth hypothesis addresses member experience and satisfaction with integrated physical and behavioral health plans. The state expects member experience and satisfaction in UMIC plans will be as good or better than that of members in ACOs.

The fifth and sixth hypotheses speak to BH services provided to Demonstration participants and Medicaid beneficiaries with SMI and SUD treated in Institutions of Mental Disease (IMD). The state anticipates that BH coverage for residential and inpatient services provided to members in IMDs will lead to a reduction in inpatient stays, ED utilization, and rate of unplanned readmission among recipients, resulting in cost decrease or stabilization. The state also anticipates this will lessen unmet need and increase engagement in treatment to reduce overdose deaths in the long-term. The IE will monitor the impact of the state's efforts to increase access to crisis stabilization services. Greater utilization of non-hospital, non-residential

[5] Individuals in the Current Eligibles population received expanded benefits through the waiver, although they would have received coverage regardless of the presence of the waiver.

services should lead to greater reductions in inpatient stays, ED utilization, and overdose deaths in the long-term.

Finally, the seventh hypothesis addresses smaller Demonstration populations, which include UPP/ESI, ISS, Blind and Disabled Dental, Aged Dental, and TAM Dental. The state anticipates that utilization for the services provided to these populations will increase and total cost of care will decrease, as these members engage in acute and preventive care. Although the number of AE members enrolled in Employer Sponsored Insurance will grow due to the new provision present in this waiver requiring enrollment in ESI for all AE members who have access to insurance through their employers, the number of members enrolled in ESI is not projected to exceed 1,385 members during this Demonstration period. As a result, the ESI population by itself is unlikely to lead to reductions in uncompensated care and inappropriate care utilization. In addition, the number of individuals in the FFCYAS population, and the number receiving ISS, were both very small in the prior Demonstration period. Therefore, the evaluation will include counts and a qualitative summary of program implementation.

The Evaluation Summary Tables in Attachments (Section J.2) provide comparison strategies, measures, data sources, and analytic approaches for each research question.

1. Hypothesis 1: The Demonstration overall will improve access to coverage and engagement in health care for low-income UT residents.

    - Primary research question 1.1: Did the fraction of low-income residents with health care coverage increase, relative to comparison states?
    - Primary research question 1.2: Did the cost of uncompensated care decrease relative to comparison states?
    - Primary research question 1.3: Did the fraction of low-income residents who avoided care due to cost decrease, relative to comparison states?
    - Primary research question 1.4: Did the fraction of low-income residents who have a personal doctor or usual source of care increase, relative to comparison states?
    - Primary research question 1.5: Did the fraction of low-income residents who had a routine check-up (a primary or specialty care appointment) in the last year increase, relative to comparison states?
    - Primary research question 1.6: Did the fraction of low-income residents who had a preventive screening (mammogram) in the last year increase, relative to comparison states?

2. Hypothesis 2: The Demonstration will improve healthcare access and engagement for the Adult Expansion population.

    - Primary research question 2.1: Did inpatient hospital utilization decrease over time for the Adult Expansion population?
    - Primary research question 2.2: Did ED visits decrease over time for the Adult Expansion population?
        - Subsidiary research question 2.2a: Did ED visits for BH conditions decrease over time for the Adult Expansion population?
        - Subsidiary research question 2.2.b: Did UMIC plans reduce ED visits for BH conditions for Adult Expansion population, relative to FFS or physical health-only ACO plans?
    - Primary research question 2.3: Did engagement in primary and ambulatory care increase over time for the Adult Expansion population?
    - Primary research question 2.4: Did engagement in BH care increase over time for the Adult Expansion population?
        - Subsidiary research question 2.4.a: Did UMIC plans improve engagement in behavioral health care for the Adult Expansion population, relative to FFS or physical health-only ACO plans?
    - Primary research question 2.5: Did engagement in treatment for chronic conditions increase over time for the Adult Expansion population?

3. Hypothesis 3: The Demonstration will improve healthcare access and engagement for the TAM population.

    - Primary research question 3.1: Did inpatient hospital utilization decrease over time for the TAM population?
    - Primary research question 3.2: Did ED visits decrease over time for the TAM population?
        - Subsidiary research question 3.2.a: Did ED visits for BH conditions decrease over time for the TAM population?
    - Primary research question 3.3: Did engagement in primary and ambulatory care increase over time for the TAM population?
    - Primary research question 3.4: Did engagement in BH care increase over time for the TAM population?

4. Hypothesis 4: The Demonstration will result in maintained or improved member experience and satisfaction.

    - Primary research question 4.1: Did UMIC members report member experience and satisfaction equal to or better than ACO members?
    - Primary research question 4.2: Did member experience and satisfaction change over time?

5. Hypothesis 5: The SMI and SUD Demonstrations increased access to appropriate treatment.

    - Primary research question 5.1: Did the number of individuals receiving services for SMI and/or SUD increase over time?
    - Primary research question 5.2: Did ED visits for BH conditions decrease among individuals with SMI and/or SUD diagnoses over time?
    - Primary research question 5.3: Did engagement in SUD treatment increase among individuals with SUD diagnoses over time?
    - Primary research question 5.4: Did follow up following hospitalization for psychiatric treatment increase among individuals with SMI relative to baseline?
    - Primary research question 5.5: Did utilization of any mental health service increase among low-income residents, relative to comparison states?
    - Primary research question 5.6: Did the number of individuals needing but not receiving SUD treatment decrease among low-income residents, relative to comparison states?

6. Hypothesis 6: The SMI and SUD Demonstrations stabilized or reduced cost of care for these populations.

    - Primary research question 6.1: Did the total cost of care for individuals with SMI diagnoses change over time?
        - Subsidiary research question 6.1.a: Did costs related to the diagnosis and treatment of SMI change over time? (SMI-IMD costs + other SMI costs + non-SMI costs)?
        - Subsidiary research question 6.1.b: What types of care (inpatient + non-ED outpatient, + ED outpatient + pharmacy, + long-term care) are the primary drivers of the cost of care for the SMI population?
    - Primary research question 6.2: Did the total cost of care for individuals with SUD diagnoses change over time?
        - Subsidiary research question 6.2.a: Did costs related to the diagnosis and treatment of SUD change over time? (SUD-IMD costs + other SUD costs + non-SUD costs)?
        - Subsidiary research question 6.2.b: What types of care (inpatient + non-ED outpatient, + ED outpatient + pharmacy, + long-term care) are the primary drivers of the cost of care for the SUD population?

7. Hypothesis 7: The Demonstration delivered coverage/ services appropriately to individuals in the smaller Demonstration populations.

   UPP/ESI

   - Primary research question 7.1: Did the number of individuals receiving coverage increase over time?
   - Primary research question 7.2: What was the average total Medicaid cost of care for enrollees?
   - Primary research question 7.3: Did the pmpm cost for enrollees change over time?

   ISS

   - Primary research question 7.4: Did the number of individuals receiving ISS increase over time?

   Aged, Blind and Disabled Dental (ABD), TAM Dental

   - Primary research question 7.5: Did dental service provision increase over time?
   - Primary research question 7.6: Did the rate of ED visits for dental conditions decrease over time?
   - Primary research question 7.7: What was the average cost of dental services?
   - Primary research question 7.8: How many FFCYAS received coverage?

In addition to the outcome-related hypotheses, there are two exploratory research questions (ERQ). These questions were explored in a single round of Key Informant Interviews and they are not shown in the Evaluation Summary Tables.

- ERQ 1 - what challenges, successes and lessons learned were experienced by stakeholders during implementation?
- ERQ2 - how did the Demonstration influence integration of BH services for Medicaid members?

D. METHODOLOGY

D.1. EVALUATION DESIGN

The Independent Evaluator (IE) used a mixed-methods evaluation approach that combined administrative data, survey data, and qualitative data to address the goals and hypotheses presented in the Demonstration application and answer all research questions listed above. The evaluation employs multiple comparison strategies, both in-state and out-of-state.

Out-of-state comparisons were performed to investigate Hypothesis 1: The Demonstration overall will improve access to coverage and engagement in health care for low-income UT residents. A difference-in-difference (DiD) model, and a synthetic control method (SCM), were used to compare the impact of the Demonstration as a whole on the aggregate Medicaid eligible population to Medicaid eligibles in other states.

The analytic approach for the claims-based measures included an in-state comparison group and trends over time compared using mixed effects regression. This option was chosen due to lack of pre-Demonstration baseline data. The Current Eligibles (CE) were the comparison group for the Adult Expansion (AE) population and the subset of CEs with an SMI and/or SUD diagnosis were the comparison group for the TAM population. By comparing Demonstration target group to members eligible under traditional Medicaid (the CE group), the evaluation design isolates the effect of the Demonstration from state or national trends unrelated to the Demonstration.

The design also includes qualitative data that was collected through key informant interviews with stakeholders. Together, these complementary methods enabled a comprehensive evaluation of the Demonstration.

D.2. TARGET AND COMPARISON POPULATIONS

As described in Exhibit 1, the Demonstration provided coverage and services for multiple populations. Out-of-state comparison using national survey data and other publicly available data sources were used for investigating the impact of the Demonstration as a whole on the full Medicaid eligible population. For specific populations, the comparison was to pre-Demonstration trends where data was available, and to a baseline year for new services. For Utah Medicaid Integrated Care (UMIC) plans, the comparison was to other plan types without integrated behavioral health (BH) services. For the SUD and SMI populations, subgroup comparisons were made among SUD only, SMI only, and both SMI/SUD for the claims-based measures. The Demonstration populations (the target groups) and the approach to comparisons are shown below in Exhibit 3.

Exhibit 3: Demonstration Populations and Comparisons

Demonstration (target) Population	Program Start	Intervention Period[6]	Comparison Group	Analytic Approach
Targeted Adult Medicaid (TAM)	November 1, 2017	November 1, 2017, to June 30, 2022	Current Eligibles with an SMI and/or SUD diagnosis	Trend Over Time, Mixed Effects Regression
Adult Expansion (AE) Population	Phase I: July 1, 2018 (up to 100% of the FPL) Phase II: July 1, 2019 (up to 138% of FPL)	April 1, 2019, to June 30, 2022	Current Eligibles	Trend Over Time, Mixed Effects Regression
Utah Medicaid Integrated Care (UMIC- subset of AE)	January 1, 2020	N/A	Three plan types: FFS, ACO, UMIC	Trend Over Time, Mixed Effects Regression
Substance Use Disorder (SUD), claims-based measures	November 1, 2017	November 1, 2017, to June 30, 2022	Subgroups: SUD only, both SMI/SUD	Trend Over Time, Mixed Effects Regression
Serious Mental Illness (SMI), claims-based measures	December 1, 2020	December 1, 2020, to June 30, 2022	Subgroups: SMI only, both SMI/SUD	Trend Over Time, Mixed Effects Regression
Substance Use Disorder (SUD), cost analysis	November 1, 2017	November 1, 2017, to June 30, 2022	November 1, 2017, to October 31, 2018 (first year of Demonstration)	Trend over time, Interrupted Time Series
Serious Mental Illness (SMI), cost analysis	December 1, 2020	December 1, 2020, to June 30, 2022	December 1, 2018, to November 30, 2019 (2 years pre-Demonstration)	Trend over time, Interrupted Time Series

Several Demonstration populations are too small to feasibly conduct a comparison to a baseline period. The analytic approaches for these populations are shown below (Exhibit 4).

Exhibit 4: Small Demonstration Populations

Demonstration (target) Population	Program Start	Analytic Approach
Utah Premium Partnership Program (UPP)	May 30, 2003	Descriptive statistics, time series regression
Aged, Blind, Disabled Dental (ABD Dental)	June 29, 2017	Descriptive statistics, time series regression
TAM Dental	February 1, 2019	Descriptive statistics, time series regression
Intensive Stabilizations Services (ISS)	November 1, 2019	Counts (small population size)

[6] This is the intervention period that is the subject of the current evaluation.

D.3. EVALUATION PERIOD

This evaluation covers the five-year Demonstration period from July 1, 2017, through June 30, 2022. The IE acknowledges that some policies authorized under this waiver are continuations of policies implemented in previous waiver periods. The goal of this evaluation is to quantify any gains realized in the current waiver period. Given that the Demonstration period coincides with COVID-19 public health emergency (PHE), as shown in Exhibit 5, sensitivity analyses were conducted and are described in Results (Section F).

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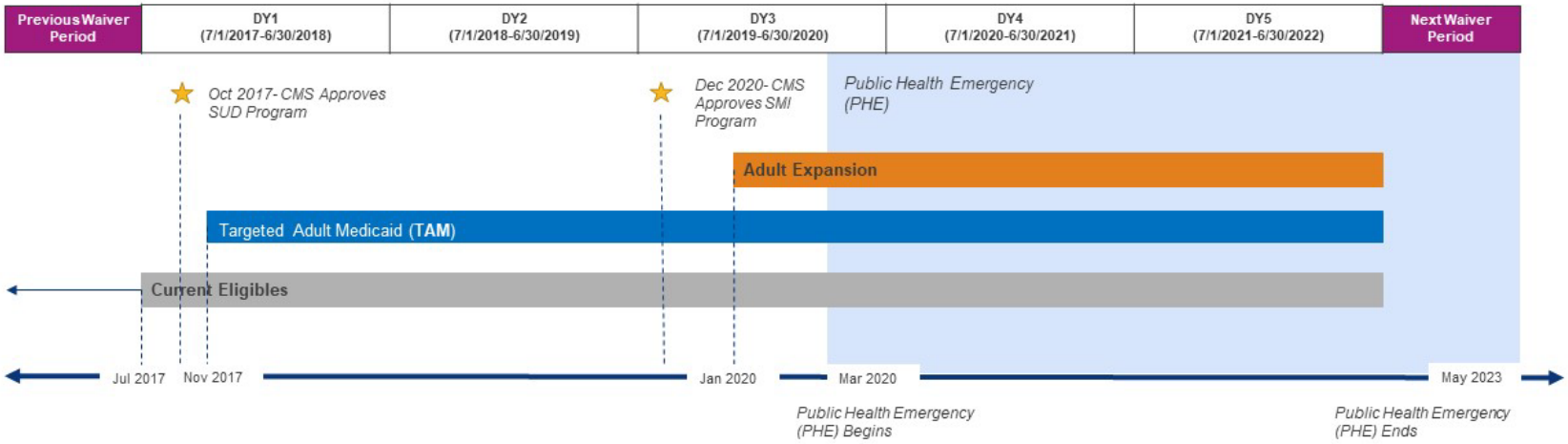
Exhibit 5: Performance Period by Population



D.4. EVALUATION MEASURES

The evaluation hypotheses and corresponding measures are summarized in the Evaluation Design Tables provided in the Attachments (Section J.2). Exhibit 6 provides a description of each claims-based measure.

Exhibit 6: Claims-based Measures

Measure	Description
AAP: Adults' Access to Preventative/Ambulatory Health Services	The percentage of members 19–64 years of age and older who had at least one ambulatory or preventive care visit during the measurement year.
AMM: Antidepressant Medication Management	The percentage of members 19–64 years of age who were treated with antidepressant medication, had a diagnosis of major depression and who remained on an antidepressant medication treatment. Two rates are reported. *Effective Acute Phase Treatment:* The percentage of members who remained on an antidepressant medication for at least 84 days (12 weeks). *Effective Continuation Phase Treatment:* The percentage of members who remained on an antidepressant medication for at least 180 days (6 months).
EDU: Emergency Department Utilization	The rate per 1,000 of members 19–64 years of age who had emergency department (ED) visits during the measurement year.
FUH – Follow Up After Hospitalization for Mental Illness	The percentage of discharges for patients 19-64 years of age who were hospitalized for treatment of selected mental health disorders or intentional self-harm diagnoses and who had a follow-up visit with a mental health provider. Two rates are reported: The percentage of discharges for which the member received follow-up within 7 days after discharge. The percentage of discharges for which the member received follow-up within 30 days after discharge
IET: Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment	The rate of members 19–64 years of age with a new episode of alcohol or other drug (AOD) abuse or dependence who received the following. *Initiation of AOD Treatment.* The percentage of members who initiate treatment through an inpatient AOD admission, outpatient visit, intensive outpatient encounter or partial hospitalization, telehealth or medication treatment within 14 days of the diagnosis. *Engagement of AOD Treatment.* The percentage of members who initiated treatment and who were engaged in ongoing AOD treatment within 34 days of the initiation visit.
IPU: Inpatient Utilization: General Hospital/Acute Care	The rate of members 19–64 years of age who utilized acute inpatient care and services in the following categories: Surgery Medicine Total Inpatient (Surgery, and Medicine) Note: Final Outputs are Discharges per 1,000 Member Months, and Average Length of Stay.
MPM: Annual Monitoring for Patients on Persistent Medications	The percentage of members 19–64 years of age who received at least 180 treatment days of ambulatory medication therapy for a select therapeutic agent (ACE inhibitor or ARB medication) during the measurement year and at least one therapeutic monitoring event for the therapeutic agent in the measurement year.
REA: 30 Day All-Cause Unplanned Readmission Following Psychiatric Inpatient Hospitalization	This measure calculates an unplanned, 30-day readmission rate for patients 19-64 years of age with a principal discharge diagnosis of a psychiatric disorder within a twelve-month period. A readmission is defined as any "unplanned" admission to an acute care hospital. The numerator is defined by filtering out "always planned" and "potentially planned" diagnoses and procedures. It must occur within 3 to 30 days after the index discharge date from the eligible index admission date that had the principal discharge diagnosis of a psychiatric disorder (Table BH01_00). Subsequent admissions on Days 0, 1, and 2 are not counted as readmissions due to transfers/interrupted stay policy.

D.5. DATA SOURCES

The evaluation utilized the following quantitative and qualitative data sources:

- National Surveys and Other Publicly Available Data Sources:
  - Behavioral Risk Factor Surveillance System (BRFSS)
  - National Survey of Drug Use and Health (NSDUH)
  - National Academy for State Health Policy's (NASHP) Hospital Cost Tool (HCT)
  - Google COVID-19 Community Mobility Data

- Utah Specific Data Sources:
  - Medicaid Administrative Data (claims, Monitoring Reports, grievances)
  - Consumer Assessment of Healthcare Providers and Systems Survey (CAHPS®)
  - University of Utah Custom Member Survey
  - Key Informant Interviews (KIIs)

D.5.1 National Surveys and Other Publicly Available Data Sources

Two national surveys and the NASHP HCT were included in the evaluation and are summarized below.

Exhibit 7: National Surveys and Other Publicly Available Data

Survey	Topic	Survey Questions / Outcomes
BRFSS	Health Risk Factors	• Have health care coverage • Have a personal doctor or usual source of care • Avoided care due to cost • Had a routine check-up (a primary or specialty care appointment) • Had a preventive screening (mammogram) in past 12 months
NSDUH	BH Needs and Services	• Received mental health treatment in the last 12 months • Needed, but did not receive, treatment for SUD
NASHP Hospital Cost Tool	Uncompensated Care Cost	• Uncompensated care/bad debt as a percentage of net patient revenue, and as a percentage of operating expenditures

Behavioral Risk Factor Surveillance System

The BRFSS is a large, high-quality federal survey that was used to measure outcomes of interest for Utah and out-of-state comparison groups. The BRFSS datasets contain respondents' state identifiers and demographic variables needed for comparison purposes. The IE used the BRFFS data to inform research questions related to coverage and access to care among low-income residents; the specific questions used in this evaluation are shown in Exhibit 7.

The BRFSS insurance coverage question outcome does not allow determination of the source of coverage (e.g., Medicaid, Medicare, or private insurance) for years prior to 2022. To approximate which respondents are Medicaid eligible and who fall below 138 percent of the FPL, a continuous value for household income was imputed using the midpoint of BRFSS income category. Using imputed income with household size allows the ability to link to annual thresholds for 138 percent FPL in each state. Limitations to this method are discussed in Methodological Limitations (Section E).

The IE also conducted power analysis for using the BRFSS. Our analyses have high statistical power due to the large sample sizes involved. We estimated the minimum detectable effect sizes (MDES) for each of

our outcomes using Hu & Hoover's (2018) power equation for non-randomized longitudinal difference-in-difference studies:

$$MDES = \frac{T(1-\rho)\sigma}{bkn} \times \left(z_{1-\frac{\alpha}{2}} + z_{1-\beta}\right)^2$$

Where:

MDES = the minimum detectable effect size, defined as a percentage point change in outcome
T = the total number of time periods
b = the number of pre-intervention periods
k = the number of post-intervention periods
n = sample size
σ = standard deviation
ρ = serial correlation
$z_{1-\frac{\alpha}{2}}$ = The critical z-value for statistical significance
$z_{1-\beta}$ = desired statistical power

The final analysis includes 5 pre-intervention years and three post-intervention years. We used BRFSS data to identify serial correlations, standard deviations, and sample sizes for each study outcome. Serial correlation is the relationship between state-level means in consecutive years. We then calculated MDES at 80% power for and α=0.05. The MDES ranges from 0.41% to 0.58% for our access outcomes. For the preventive service outcomes, the MDES ranges from 0.54% (receipt of annual checkup) to 1.41% (receipt of mammogram in past 12 months). The mammogram question is only asked of female respondents in even years, which limits our ability to detect smaller effects.

Exhibit 8: Minimum Detectable Effect Sizes (MDES)

Outcome	Serial correlation	Standard deviation	Sample size	MDES
Have Health Care Coverage	0.891	0.478	116,482	0.41
Have a personal doctor or usual source of care	0.840	0.488	116,893	0.48
Avoided care due to cost	0.796	0.460	117,000	0.58
Receipt of annual checkup (primary or specialty)	0.809	0.482	115,376	0.54
Receipt of mammogram in past 12 months	0.758	0.430	26,814	1.41

Notes: SD = Standard deviation. MDES = Minimum detectable effect size (percentage point change) at 80% for a difference-in-differences analysis with α=0.05.

National Survey of Drug Use and Health

To investigate the SUD and SMI waiver impact, the IE used data from the NSDUH. The NSDUH collects data annually on incidence and treatment of mental health and substance use conditions. Key NSDUH questions address whether individuals have experienced BH conditions, and whether they have received treatment. The NSDUH public use dataset does not contain enough information to conduct a power analysis.

National Academy of State Health Policy's Hospital Cost Tool

To investigate the Demonstration's impact on uncompensated care costs, the IIE used the NASHP HCT. The NASHP HCT provides a range of measures for hospital revenue, costs, profitability, and break-even points across over 4,600 hospitals nationwide. The underlying dataset includes variables extracted and calculated from the national Healthcare Cost Report Information System (HCRIS).

D.5.2 Medicaid Administrative Data

The IE received claims and other Medicaid administrative data, such as eligibility files, from the state on an annual basis. Administrative data was of high quality, in terms of completeness and accuracy, with the exception of race/ethnicity data. The demographics summary provided in Results (Section F.1) indicates that race/ethnicity was "other" or missing for a large portion of each population (45% for AE, 39% for CE, and 40% for TAM).

D.5.3 Custom Member Survey

The University of Utah was the contracted IE that designed and administered a custom member survey in the final three years of the Demonstration: 2020-2022. The description of the survey development and administration shown below is taken from the 2021 Interim Evaluation Report issued by the University of Utah.

The custom member survey is an online survey consisting of 46 questions administered to a statewide cross-sectional sample of Medicaid beneficiaries. The survey was administered to a purchased panel by Qualtrics Inc. Qualtrics has a national panel of Medicaid beneficiaries who participate in a variety of surveys. The survey was conducted online and a stratified approach to data collection was used to achieve statewide representation (geographically) as well as a male / female stratification that approximates Utah Medicaid enrollees. The survey was administered three times, in 2020, 2021, and 2022. The total sample for each year was approximately 400. Several systematic data checking processes were utilized. The data was first reviewed for duplicates. Then, surveys that were completed too quickly were reviewed and through proprietary algorithm responses were assigned a "fraud score" and were then checked manually.

The three annual surveys were not weighted. This design compares group-level outcomes at various times to understand how a Demonstration's effects change over time. The survey questions are standardized questions and composite question scales from the BRFSS, CAHPS® and CAHPS® Experience of Care and Health Outcomes (ECHO) Survey, which asks health plan enrollees about their experiences with health care services, including behavioral health care services.

The following four questions were analyzed to gauge access to mental health services, access to community resources, access to counseling treatment, and the extent to which treatment helped beneficiaries throughout 2020 to 2022.

1. Are mental health services covered as part of your plan?
2. If you felt depressed, needed assistance with drug or alcohol use, or mental or emotional illness are there places in your community you could go to get the help needed?
3. In the last 12 months, when you or a member of your household needed counseling, treatment, or medicine, how often were you or a family member able to see someone as soon as needed?
4. In the last 12 months, how much were you or a member of your household helped by counseling, treatment, or medicine received?

D.5.4 Key Informant Interviews

Qualitative data on program implementation were gathered through KIIs with providers and state administrators. A total of 27 KIIs were conducted; participants included leaders and administrators at each of the four health plans, state employees participating in implementation, and community-based primary care and BH providers.

In addition to the administrative contacts from the accountable care organizations (ACOs) and managed care organizations (MCOs), the IE interviewed community-based providers, such as primary care providers and behavioral health clinicians, who directly serve Medicaid patients at sites such as community health centers, in order to capture the perspective of front-line clinicians working through the UMIC Demonstration.

These providers were asked about topics including integration of behavioral health care, barriers to access, and their perceptions of patients' engagement in care.

Semi-structured key informant interviews lasting 30-45 minutes per contact were conducted by phone or videoconference, with privacy protections in accordance with CMS guidelines. Interviews were recorded and transcribed. Interview guides were developed by the IE in collaboration with DHHS for providers, health plans, and for state administrators involved in implementation of the 1115 Demonstration. Based on the interviewee's role, the interview guide and questions asked were tailored accordingly. For example, state administrators were invited to discuss the program rollout and feedback received from plans, health plan representatives were asked about the plan's approach to integrating BH services, and questions regarding telehealth experiences were directed towards clinicians.

As appropriate, interviews explored successes and challenges about program implementation, especially in light of the PHE, and other topics drawn from the logic model; examples are shown in Exhibit 9. Interview guides included questions that address disparities and health equity as appropriate for the interviewee's role. This included population health analysis strategies, language services, and targeted outreach programs.

Exhibit 9: Key Informant Interview Questions and Topics

Interview Question	Example topics
Was the Demonstration implemented effectively? To what extent are BH services integrated with physical health services? Did enrollment or outcomes differ by demographic factors?	● Perceived successes and challenges in implementation ○ Care integration with behavioral health ● Perceived steps towards integrating behavioral health with physical health services, e.g., screening and referrals ● Perceived impact of the PHE/pandemic on member engagement ● Perceptions about the role of telehealth in achieving Demonstration goals ● Screening and referrals ● Care coordination for members with BH conditions ● Sharing of patient data across practices ● Perceptions of barriers to access and participation in care ● Steps health plans/providers are taking to identify, understand, and address disparities in access and engagement

D.5.5 CAHPS® Survey

The IE accessed aggregate CAHPS® data collected by the health plans and reported to DHHS. Health plans can distinguish between ACO and UMIC plan enrollment in CAHPS® data and report this information to the state. These data allowed for comparisons among plan types.

CAHPS® data was also used to analyze differences in access to care coordination and patient satisfaction between subgroups. Because CAHPS® data was available only in aggregate, subgroup analysis was limited to the available demographic stratifications: age, race (White and Other), ethnicity (Hispanic/ Not Hispanic), and gender.

D.5.6 Community Mobility Data

To explore the relationship of ED visit fluctuation with the COVID-19 PHE, the IE used publicly available community mobility data[7]. This data was aggregated from smartphones by Google and captured the number of people going to a given type of location on a given day. The IE was able to observe the percent change in how people visited different locations from a pre-PHE baseline, including the use of the ED.

D.6. ANALYTIC METHODS

D.6.1 Quantitative Methods

The evaluation design includes multiple analytic strategies to answer the research questions and provide robust conclusions. The approach includes quasi-experimental analyses, employing descriptive statistics, mixed effects regression, difference-in-differences (DiD), and synthetic control methods (SCM). Quasi-experimental analyses were conducted where data was available. Multivariate regression was used to model outcomes over time, following individuals longitudinally. This approach allows for the trend over time to be adjusted for changes in the Demonstration populations as members enter and leave the Populations. For smaller Demonstration populations and small subgroups where regression analysis was not feasible, the evaluation provides description statistics, such as service counts and costs over time. The specific analytic method for each research question and measure is provided in Appendix …

Descriptive statistics

The IE used descriptive statistical methods to generate summary tables of population size and characteristics, and outcomes for the three groups of Demonstration participants. Data was analyzed using standard tests as rates, proportions, frequencies, and measures of central tendency (e.g., mean, median, mode). These tables were used to develop a quantitative picture of the population, to describe raw trends, and to identify characteristics that will be included as covariates in regression modeling.

Prior to performing regression analysis of the plan types within AE, the composition of the beneficiary population in the three groups (FFS, ACO, and UMIC) was compared to identify differences in demographic or clinical characteristics. ANOVA/MANOVA tests were used as a first pass comparison of mean outcomes for the three groups. For metrics derived from BRFSS survey data, results for Utah were compared to national averages for each year.

Trend over time and linear regression modeling

Outcomes of interest were plotted over time for the duration of the Demonstration. The trends for the target and comparison groups were modeled using multivariate linear regression and compared. The null hypothesis is that the target and comparison groups have identical trends. Inverse probability of treatment weighting was used to construct comparable groups that are equivalent for measurable characteristics and allowing any difference in outcomes to be attributed to the intervention.[8]

For the measures with binary outcomes (AAP, FUH, AMM, MPM, IET) the regression models were logistic and for EDU and IPU Poisson models were used since these were count-based outcomes. The mixed effects logistic regression model accommodates for both fixed and random effects. In this case, it allows for the fact that members can appear multiple times in the datasets and that they can appear different numbers of times resulting in unbalanced data. The models included the 'client id' variable as a random effect. The outcome variable is the binary or count outcome. To assess changes over time for each population a fixed effects for measurement year and population was included in addition to an interaction term between them. Measurement year was included as a continuous variable after plotting raw trends to

[7] Google (2022, October 15). COVID-19 Community Mobility Report. Google.com. Retrieved February 1, 2024, from https://www.google.com/covid19/mobility/

[8] Austin PC, Stuart EA. Moving towards best practice when using inverse probability of treatment weighting (IPTW) using the propensity score to estimate causal treatment effects in observational studies. Stat Med. 2015; 34(28):3661–79. Epub 2015/08/05. https://doi.org/10.1002/sim.6607 PMID: 26238958; PubMed Central PMCID: PMC4626409.

assess linearity. Adjusted models included the covariates gender, race/ethnicity, age as a continuous variable, region, and SMI/SUD diagnosis group, as appropriate. We also ran stratified mixed models by gender, age group and race/ethnicity with the same adjustment procedures. Models are described in the following formulas.

Mixed Logistic Regression Model

$$logit(Y = 1_{ij}) = \beta_0 + \beta_1 Pop_i + \beta_2 MY_{ij} + \beta_3 MY_{ij} * Pop_i + \beta_x X_i + \gamma_{0i}$$

Mixed Poisson Regression Model

$$\log(Y)_{ij} = \beta_0 + \beta_1 Pop_i + \beta_2 MY_{ij} + \beta_3 MY_{ij} * Pop_i + \beta_x X_i + \gamma_{0i} + \ln(offset)$$

Where Y corresponds to outcome of interest with a different expression depending on its distribution, β_0 to the overall intercept of the model, $\beta_1 Pop_i$ to the effect of belonging to a certain population group compared to the reference group (current eligible), $\beta_2 MY_{ij}$ to the effect of measurement year as a continuous variable, $\beta_3 MY_{ij} * Pop_i$ is the interaction effect between population and measurement year which allows us to estimate change over time between populations, $\beta_x X_i$ corresponds to individual level adjustment covariates, and γ_{0i} corresponds to the random intercept of each client to account for the clustering effect of appearing in more than one measurement year. In the case of Poisson models, the model includes an offset, for EDU corresponding the total number of clients and for IPU to the total member-months.

For the adult expansion group, there were three plan types (ACO, FFS and UMIC). We ran models comparing trends over time between the plans and the current eligible members following the same adjustment procedures.

Tables were produced that contain the odds ratios and 95% confidence intervals, and p-value distinctions at p<.05, p<.01 and p<.001. In addition, the marginal effects of the interaction between population and measurement year for each model were plotted. These marginal effects result from the predicted probabilities of the outcome occurring based on model estimations and represent an average of individual probabilities.

Difference-in-difference

To examine the impact of the Demonstration on its overarching aim of improved access, PCG conducted a difference-in-difference (DiD) analysis to model the effect of the Demonstration in Utah relative to comparison states over time.

First, we used a series of covariate-adjusted ordinary least squares (OLS) regressions to assess parallel pre-trends for each outcome. Models were of the form:

$$Y_{ist} = \boldsymbol{\alpha_s} + \boldsymbol{\delta X_{ist}} + \boldsymbol{\tau_t} + \beta_1 \times Time_t + \beta_2 Utah_s \times Time_t + \varepsilon_{ist}$$

Where:

$\boldsymbol{\alpha_s}$ = Vector of state fixed effects
$\boldsymbol{\delta X_{ist}}$ = Vector of individual characteristics including age, educational attainment, race, ethnicity, employment status, household size, veteran status, sex, income, homeownership status, presence of children in the household, and whether the survey was completed via a cell phone vs. land line.
$\boldsymbol{\tau_t}$ = Vector of calendar month fixed effects (12)
$Time_t$ = Linear time measured in years ranging from zero (2011) through five (2016)
$Utah_s$ = Binary indicator taking on a value of 1 if the survey occurred in Utah, zero otherwise

The coefficient β_1 thus represents time pre-trends in control status while β_2 represents potential differential pre-trends in Utah. The p-values for β_2 were 0.339 (health insurance status), 0.236 (avoided

care due to cost), 0.324 (having a regular provider), 0.299 (receipt of annual checkup), and 0.892 (receipt of mammogram), indicating a lack of evidence that the parallel trends assumption does not hold. Event studies were also conducted (Appendix J.6.3).

The comparison states are those states not exposed to the treatment of interest (Utah's Demonstration) – in this case, all other states that either (1) have not expanded Medicaid, or (2) expanded Medicaid before the current Demonstration start date of July 1, 2022. The time periods for comparison are: Early Demonstration (February 1, 2017 to December 31, 2019) Late Demonstration (Jan 1, 2020 – June 30, 2022), and Pre-intervention Baseline (January 1, 2011 to January 1, 2016); the five years before the current Demonstration period. Sensitivity analysis was conducted to determine whether the PHE influenced the overall results.

The DiD model is:

$$Y = \beta_0 + \beta_1(Time) + \beta_2(Intervention) + \beta_3(Time * Intervention) + \beta_4(Covariates) + \varepsilon$$

In the above equation is:

$$Y_{its} = \boldsymbol{\alpha_s} + \boldsymbol{\beta_t} + \beta_2 Expansion_s + \beta_3 Post_t + \beta_4 Intervention_s \times Post_t + \boldsymbol{\delta X_{it}} + \varepsilon_{ist}$$

Where:

Y_{its} = Our outcome(s) of interest
α_s = A vector of state fixed effects
β_t = A vector month and year fixed effects
$Intervention_s$ = A binary indicator for residence in our treated state (Utah)
$Post_t$ = A binary indicator for whether the outcome occurred during the Demonstration period
δX_{it} = A vector of observed individual-level characteristics

Covariates include respondent age, education, employment status, household size, veteran status, sex, household income, homeownership status, presence of children in the household, survey month, and whether the survey was conducted via landline or cell phone. The regression coefficient β_4 thus represents our regression-adjusted estimates of changes in outcomes associated with Utah's Medicaid expansion, after controlling for state, month, year, and observed covariates.

Synthetic control method

In addition to the DiD approach, the IE used synthetic control methods (SCM) to estimate the association between implementation of the Demonstration and study outcomes. SCM have been employed to evaluate state-level policy impacts because they are particularly useful when estimating the impact of a policy change that affects a small number of treatment groups (i.e., a state).[9,10,11,12] These methods are a quasi-experimental approach similar to traditional difference-in-difference (DiD) estimation but require fewer assumptions to obtain estimates of association. DiD assumes that any differential changes in outcomes between treated and control groups are attributable to the policy change. Yet treated and control groups are often nonequivalent in terms of pre-treatment outcome levels, trends in outcomes, and other important covariates. To mitigate this limitation, researchers typically attempt to control for observed variables that may be associated with both treatment likelihood and the outcome of interest. However, treatment and

[9] Abadie, A., 2012. *Synthetic control methods for comparative case studies: estimating the effect of California's tobacco control program. J Am Stat Assoc* 105(490):493-505. https://www.tandfonline.com/doi/abs/10.1198/jasa.2009.ap08746
[10] Rudolph, K.E., *et al.*, 2015. *Association between Connecticut's Permit-to-Purchase handgun law and homicides. Am J Public Health* 105(8):e49-e54. https://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2015.302703
[11] Santella-Tenorio, J. *et al*., 2020. *Association of recreational cannabis laws in Colorado and Washington state with changes in traffic fatalities. JAMA* 180 (8):1061-1068. https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2767647
[12] Bhatt, A. *et al.* 2020. *Association of changes in Missouri firearm laws with adolescent and young adult suicides by firearms. JAMA Netw Open* 3(11). https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2772526

control groups may still differ in terms of outcome pre-trends and levels due to unobserved factors. This introduces potential selection issues, which may bias any estimates of association.

In contrast, SCM constructs a synthetic control. The synthetic control is constructed using a weighted average of the states included, with weights determined through a fully empirical process; weights for individual control units may range from 0 to 1 and are assigned so the synthetic control is as similar as possible to the treated group in terms of outcome pre-trends. Unlike traditional regression, inclusion of covariates is not required to achieve equivalence between treated and control groups.

Public Health Emergency; Sensitivity Analysis

The Late Demonstration period coincides with the Covid-19 pandemic which had a profound impact on health care utilization. Trends for UT and comparison groups were modeled with and without the most affected months (in the case of national survey data) or years (in the case of claims-based measures) in 2020 and 2021, for the purpose of identifying whether the groups were impacted differentially. There were no differential impacts identified, therefore, all years/months are included in the evaluation. Additional COVID related considerations are described in the Methodological Limitations (Section E).

Subgroup Analyses

The evaluation seeks to understand how different subgroups of participants are impacted by the Demonstration. Analyses stratified participants by gender, race/ethnicity, age, and SMI/ SUD diagnosis status. As seen in Exhibit 10 below, 45% of race/ethnicity data was either “other” or missing. The evaluation is not able to identify racial/ethnic disparities in outcomes due to the high amount of missing. While data on geographic region is available (urban, rural, frontier), the evaluation does not include subgroup analyses by geographic location because the geography variable is confounded with Plan Type. Specifically, Adult Expansion members in 5 counties must enroll in the UMIC plans with integrated physical and behavioral health benefits. In 8 other counties, Adult Expansion must enroll in an ACO and a Prepaid Mental Health Plan. In the remaining counties of the state, members may enroll in an ACO or stay with FFS.

Exhibit 10: Population Characteristics

Demographic / Health Characteristic		Adult Expansion (N= 92,026)	Targeted Adult Medicaid (N=9,582)
Gender	Male	44,703 (48.6%)	7,223 (75.4%)
	Female	47,323 (51.4%)	2,359 (24.6%)
Age	19-44	62,781 (68.2%)	6,948 (72.5%)
	45-54	15,821 (17.2%)	1,791 (18.7%)
	55-64	13,424 (14.6%)	843 (8.8%)
Race/ethnicity	Other/Missing	41,772 (45.4%)	3,840 (40.1%)
	White (non-Hispanic)	14,963 (16.3%)	1,634 (17.1%)
	Hispanic, Black, AIAN, Pacific Islander	35,291 (38.3%)	4,108 (42.9%)
SMI/SUD Diagnosis	None	66,539 (72.3%)	1,781 (18.6%)
	SMI Only	3,155 (3.4%)	171 (1.8%)
	SUD Only	16,658 (18.1%)	5,652 (59.0%)
	Both SMI/SUD	5,674 (6.2%)	1,978 (20.6%)

NOTE: The characteristics shown above represent every person ever enrolled during the Demonstration period (7/1/2017--6/30/2022), as of their last appearance in the claims data.

Cost Analyses for SUD and SMI Demonstrations

The analytic methods for the SUD Demonstration cost analysis are detailed below. The same approach was taken for the SMI Demonstration. The only difference being the target group and the dates of the baseline periods. See Methodology (Section D.2 Exhibit 3)

SUD Demonstration target group members were identified based on claims and encounters with an SUD diagnosis and/or procedure code, and/or pharmacy claims and encounters with a dispensed drug for Medication Assisted Treatment (MAT), at any time during the five-year Demonstration. Once a member has been identified, they are included in the population for the entirety of the Demonstration. The rationale for this approach is that if an individual is diagnosed at any point during the during the Demonstration period, they may have been experiencing the condition but undiagnosed up to that point, and consequently at risk for poor outcomes, including ED visits, related to untreated SMI/SUD.

There are three levels of cost analyses:

I. Total Cost of Care = Total Medicaid Costs (claims and managed care capitation payments) + federal costs (Total Medicaid Costs * the Utah specific Federal Financial Participation rate)
II. Costs related to the diagnosis and treatment of SUD = SUD-IMD costs + other SUD costs + non-SUD costs
III. Source of care cost drivers = inpatient (non-IMD) + non-ED outpatient, + ED outpatient + pharmacy

Long-term care costs were not included as source of care cost driver as the population under evaluation is adults ages 19 to 64; a group with relatively few long-term care needs. The Total Cost of Care will not include administrative costs, as the State does not currently track administrative costs specific to these demonstrations. Given the large number of waivers and amendments in Utah, it is not possible to estimate administrative costs separately.

To calculate total cost of care, the Utah specific federal administrative rate for the specific fiscal year was used as a multiplier to the sum of claims and capitation payments. All cost outcomes were divided by the amount of time a member was enrolled in a given month to get a per member per month cost.

Given the lack of a comparison group, an interrupted time series model was used to estimate the linear effects of the Demonstration. For all costs, we applied top- and bottom-coding at 10th and 90th percentiles due to extreme values

Separate generalized linear models [GLM] were used to examine the change in cost per member per month (PMPM) between baseline and expansion for each cost outcome. The model equation is:

$$Linear: PMPM\ Cost = \beta 0 + \beta 1 * Quarter + \beta 2 * Expansion + \beta 3 * (Quarter * Expansion) + Bi * CONTROLS + \varepsilon$$

Where quarter is a count variable that starts with the first quarter of the pre-demonstration period and ends with the last quarter of the post-demonstration period. Expansion is the indicator that equals 1 if the month occurred on or after the demonstration start date and 0 if the month occurred before the demonstration start date. Controls are the covariates: age, gender, region, and race.

For the GLM model we chose not to log transform costs as it was not necessary due to the large sample size and the nature of the data as repeated cross sectional measures which warrant the clustering of the data and its treatment as panel data.

D.6.2 Qualitative Methods

Qualitative analysis was used for key informant interview transcripts. The research questions to be addressed, with corresponding example topics, are provided in the Methodology (Section D.5.4). Interviews addressed these questions by probing for perspectives from providers and from administrators involved in implementing the Demonstration. Thematic analysis using a coding tree derived from the Demonstration logic model was used to excerpt transcripts. Additional themes that arose during coding were then added to the analysis. Results of provider interviews add context to the quantitative findings regarding experience of care, beneficiary engagement, and barriers to engagement. Results of provider and administrator interviews also address implementation and inform the Evaluation Report chapter on Lessons Learned and Recommendations (Section I).

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E. METHODOLOGICAL LIMITATIONS

1. **Lack of a true comparison group.** The Demonstration is implemented statewide, making a perfect comparison group impossible. To mitigate this limitation, the IE used both in-state comparison among benefit groups, and out-of-state BRFSS and NSDUH data.

2. **Sample size.** For the smallest populations, regression analysis was not feasible, so descriptive statistics over time were observed in combination with qualitative assessment.

3. **Health Plan Reporting.** The independent evaluator received aggregate CAHPS® data reported in aggregate by the health plans, stratified by gender, age, and race/ethnicity. Patient-level data is not available for privacy reasons. Data aggregation limited the available subgroup analyses that could be performed. The current age and race/ethnicity reporting buckets for CAHPS® data are limited and are not standardized across health plans. To aggregate data across the population, the IE combined categories as needed, creating wider age bands, and characterizing race as White/Other.

4. **Lack of data on source of insurance coverage in national survey data.** The use of national survey data allows for out of state comparison groups but limits the ability to specifically identify individuals enrolled in the Demonstration. As noted in Methodology (Section D.5) the BRFSS insurance coverage outcome does not allow determination of the source of coverage (e.g., Medicaid, Medicare, or private insurance) for years prior to 2022. As a result, it is not possible to identify individuals enrolled in Medicaid and thus not possible to determine if respondents fall into the Demonstration group or are enrolled in Medicaid in comparison states. While an approximation was achieved by using income and household size to define a sample representing Demonstration participants as closely as possible, the inclusion of respondents who may not be part of the Demonstration group or be Medicaid enrolled in comparison states likely attenuated the effect estimates. While differences in BRFSS responses between Utah and the comparison states are of interest, the evaluation's results should be interpreted as associations and may not necessarily be directly attributed to the Demonstration.

5. **Historic effects.** The impacts of the Covid-19 PHE were profound in 2020 and 2021 and lingering effects continued into 2022. Sensitivity analyses ruled out any differential impact of the PHE on target and comparison groups. The PHE unwinding took place after the Demonstration period under evaluation, with eligibility redeterminations beginning in April 2023. Ongoing direct and indirect impacts of the PHE such as staffing shortages should be considered in interpreting findings. The continuous enrollment policy and concomitant increase in Medicaid enrollment created a limitation in interpreting evaluation findings. PHE policy prevented states from removing individuals from the rolls when their income rose above eligibility thresholds, which in effect expanded Medicaid eligibility nationally. This made it impossible to interpret out-of-state comparisons to determine the impact of Utah's Medicaid expansion.

6. **Data availability for the NSDUH.** The IE was unable to conduct analysis for two outcomes initially planned for the evaluation design: receiving SUD treatment and ability to access mental health services because the data was not available in the public use files.

7. **Missing race/ethnicity data**. In the claims dataset used for measures of engagement in care, the race/ethnicity field was missing for over 40% of individuals. Given the high rate of missing data, the IE was unable to draw meaningful conclusions about racial disparities in Demonstration outcomes. For regression analyses, the field was included as a covariate using three categories: White, Non-white (Black, Hispanic, Pacific Islander, AIAN) and Missing/Other.

F. RESULTS

Results are presented in order by hypothesis.

F.1 OVERVIEW OF CLAIMS-BASED MEASURES RESULTS

The analytic approach for the claims-based measures included an in-state comparison group and trends over time compared using mixed effects regression models. The Current Eligibles (CEs) were the comparison group for the Adult Expansion (AE) population and the subset of CEs with an SMI and/or SUD diagnosis were the comparison group for the TAM population. This option was chosen due to lack of pre-Demonstration baseline data. Regression models were also used to compare each plan type (FFS, UMIC, ACO) to CE. These models did not include region as a covariate, given that plan types align with region due to the implementation process. Specifically, Adult Expansion members in 5 counties must enroll in the UMIC plans with integrated physical and behavioral health benefits. In 8 other counties, Adult Expansion must enroll in an ACO and a Prepaid Mental Health Plan. In the remaining counties of the state, members may enroll in an ACO or stay with FFS

Results were stratified by demographic subgroups (gender, age, and SMI/SUD diagnostic status). Stratified results by race/ethnicity are not reported due to the high frequency of race/ethnicity data that was either missing or "other".

Demonstration Years

The Demonstration years begin on July 1 and end on June 30 of the following year. The claims-based measures were calculated annually for each DY and included in the appropriate regression models. To avoid excessively lengthy labels in charts and graphs, throughout this report, the DYs are referenced as shown below.

Exhibit 11: Summary of Demonstration Populations Under Evaluation

Demonstration Year	Time Period	References in Text or Tables*
DY1	July 1, 2017, to June 30, 2018	DY1 (2017-2018)
DY2	July 1, 2018, to June 30, 2019	DY2 (2018-2019)
DY3	July 1, 2019, to June 30, 2020	DY3 (2019- 2020)
DY4	July 1, 2020, to June 30, 2021	DY4 (2020-2021)
DY5	July 1, 2021, to June 30, 2022	DY5 (2021-2022)

*In instances where an axis is labeled with the year only (2020), it represents the end of the DY. "2020" indicates DY3, which ended June 2020.

Regression Table Interpretation

All regression results tables are provided in Attachments (Section J.4 – J.6). An example is provided below (Exhibit 12) to illustrate how the coefficients are interpreted. In this example, the trend in Inpatient Utilization (IPU) discharges is modeled for the AE population relative to the CE comparison group over time.

- The AE adjusted coefficient represents the magnitude of the measure relative to the comparison group (regardless of time)
- The DY coefficient represents the direction and rate of change of the measure over time (for all members of AE and the comparison group)
- The AE over time coefficient represents the rate of change for the measure in the AE population
- The AE*DY interaction coefficient represents the rate of change for the AE population, relative to that of the comparison group

Exhibit 12: Regression Table Interpretation Example: Inpatient Utilization (IPU) Overall Discharges, Adult Expansion vs Current Eligibles

Mixed Poisson regression models, IPU overall discharges, AE vs CE

	Crude		Adjusted	
Number of discharges, IPU overall				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	2.35***	[2.13,2.60]	1.55***	[1.42,1.70]
MY	0.94**	[0.91,0.98]	0.96*	[0.92,1.00]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	0.89***	[0.85,0.93]	0.90***	[0.86,0.94]
Gender:				
Male			1	[1,1]
Female			0.69***	[0.65,0.74]
Race:				
White			1	[1,1]
Non-white			1.47***	[1.34,1.60]
Missing or other			1.31***	[1.22,1.40]
Region:				
Urban			1	[1,1]
Rural			1.03	[0.95,1.11]
Frontier			1.02	[0.88,1.17]
Chronic disease			18.1***	[16.6,19.8]
Age			1.06***	[1.06,1.06]
SMI/SUD:				
None			1	[1,1]
SMI only			8.79***	[7.77,9.94]
SUD only			4.51***	[4.18,4.87]
SMI + SUD			11.3***	[10.3,12.5]
N	221645		221645	
AE over time	0.84***		0.86***	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
Members with more than 14 discharges or more than 100 days of stay per MY were excluded.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

There were 55% more IPU discharges per 1000 member months in the AE population than in the comparison group.

There was a significant difference in the pattern of IPU rates over time between the AE population and the comparison group.

There was a 14% decrease in IPU discharges per 1000 member months in the AE population over time.

F.2 ENROLLMENT

Exhibit 13: Enrollment over Demonstration Years

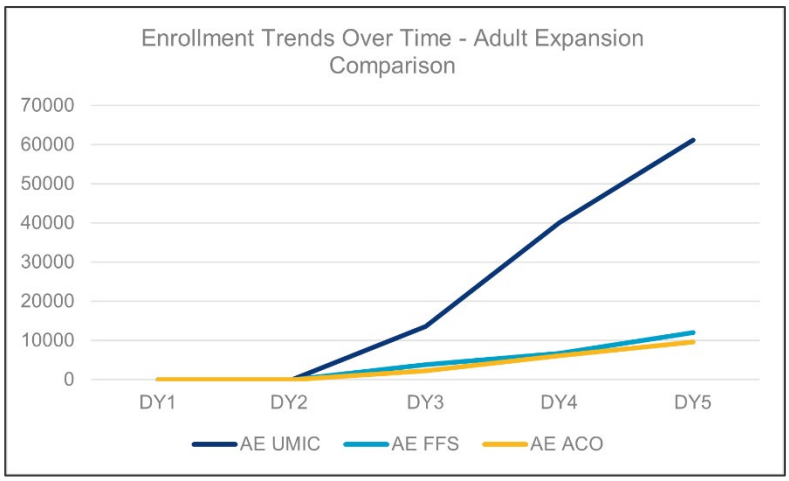
		DY1 (2017-2018)	DY2 (2018-2019)	DY3 (2019-2020)	DY4 (2020-2021)	DY5 (2021-2022)
Current Eligibles		17,308	14,299	13,707	23,167	29,700
TAM		594	1,436	2,403	5,607	6,891**
Adult Expansion	**UMIC**	0	0	13,569	40,099	61,145*
	FFS	0	0	3,787	6,716	12,052
	ACO	0	0	2,208	6,150	9,621*
	Total	0	0	19,564	52,965	82,818*

Note: asterisks in the DY5 column indicate statistically significant changes over time in enrollment.
* p < 0.05, ** p < 0.01, *** p < 0.001

The Adult Expansion Demonstration began in DY3 at the same time the State started to wind-down the Current Eligibles and transition members to AE plans. Over time, AE enrollment grew and by DY5 AE is

the largest Demonstration population, as expected, with 82,818 enrollees (Exhibit 13). The majority of the Adult Expansion population are in the UMIC plan, making up about 74% of the AE population in DY5.

Exhibit 14: Enrollment Trends Over Time – Comparison Among Adult Expansion Population



Enrollment in TAM increased significantly ($p<.01$) throughout the Demonstration years; the increase was expected as outreach and engagement strategies were deployed. TAM enrollment increased steadily each year, with the largest increase occurring between DY3 and DY4 from 2,403 to 5,607.

Exhibits 13 and 14 depict the enrollment trends across the years, highlighting the drastic jumps between years, especially between DY3 and DY4.

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Exhibit 15: Current Eligible, TAM and Adult Expansion Demographic Information

		Adult Expansion	Current Eligibles	TAM
Gender	Male	44736 (48.6%)	18602 (29.0%)	7256 (75.4%)
	Female	47351 (51.4%)	45565 (71.0%)	2369 (24.6%)
Race/Ethnicity	Hispanic	35298 (38.3%)	28179 (43.9%)	4123 (42.8%)
	Non-Hispanic white	14965 (16.3%)	10938 (17.0%)	1642 (17.1%)
	Other/Missing	41824 (45.4%)	25050 (39.0%)	3860 (40.1%)
Age Group	19-44	62828 (68.2%)	54196 (84.5%)	6978 (72.5%)
	45-54	15833 (17.2%)	8200 (12.8%)	1799 (18.7%)
	55-64	13426 (14.6%)	1771 (2.8%)	848 (8.8%)
Region	Urban	71149 (77.3%)	49553 (77.2%)	8298 (86.2%)
	Rural	17067 (18.5%)	12236 (19.1%)	1146 (11.9%)
	Frontier	3871 (4.2%)	2378 (3.7%)	181 (1.9%)
SMI and/or SUD diagnosis	None	66590 (72.3%)	49833 (77.7%)	1790 (18.6%)
	SMI Only	3156 (3.4%)	2158 (3.4%)	172 (1.8%)
	SUD Only	16664 (18.1%)	9177 (14.3%)	5675 (59.0%)
	Both SMI/SUD	5677 (6.2%)	2999 (4.7%)	1988 (20.7%)
COPD or CHF diagnosis	No	51622 (56.1%)	36283 (56.5%)	5274 (54.8%)
	Yes	40465 (43.9%)	27884 (43.5%)	4351 (45.2%)
Years on Plan	One	43655 (47.4%)	30985 (48.3%)	4456 (46.3%)
	Two	33642 (36.5%)	16086 (25.1%)	3357 (34.9%)
	Three	14790 (16.1%)	8123 (12.7%)	1511 (15.7%)
	More than three	0 (0%)	8973 (14%)	301 (3.1%)
Plan Type	ACO	10735 (11.7%)	-	-
	FFS	13498 (14.7%)	-	-
	UMIC	67854 (73.7%)	-	-

The Adult Expansion population was relatively evenly split between males and females (48.6% vs. 51.4%), but the TAM population had a substantially larger male population than female (75.4% males vs. 24.6% females). The current eligibles population was the opposite, with a larger female population than male

(29.0% males vs. 71.0% females). Gender, as well as other demographic factors, was adjusted for in measure analyses.

The race/ethnicity category was mostly missing for the adult expansion, TAM, and current eligible populations, but comparing the individuals with a reported race/ethnicity, there were more Hispanic individuals in each population than Non-Hispanic white individuals. The majority of individuals were in the age 19-44 category for each population. Furthermore, most individuals were living in urban areas for each population over rural and frontier populations. The TAM population had the highest percentage of urban residents versus rural or frontier residents, with 86.2% of the population residing in urban areas, compared to 77.3% in the adult expansion population and 77.2% in the current eligibles population.

As for SMI/SUD diagnosis, the majority of individuals did not have an SMI/SUD diagnosis in the adult expansion and current eligibles populations, but for the TAM population, the category with the highest percentage of individuals was SUD only diagnosis (59.0%). For COPD and CHF diagnosis, the majority of individuals in all three populations did not have COPID/CHF diagnoses.

The distribution of percentages for years enrolled in the plan was comparable among populations. Among the three populations, the adult expansion population had the highest percentage of individuals enrolled in the plan for three years at 16.1%. This value is not largely higher than the other populations, with the percentage being 12.7% for the current eligible population and 15.7% for the TAM population.

F.3 ACCESS AND ENGAGEMENT

F.3.1 Low-income Utah Residents; Hypothesis 1

Hypothesis 1: The Demonstration overall will improve access to coverage and engagement in health care for low-income UT residents.

The IE analyzed data from the Behavioral Risk Factor Surveillance System (BRFSS) and the National Academy for State Health Policy (NASHP) Hospital Cost Tool (HCT) to answer the primary research questions around access to coverage and engagement in care for Hypothesis 1.

Key Findings

- Overall, Utah improved access to health care coverage and engagement in care for low-income residents in the early years of the Demonstration, and maintained those for the duration of the Demonstration, relative to other states.
    - The percent of BRFSS survey respondents who reported that they have a personal doctor, had a checkup in the last year, and had a mammogram, increased in Utah more than comparison states
    - The percent of BRFSS survey respondents who reported that they had avoided care due to cost decrease in Utah more than in comparison states
- The cost of uncompensated care decreased in Utah relative to comparison states over the course of the Demonstration.

Behavioral Risk Factor Surveillance System Results

Research questions 1.1 and 1.3 to 1.6 assess access and engagement among low-income residents in Utah and comparison states by self-reported measures of coverage, cost barriers, and routine care. Increases are hypothesized for all measures except “avoiding care due to cost”.

- Primary research question 1.1: Did the fraction of low-income residents with health care coverage increase, relative to comparison states?
- Primary research question 1.3: Did the fraction of low-income residents who avoided care due to cost decrease, relative to comparison states?
- Primary research question 1.4: Did the fraction of low-income residents who have a personal doctor or usual source of care increase, relative to comparison states?
- Primary research question 1.5: Did the fraction of low-income residents who had a routine check-up (a primary or specialty care appointment) in the last year increase, relative to comparison states?
- Primary research question 1.6: Did the fraction of low-income residents who had a preventive screening (mammogram) in the last year increase, relative to comparison states?

The IE used data from the BRFSS to analyze changes in health care access and utilization of preventive services among low-income residents in Utah during the Demonstration period. Overall, as illustrated in Exhibit 16, Utah was successful in improving access to coverage and engagement in care for low-income residents in the early years of the Demonstration and was able to maintain those gains in the later years of the Demonstration relative to other states. Due to the disruption of the COVID-19 pandemic in 2020, and the ensuing continuous enrollment provision in the Families First Coronavirus Response Act which created conditions similar to Medicaid expansion in all states, it is difficult to draw conclusions about the impact of the Demonstration after 2020.

The IE utilized two analytic approaches to analyze the survey data: Difference in Differences (DiD) and synthetic control. DiD uses weights based on known demographic characteristics of Utah residents to facilitate comparisons between Utah residents and residents in the rest of the country (the control group). The synthetic control model creates weights at a state level, not an individual level, and by the pre-Demonstration outcomes, not by demographic characteristics. As detailed in Methods, the synthetic control pools states that have either (1) not expanded Medicaid, or (2) expanded Medicaid before the current Demonstration start date to create a "synthetic Utah"--or what would be expected to occur in Utah in the absence of the Demonstration. The IE presents results from the DiD here. The synthetic control results are provided in Attachments (Section J.3).

Exhibit 16: Summary of Adjusted Changes in Health Care Access and Service Utilization in Utah and Comparison States (continued next page)

Overall changes from baseline to the Demonstration, February 2017—June 2022[1]				
	Estimate (95% CI)[2]	**P-Value**	**Difference (95% CI)[3]**	**P-Value**
Have Health Care Coverage				
Utah	2.2	0.0023	-.4	.2762
Comparison	2.7	0.0000	--	--
Have Personal Doctor				
Utah	3.7	0.0000	2.5	0.0004
Comparison	1.2	0.0000	--	--
Last Routine Checkup				
Utah	10.8	0.0000	4.3	0.0000
Comparison	6.6	0.0000	--	--
Avoided Care Due to Cost				
Utah	-.06	0.4525	2.6	0.0000
Comparison	-3.2	0.0000		--
Last Mammogram				
Utah	1.0	0.3678	1.9	0.0785
Comparison	-1.0	0.0184	--	--

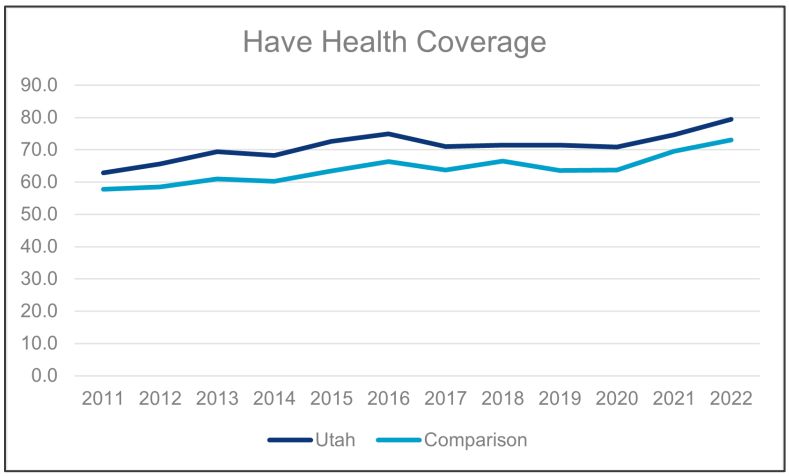
Changes from baseline to Early Demonstration, February 2017—December 2019[1]				
	Estimate (95% CI)[2]	P-Value	Difference (95% CI)[3]	P-Value
Have Health Care Coverage				
Utah	1.4	0.1248	-.3	0.1728
Comparison	1.7	0.0000	--	--
Have Personal Doctor				
Utah	1.6	0.0999	2.5	0.0000
Comparison	-0.9	0.0028	--	--
Last Routine Checkup				
Utah	11.1	0.0000	4.2	0.0000
Comparison	6.9	0.0000	--	--
Avoided Care Due to Cost				
Utah	0.9	0.3459	2.2	0.0000
Comparison	-1.4	0.0000	--	--
Last Mammogram				
Utah	0.4	0.7890	0.0	0.9931
Comparison	0.4	0.4998	--	--

Changes from baseline to Late Demonstration, January 2020—June 2022[1]				
	Estimate (95% CI)[2]	P-Value	Difference (95% CI)[3]	P-Value
Have Health Care Coverage				
Utah	3.1	0.0006	-0.7	0.3838
Comparison	3.7	0.0000	--	--
Have Personal Doctor				
Utah	5.7	0.0000	2.4	0.0133
Comparison	3.3	0.0000	--	--
Last Routine Checkup				
Utah	10.6	0.0000	4.3	0.0000
Comparison	6.2	0.0000	--	--
Avoided Care Due to Cost				
Utah	-1.9	0.0337	3.2	0.0000
Comparison	-5.1	0.0000	--	--
Last Mammogram				
Utah	1.4	0.2535	3.5	0.0009
Comparison	-2.1	0.0000	--	--

The following notes apply to all tables in Exhibit 16.

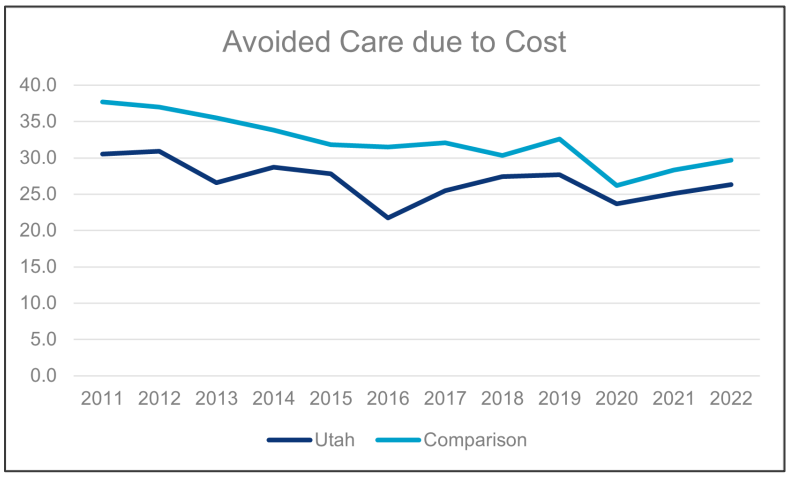
- Baseline is January 2011 to June 2022.
- Regression estimates are adjusted for respondent age, education, employment status, household size, veteran status, sex, household income, homeownership status, presence of children in the household, survey month, and whether the survey was conducted via landline or cell phone.
- Standard errors in difference-in-difference models were adjusted for clustering at the state level.
- Control states included those that did not implement Medicaid expansion before the end of 2020: AL, FL, GA, KS MI MS, NC, SC, SD, TN, TX, WI, WY.
- [1]These changes are relative to the baseline period comprising January 2015 through January 2017. [2] Results from interrupted time series models stratified by outcome and Utah/control group, using BRFSS post-stratification weights. [3] DiD estimate for the changes in Utah and control states over time, using BRFSS post-stratification weights. Standard errors were adjusted for clustering at the state level.

Exhibit 17: Utah vs. Comparison States - Health Coverage



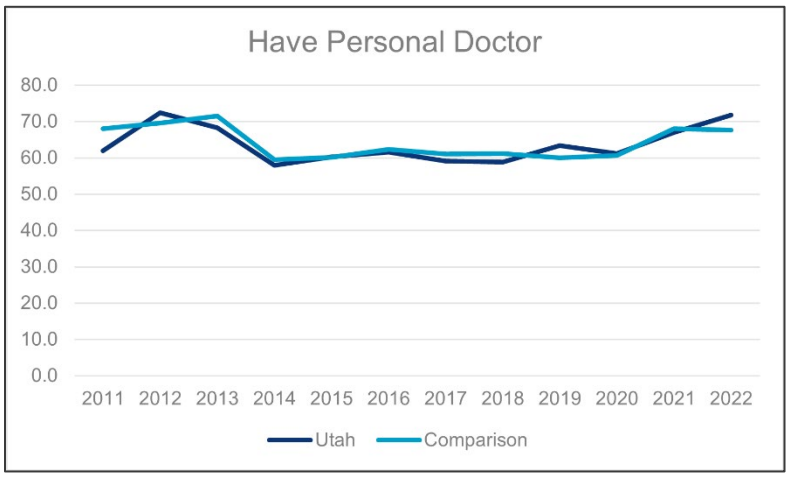
Utah had higher rates of health care coverage for low-income residents before and during the Demonstration than comparison states. The proportion with coverage increased in both Utah (2.2%) and the comparison states (2.7%) from baseline to the Demonstration overall. From baseline to Late Demonstration specifically, the proportion with coverage increased in both Utah (3.1%) and the comparison states (3.7%). There is not a significant difference in the changes in Utah relative to the changes in the comparison states.

Exhibit 18: Utah vs. Comparison States – Avoided Care due to Cost



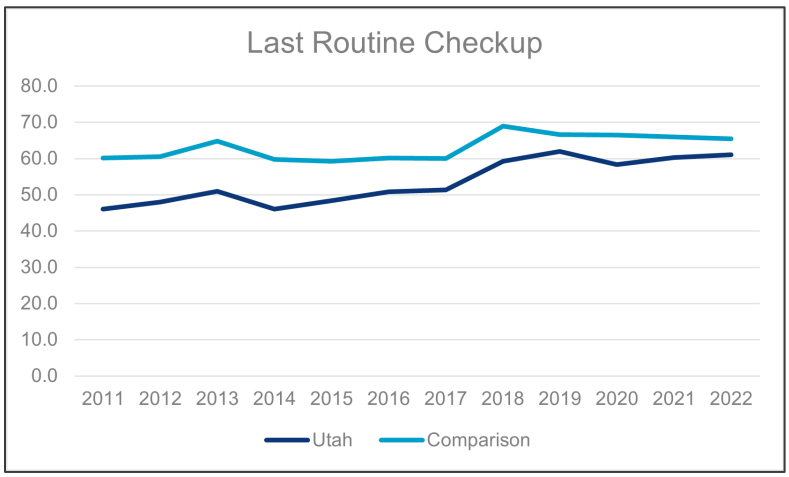
Utah had lower rates of low-income residents who avoided care due to cost before and during the Demonstration than comparison states. The proportion who avoided cost due to care decreased slightly in Utah (0.6%) and decreased more in comparison states (3.2%) from baseline to the Demonstration overall. From baseline to Early Demonstration, this proportion increased slightly in Utah by .9% and decreased in comparison states by 1.4%. From baseline to Late Demonstration, this proportion decreased by 1.9% in Utah and 5.1% in comparison states. There was a significant difference in the changes in Utah relative to the changes in the comparison states.

Exhibit 19: Utah vs. Comparison States – Personal Doctor



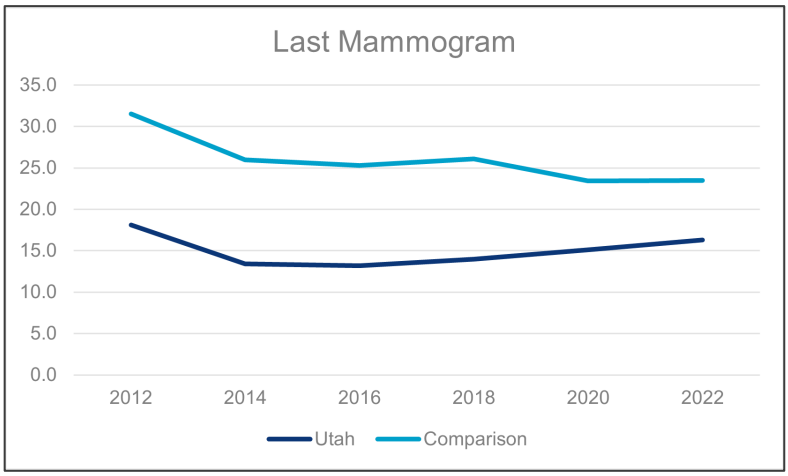
The proportion of low-income residents in Utah with a personal doctor or usual source of care was similar to the comparison states, with some fluctuations year to year before and during the Demonstration. The proportion with a personal doctor increased by 3.7% in Utah and 1.2% in comparison states from baseline to the Demonstration overall. From baseline to early Demonstration, this proportion increased 1.6% in Utah, and decreased .9% in comparison states. From baseline to Late Demonstration, this proportion increased 5.7% in Utah and 3.3% in comparison states. There was a significant difference in the changes in Utah relative to the changes in comparison states.

Exhibit 20: Utah vs. Comparison States – Last Routine Checkup



The proportion of low-income residents in Utah who had a routine checkup in the last year was lower overall than residents in comparison states, before and during the Demonstration. The proportion of low-income residents who had a routine checkup in the last year increased 10.8% in Utah and 6.6% in comparison states from baseline to the Demonstration overall. The proportion who had a routine checkup in the last year increased at a higher rate in Utah than in comparison states from baseline to Early Demonstration and baseline to Late Demonstration. There were significant differences in the changes in Utah relative to comparison states.

Exhibit 21: Utah vs. Comparison States – Last Mammogram



The proportion of low-income Utah residents who had a mammogram were lower before and during the Demonstration than comparison states. The proportion who had a mammogram increased by 1% in Utah and decreased by 1% in comparison states from baseline to the Demonstration. This proportion increased by 0.4% in both Utah and comparison states from baseline to Early Demonstration. From baseline to Late Demonstration, this proportion increased by 1.4% in Utah and decreased by 2.1% in comparison states. This difference in changes in Utah relative to comparison states was significant.

National Academy for State Health Policy Hospital Cost Tool (NASHP HCT) Results

Research questions 1.2 explores the impact of the Demonstration on the financial health of the hospital system.

- Primary Research Question 1.2: Did the cost of uncompensated care decrease relative to comparison states?

Exhibit 22: Adjusted Changes in Uninsured/Bad Debt Costs for Utah and Comparison Hospitals, 2017—2021 (continued next page)

Changes from baseline to Early Demonstration February 2017—December 2019[1]				
	Estimate (95% CI)[3]	**P-Value**	**Difference (95% CI)[4]**	**P-Value**
Uninsured/bad debt as a % of net patient revenue				
Utah	-0.6 (-0.8, -0.5)	0.0000	-0.4 (-0.6, -0.2)	0.0000
Comparison	-0.3 (-0.4, -0.2)	0.0000	--	--
Uninsured/bad debt as a % of operating expenditures				
Utah	-0.7 (-0.9, -0.5)	0.0000	-0.4 (-0.6, -0.2)	0.0002
Comparison	-0.3 (-0.4,-0.2)	0.0000		

Changes from baseline to Late Demonstration January 2020—December 2021[1]				
	Estimate (95% CI)[3]	**P-Value**	**Difference (95% CI)[4]**	**P-Value**
Uninsured/bad debt as a % of net patient revenue				
Utah	-1.1 (-1.3, -1.0)	0.0000	-0.5 (-0.7, -0.3)	0.0000
Comparison	-0.7 (-0.8, -0.6)	0.0000	--	--
Uninsured/bad debt as a % of operating expenditures				
Utah	-1.3 (-1.4, -1.1)	0.0000	-0.6 (-0.7, -0.4)	0.0000
Comparison	-0.7 (-0.8, -0.6)	0.0000	--	--

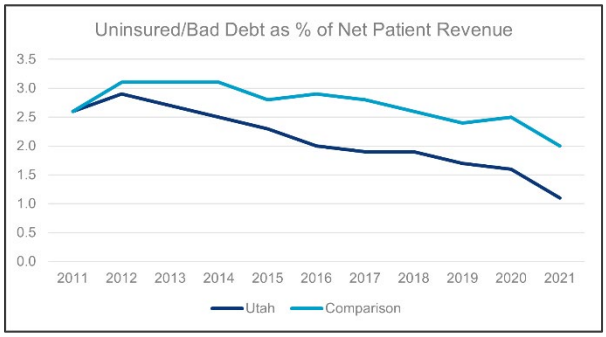
Additive changes in Late Demonstration January 2020—December 2021[2]				
	Estimate (95% CI)[3]	P-Value	Difference (95% CI)[4]	P-Value
Uninsured/bad debt as a % of net patient revenue				
Utah	-0.5 (-0.6, -0.4)	0.0000	-0.1 (-0.3, 0.0)	0.0729
Comparison	-0.4)-0.5, -0.3)	0.0000	--	--
Uninsured/bad debt as a % of operating expenditures				
Utah	-0.6 (-0.7, -0.5)	0.0000	-0.2 (-0.3, -0.0)	0.0085
Comparison	-0.4 (-0.5, -0.4)	0.0000	--	--

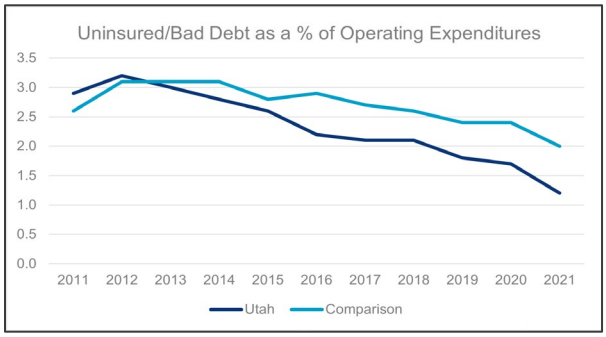
The following notes apply to all tables in Exhibit 22.

- Analysis of data from the National Academy for State Health Policy's 2011-2021 Hospital Cost Tool.
- The table displays interrupted time series/difference-in-differences estimates for changes in the ratio of hospitals' uninsured/bad debt costs to either net patient revenue or operating expenditures during 2017-2021.
- Our unit of analysis was the hospital-year.
- Regression estimates are adjusted for bed category and include hospital fixed effects; facility type, owner type, and independent status were not included due to collinearity concerns.
- Standard errors in difference-in-difference models were adjusted for clustering at the hospital level.
- Control states included those that did not implement Medicaid expansion before the end of 2020: AL, FL, GA, KS, MI, MS, NC, SC, SD, TN, TX, WI, WY.
- [1]These changes are relative to the baseline period comprising January 2015 through January 2017. [2]These changes are relative to the early expansion period comprising February 2017 through December 2019. [3]Results from interrupted time series models stratified by outcome and Utah/control group, using BRFSS post-stratification weights. [4] DiD estimate for the changes in Utah and control hospitals over time.

Utah hospitals had less uninsured/bad debt as a % of both net patient revenue and operating expenditures before and during the Demonstration relative to comparison states. From baseline to Early Demonstration, uninsured/bad debt decreased more in Utah than in comparison states as both a % of net patient revenue and operating expenditures. This trend continued from baseline to January 2020—December 2021. These changes in Utah relative to comparison states were significant.

Exhibit 23: Utah vs. Comparison States – Uninsured/Bad Debt





F.3.2 Adult Expansion Population; Hypothesis 2

Hypothesis 2: The Demonstration will improve healthcare access and engagement for the Adult Expansion (AE) population.

Changes in access and engagement measures for the AE population were modeled over time, and in comparison to Current Eligibles. Regression models were adjusted for gender, age, race/ethnicity, region, chronic disease (COPD or CHF diagnosis), and SMI and/or SUD diagnosis.

Acute Care Utilization Summary

Research questions 2.1 and 2.2 assess health outcomes among Medicaid members by measuring acute care utilization. **Decreases** are hypothesized. The impact of plan type is examined for behavioral health related measures.

- Primary research question 2.1: Did inpatient hospital utilization decrease over time, for the Adult Expansion population?
- Primary research question 2.2: Did ED visits decrease over time, for the Adult Expansion population?
  - Subsidiary research question 2.2a: Did ED visits for BH conditions decrease over time, for the Adult Expansion population?
  - Subsidiary research question 2.2.b: Did UMIC plans reduce ED visits for BH conditions for Adult Expansion population, relative to FFS or physical health-only ACO plans?

Exhibit 24: Mixed Logistic Regression Models: Adult Expansion vs Current Eligibles
Acute Care Measures

	Crude	CI	Adjusted	CI
Inpatient Utilization (IPU), discharges				
AE	2.35	[2.13,2.60]	1.55	[1.42,1.70]
DY	0.94	[0.91,0.98]	0.96*	[0.92,1.00]
AE*DY	0.89***	[0.85,0.93]	0.90***	[0.86,0.94]
AE over time (N=221645)	0.84***		0.86***	
Inpatient Utilization (IPU), length of stay				
AE	1.25***	[1.18,1.32]	1.18***	[1.12,1.25]
DY	1.03*	[1.00,1.06]	1.03*	[1.00,1.06]
AE*DY	0.97	[0.94,1.00]	0.97	[0.94,1.00]
AE over time (N=10359)	1.00		1.00	
Emergency Department Utilization (EDU)				
AE	0.98	[0.95,1.02]	0.98	[0.95,1.02]
DY	0.96***	[0.94,0.97]	1.01	[0.99,1.03]
AE*DY	0.92***	[0.91,0.95]	0.94***	[0.92,0.96]
AE over time (N=211517)	0.89***		0.95***	
Emergency Department Utilization, Behavioral Health visit (EDU BH)				
AE	2.03***	[1.80,2.30]	1.66***	[1.47,1.87]
DY	0.80***	[0.75,0.86]	0.89**	[0.83,0.96]
AE*DY	0.82***	[0.76,0.90]	0.84***	[0.78,0.92]
AE over time (N=211517	0.66***		0.76***	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Reductions over time in acute care utilization – both inpatient discharges and ED – were observed for the AE population; the pattern was significantly different than the comparison group. Length of stay was relatively flat for both groups. (Exhibit 24)

Acute Care Utilization Details

Inpatient Utilization (IPU), discharges

Exhibit 25: Marginal Effects for Inpatient Utilization (IPU), discharges, Adult Expansion vs Current Eligibles

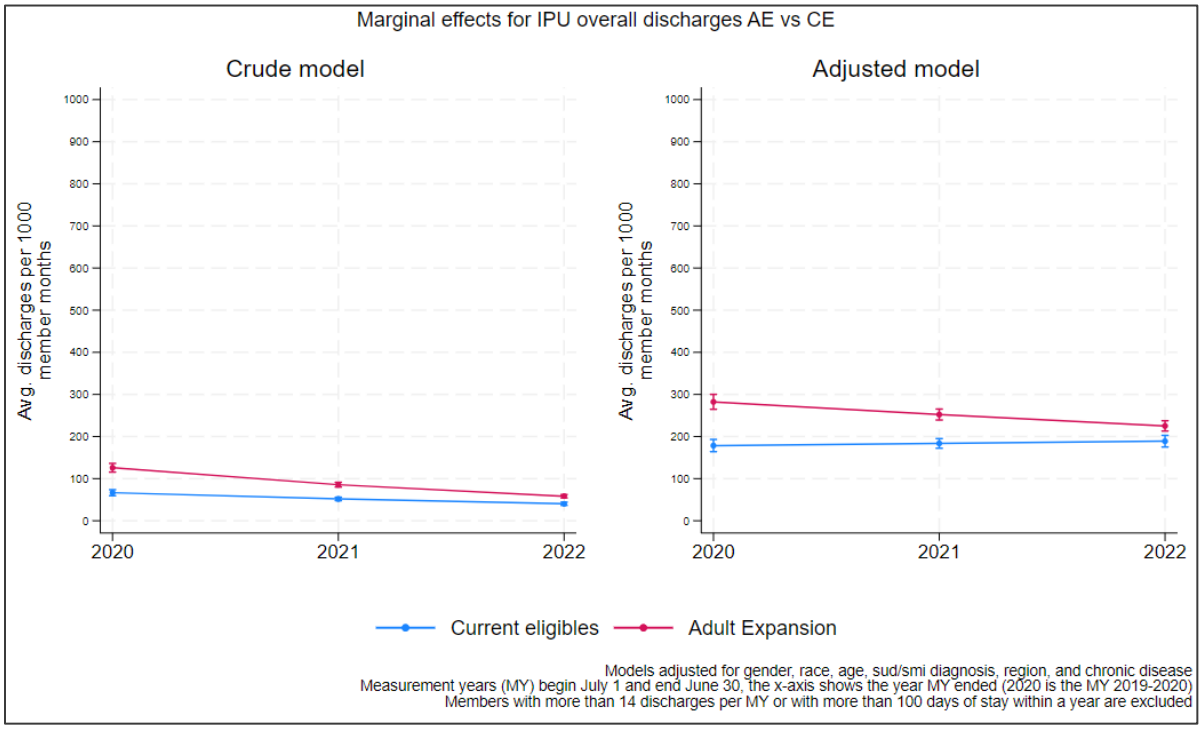
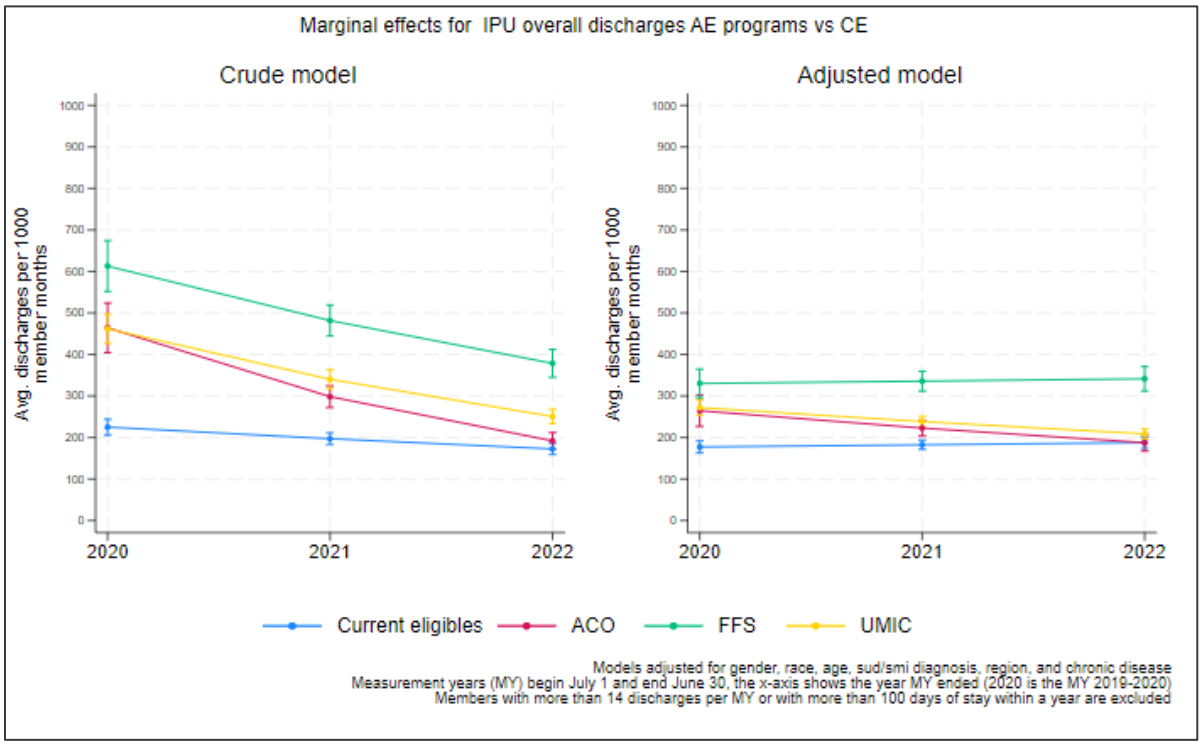


Exhibit 26: Marginal Effects for Inpatient Utilization (IPU), discharges, Adult Expansion Plan Types vs Current Eligibles



The overall IPU discharge rate was 55% higher in the AE population relative to the comparison group. There was a 14% decrease over time in IPU discharges in the AE population (p<.001) while the rate was relatively flat for the comparison group. The AE IPU rate AE IPU rate was close to that of the comparison group by the end of the Demonstration. The pattern over time is significantly different for the AE population relative to the comparison group (p<.001). The pattern of change was seen across demographic subgroups, though higher rates of IPU were associated with male gender, older age group, presence of chronic disease, and SMI and/or SUD diagnosis. (Exhibit 25)

The same pattern was evident for medical discharges and surgical discharges when analyzed separately.

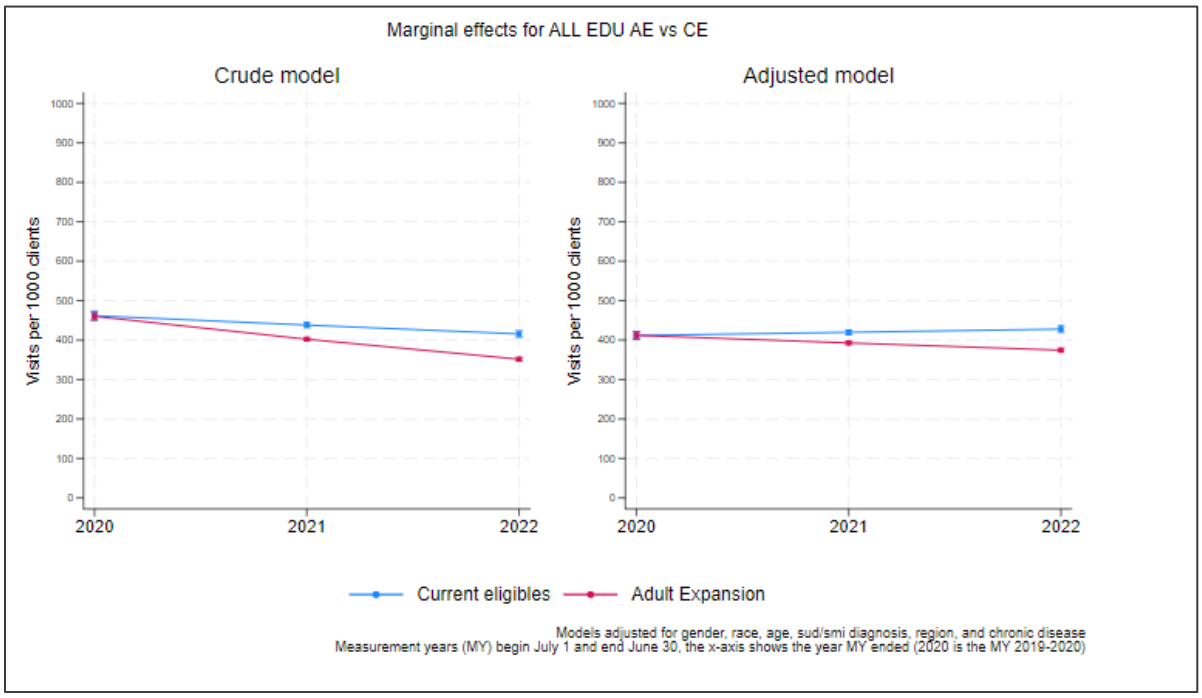
Both the ACO and UMIC plans were effective at reducing inpatient utilization (Exhibit 26).

Inpatient Utilization: Length of Stay

The IPU overall length of stay (LOS) increased slightly over time for both the TAM population and the comparison group.

Emergency Department Utilization (EDU)

Exhibit 27: Marginal Effects for Emergency Department Utilization (EDU), Adult Expansion vs Current Eligibles



Rates of Emergency Department Utilization (EDU) were similar in the AE population and the comparison group at the start of the Demonstration. There was a 5% decrease over time in EDU in the AE population (p<.001) while the rate was relatively flat for the comparison group. The AE EDU rate was below that of the comparison group by the end of the Demonstration. The pattern over time is significantly different for the AE population relative to the comparison group (p<.001). The pattern of change was seen across demographic subgroups, though higher rates of EDU were associated with female gender, the frontier region, older age group, presence of chronic disease, and SMI and/or SUD diagnosis.

Emergency Department Utilization (EDU), Behavioral Health Visits

Exhibit 28: Mixed Logistic Regression Models: Adult Expansion vs Current Eligibles

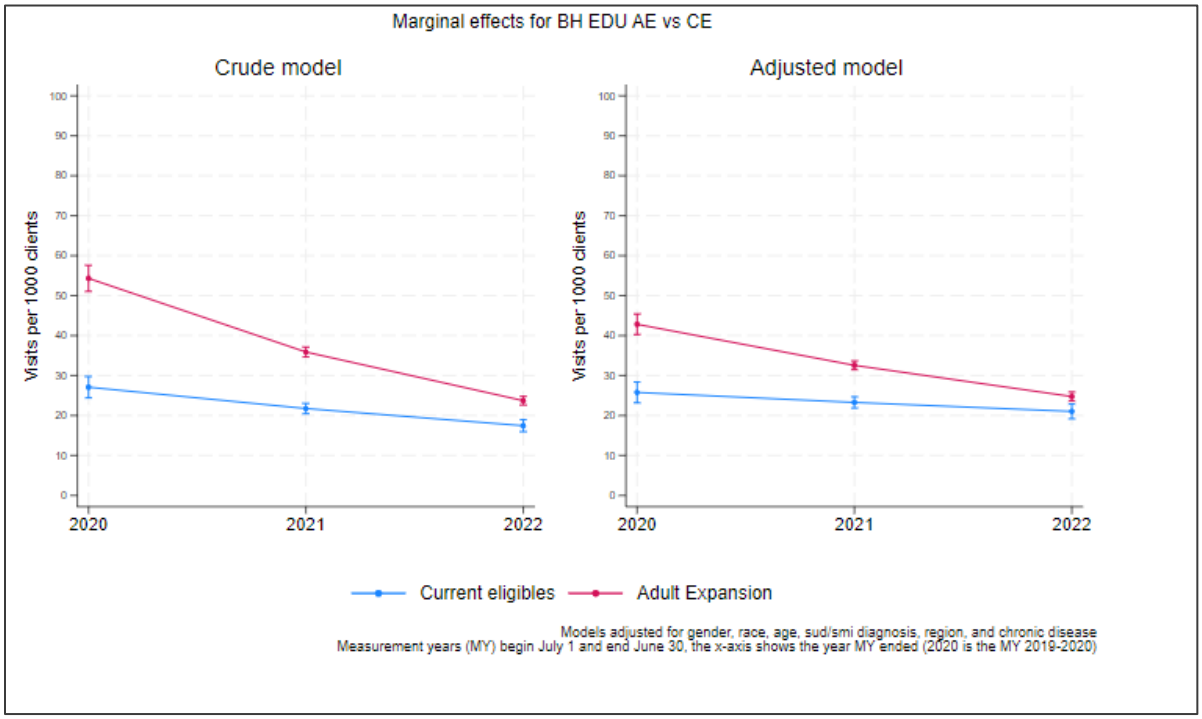
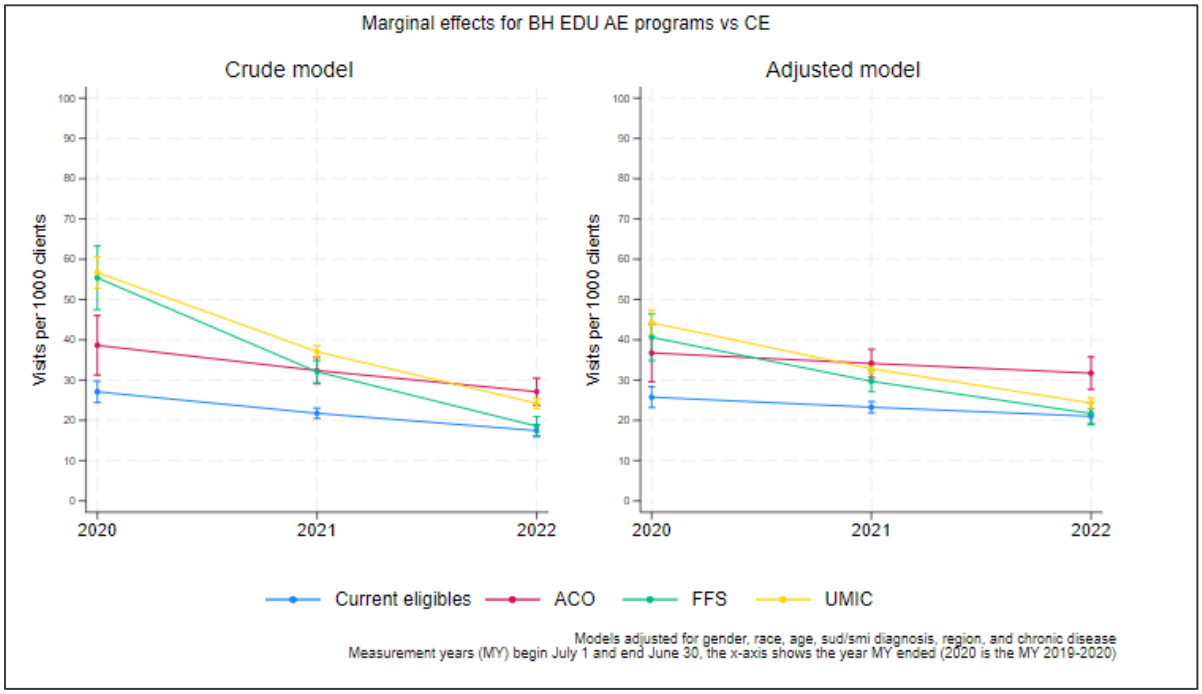


Exhibit 29: Mixed Logistic Regression Models: Adult Expansion Plan Types vs Current Eligibles



As seen in Exhibit 28, the overall EDU BH rate was 66% higher in the AE population relative to the comparison group. There was a 24% decrease over time in EDU BH in the AE population (p<.001) while there was only a slight decrease in the comparison group. The AE EDU BH rate was still higher than, but relatively close to, that of the comparison group by the end of the Demonstration. The pattern over time is significantly different for the AE population relative to the comparison group (p<.001). The pattern of change was seen across demographic subgroups, though higher rates of EDU were associated with female gender, the frontier region, younger age group, presence of chronic disease, and SMI and/or SUD diagnosis.

There were decreases in the EDU BH rate across all plan types (Exhibit 29): ACO 7% decrease (not statistically significant); FFS and UMIC both decreased by 27% (p<.001). This indicates the overall decrease in EDU BH in the AE population is driven primarily by UMIC, given the large number of UMIC members compared to FFS members, with the decreases in FFS being an additional contributing factor.

Ambulatory and Behavioral Health Care Summary

Research questions 2.3, 2.4 and 2.5 assess engagement in primary and ambulatory care, and in behavioral health treatment through utilization measures. Increases are hypothesized for all measures except 30 Day All Cause Unplanned Readmission following Hospitalization in an Inpatient Psychiatric Facility (REA).

- Primary research question 2.3: Did engagement in primary and ambulatory care increase over time for the Adult Expansion population?
- Primary research question 2.4: Did engagement in behavioral health care increase over time for the Adult Expansion population?
    - Subsidiary research question 2.4.a: Did UMIC plans improve engagement in behavioral health care for the Adult Expansion population, relative to FFS or physical health-only ACO plans?
- Primary research question 2.5: Did engagement in treatment for chronic conditions increase over time for the Adult Expansion population?

Note that the Evaluation Design Revision Memo (Attachment J.1) lists the following measures for Primary research question 2.3:

- AAP: Adults' Access to Preventative/Ambulatory Health Services
- CDC: Comprehensive Diabetes Care
- BCS: Breast Cancer Screening
- CCS: Cervical Cancer Screening

The results presented here include only the AAP measure. We chose to focus on AAP as the indicator of ambulatory access to care, and did not report CDC, BCS, or CCS for several reasons. First, CDC is a composite measure that includes a component requiring medical records review, which was not included in the evaluation budget. We considered reporting the Hba1C screening component of CDC but given that Hba1C screening has been the standard of care for decades, the rates are high and stable over time and therefore not informative for the evaluation. We did not report BCS and CCS due to changes in the clinical guidelines, and in some cases competing guidelines, for these measures during the evaluation period which make year over year comparisons not meaningful.

Exhibit 30: Mixed Logistic Regression Models: Adult Expansion vs Current Eligibles
Ambulatory and Behavioral Health Care Measures

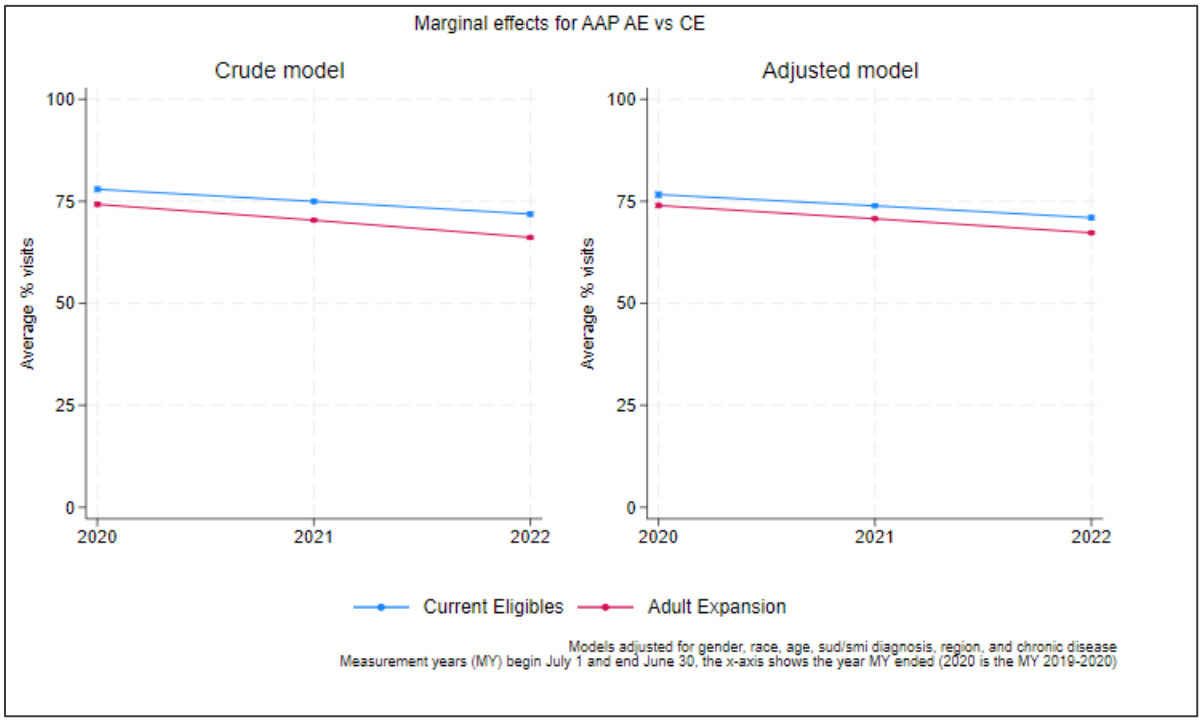
	Crude	CI	Adjusted	CI
Adult Access to Ambulatory/Preventive Care (AAP)				
AE	0.67***	[0.62,0.72]	0.77***	[0.71,0.82]
DY	0.72***	[0.70,0.75]	0.76***	[0.73,0.79]
AE*DY	0.93***	[0.89,0.97]	0.97	[0.93,1.01]
AE over time (N=221832)	0.67***		0.74***	
Antidepressant Medication Management (AMM), Acute Phase				
AE	0.79	[0.52,1.19]	0.74	[0.48,1.13]
DY	1.46**	[1.16,1.85]	1.47**	[1.16,1.87]
AE*DY	1.01	[0.77,1.34]	1.00	[0.75,1.34]
AE over time (N=4684)	1.49***		1.48***	
Antidepressant Medication Management (AMM), Continuation Phase				
AE	1.11	[0.75,1.64]	1.07	[0.72,1.59]
DY	1.35**	[1.10,1.65]	1.34**	[1.09,1.64]
AE*DY	0.91	[0.70,1.18]	0.92	[0.71,1.20]
AE over time (N=4684)	1.22**		1.24**	
Follow-up after Hospitalization for Mental Illness (FUH) 7 Day				
AE	0.73	[0.46,1.16]	0.77	[0.48,1.23]
DY	1.04	[0.94,1.15]	1.05	[0.95,1.16]
AE*DY	0.97	[0.83,1.13]	0.96	[0.83,1.12]
AE over time (N=5093)	1.01		1.01	
Follow-up after Hospitalization for Mental Illness (FUH) 30 Day				
AE	0.39***	[0.24,0.66]	0.41***	[0.25,0.69]
DY	0.98	[0.87,1.09]	1.00	[0.89,1.12]
AE*DY	1.13	[0.96,1.34]	1.13	[0.96,1.33]
AE over time (N=5093)	1.11		1.13*	
Initiation and Engagement in SUD Treatment (IET), Initiation				
AE	1.11	[0.80,1.53]	1.08	[0.78,1.50]
DY	0.95	[0.77,1.18]	0.97	[0.78,1.19]
AE*DY	0.94	[0.73,1.19]	0.93	[0.73,1.19]
AE over time (N=12233)	0.89*		0.90*	
Initiation and Engagement in SUD Treatment (IET), Engagement				
AE	0.87	[0.51,1.48]	0.90	[0.52,1.55]
DY	0.80	[0.56,1.16]	0.81	[0.56,1.17]
AE*DY	1.22	[0.80,1.84]	1.22	[0.81,1.86]
AE over time (N=12233)	0.98		0.99	
30 Day All Cause Unplanned Readmission following Hospitalization in an Inpatient Psychiatric Facility (REA)				
AE	1.52	[0.91,2.54]	1.18	[0.70,1.99]
DY	1.03	[0.75,1.43]	1.13	[0.82,1.57]
AE*DY	0.91	[0.64,1.30]	0.90	[0.63,1.29]
AE over time (N=6085)	0.94		1.02	
Monitoring for Persistent Medications (MPM)				
AE	0.95	[0.78,1.17]	0.93	[0.76,1.15]
DY	1.07	[0.95,1.22]	1.07	[0.95,1.22]
AE*DY	0.97	[0.85,1.12]	0.97	[0.85,1.12]
AE over time (N=13147)	1.05		1.04	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)

Ambulatory and Behavioral Health Care Details

Adult Access to Ambulatory/Preventive Care (AAP)

Exhibit 31: Marginal Effects for Adult Access to Ambulatory/Preventive Care, AE vs CE



The odds of Adults' Access to Preventive/Ambulatory Health Services (AAP) was slightly lower in the AE population than the comparison group at the start of the demonstration. The overall AAP odds was 23% lower in the AE population relative to the comparison group. There was a 26% decrease over time in AAP in the AE population ($p<.001$), contrary to the hypothesis. A similar decrease was observed in the comparison group; the AE and CE patterns are not significantly different. The pattern of change was seen across demographic subgroups, though higher odds of AAP were associated with female gender, rural and frontier regions, the middle age group, presence of chronic disease, and SMI and/or SUD diagnosis.

Antidepressant Medication Management (AMM)

The AMM measure addresses antidepressant medication management. It is measured in the acute phase by the percentage of members who remained on an antidepressant medication for at least 84 days (12 weeks), and in the continued phase by the percentage of members who remained on an antidepressant medication for at least 180 days (6 months).

Exhibit 32: Marginal Effects for Antidepressant Medication Management (AMM), Acute Phase, AE vs CE

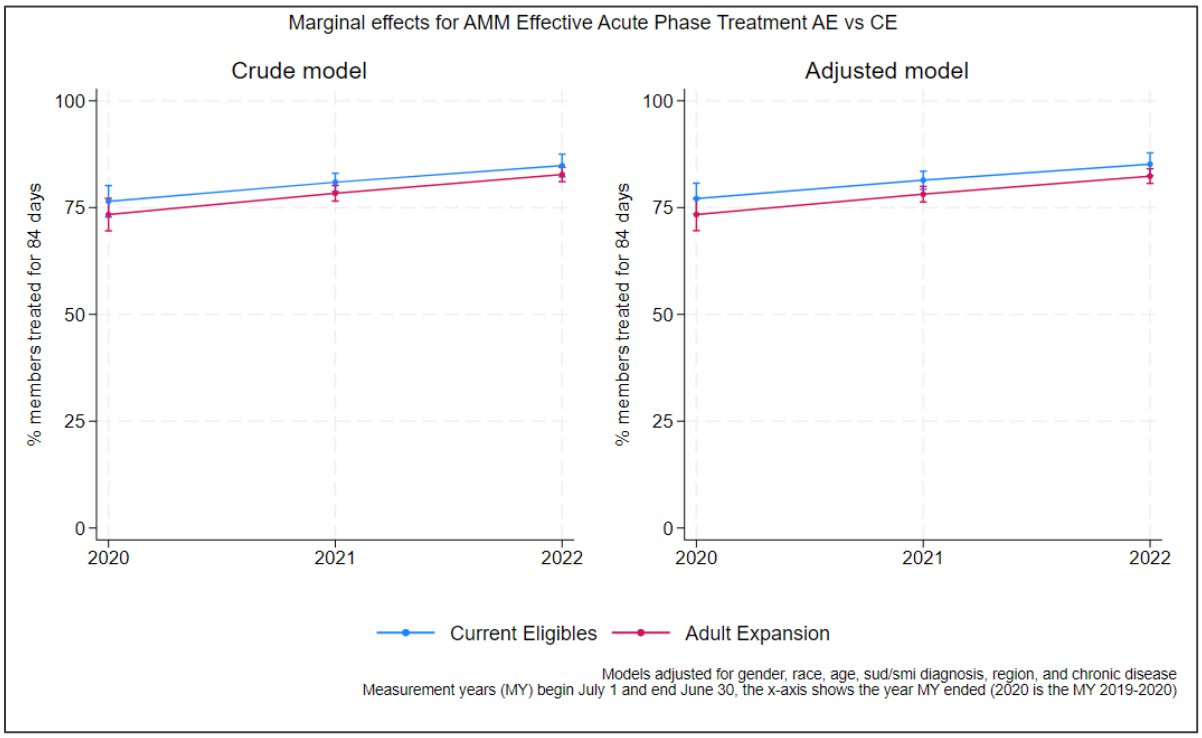
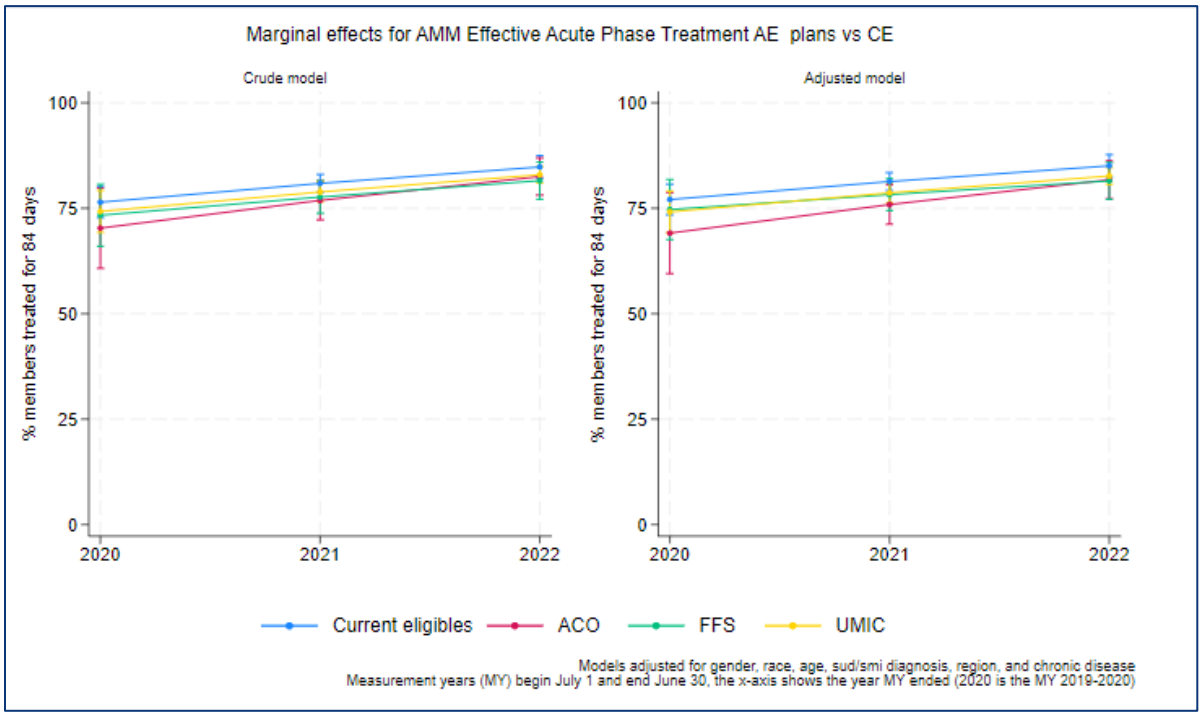


Exhibit 33: Marginal Effects for Antidepressant Medication Management (AMM), Acute Phase, AE Plan Types vs. CE



The overall AMM odds in the acute phase of treatment (Exhibit 32) was 26% lower in the AE population relative to the comparison group. There was a 48% increase over time in the AMM acute phase odds in the AE population (p<.001), supporting the hypothesis. A similar increase was observed in the

comparison group; the AE and CE patterns are not significantly different. The increase was observed in all plan types; there were no significant differences by plan (Exhibit 33). The pattern of change was seen across demographic subgroups, though higher odds were associated with older age groups and lower odds were associated with SUD diagnosis (with or without SMI diagnosis).

Exhibit 34: Marginal Effects for Antidepressant Medication Management (AMM) Continuation Phase,AE vs CE

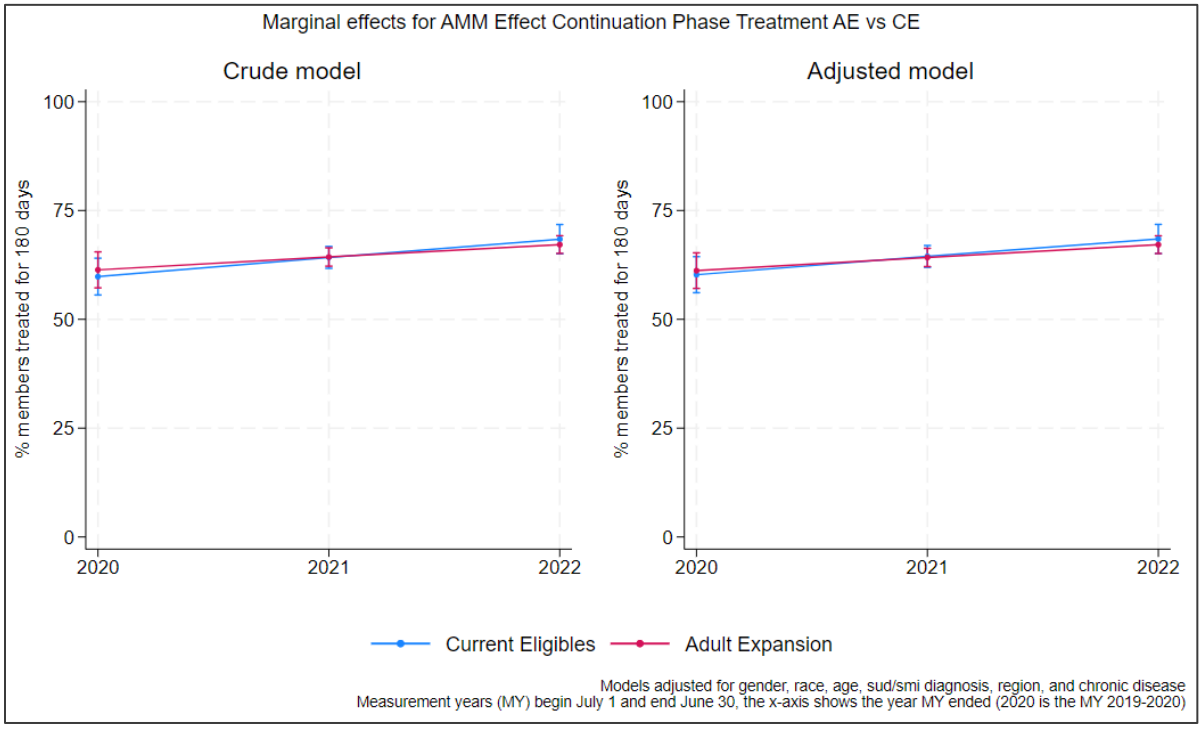
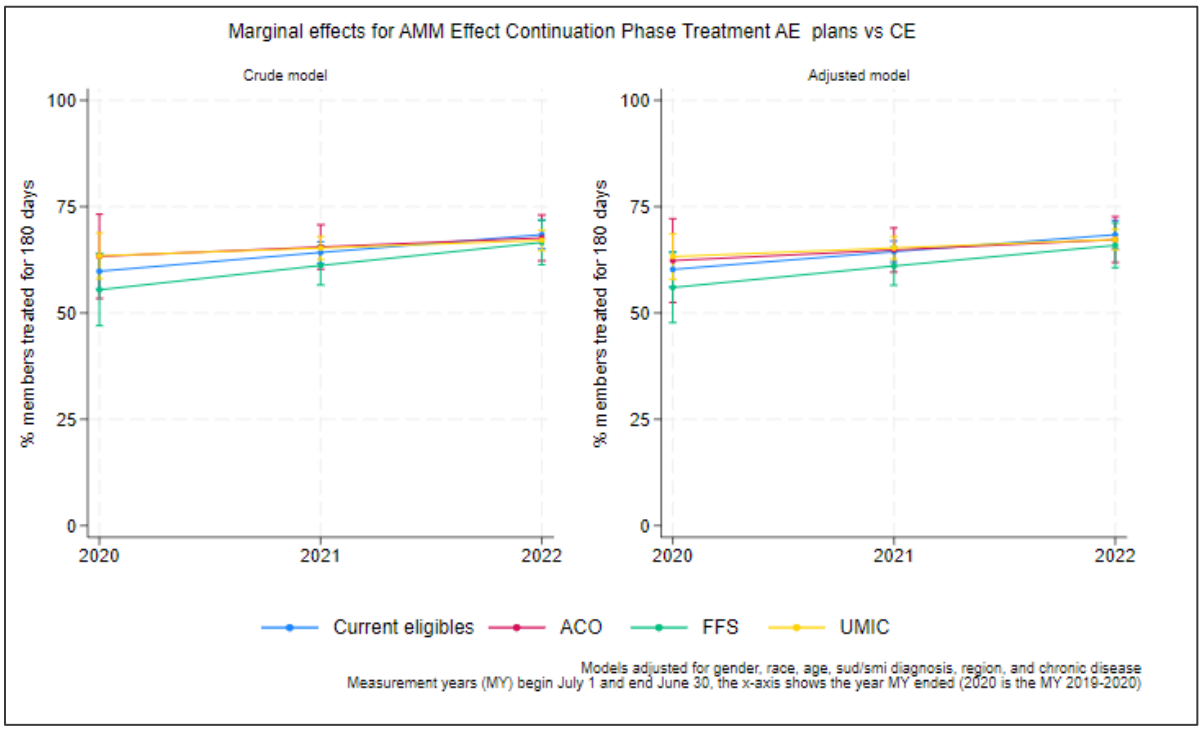


Exhibit 35: Marginal Effects for Antidepressant Medication Management (AMM), Continuation Phase, AE Plan Types vs. CE



The overall AMM odds in the continuation phase of treatment (Exhibit 34) was 7% higher in the AE population relative to the comparison group. There was a 24% increase over time in the AMM continuation phase odds in the AE population (p<.01), supporting the hypothesis. A similar increase was observed in the comparison group; the AE and CE patterns are not significantly different. The increase was observed in all plan types; there were no significant differences by plan (Exhibit 35).The pattern of change was seen across demographic subgroups, though higher odds were associated with older age groups and chronic disease, and lower odds were associated with SUD diagnosis (with or without SMI diagnosis).

30-Day All-Cause Unplanned Readmission Following Psychiatric Hospitalization in an Inpatient Psychiatric Facility (REA)

Exhibit 36: Marginal Effects for 30 day REA, AE vs CE

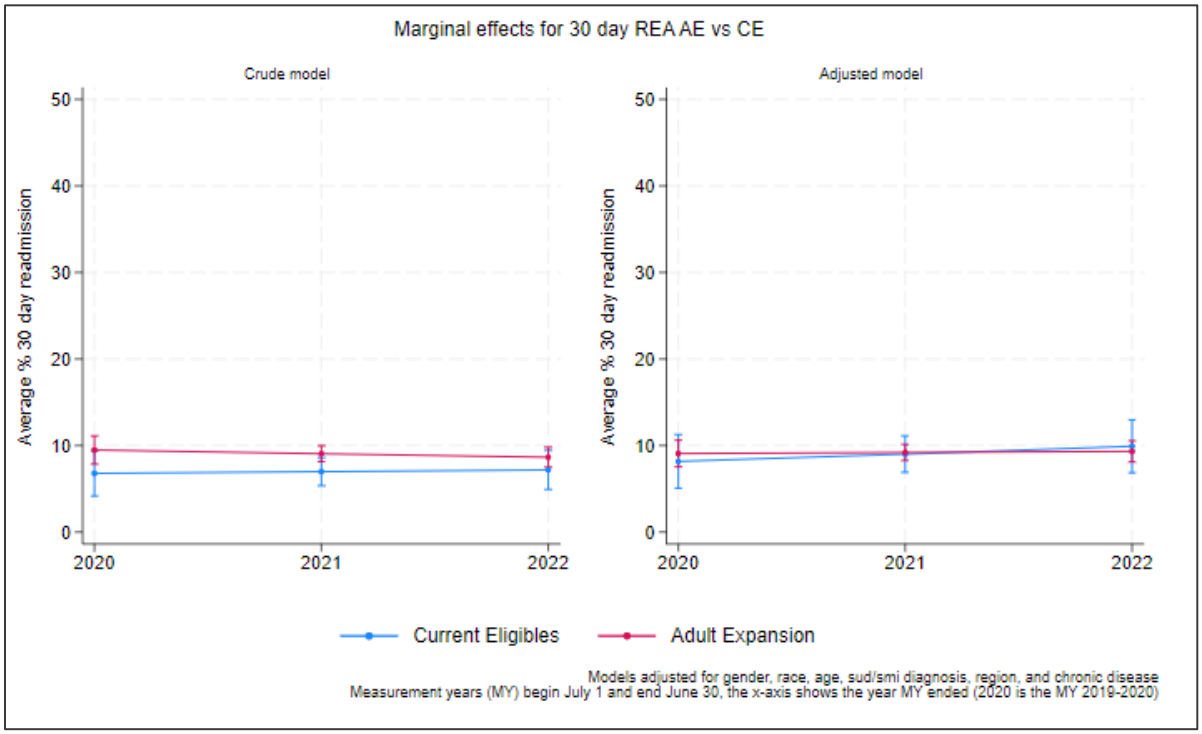
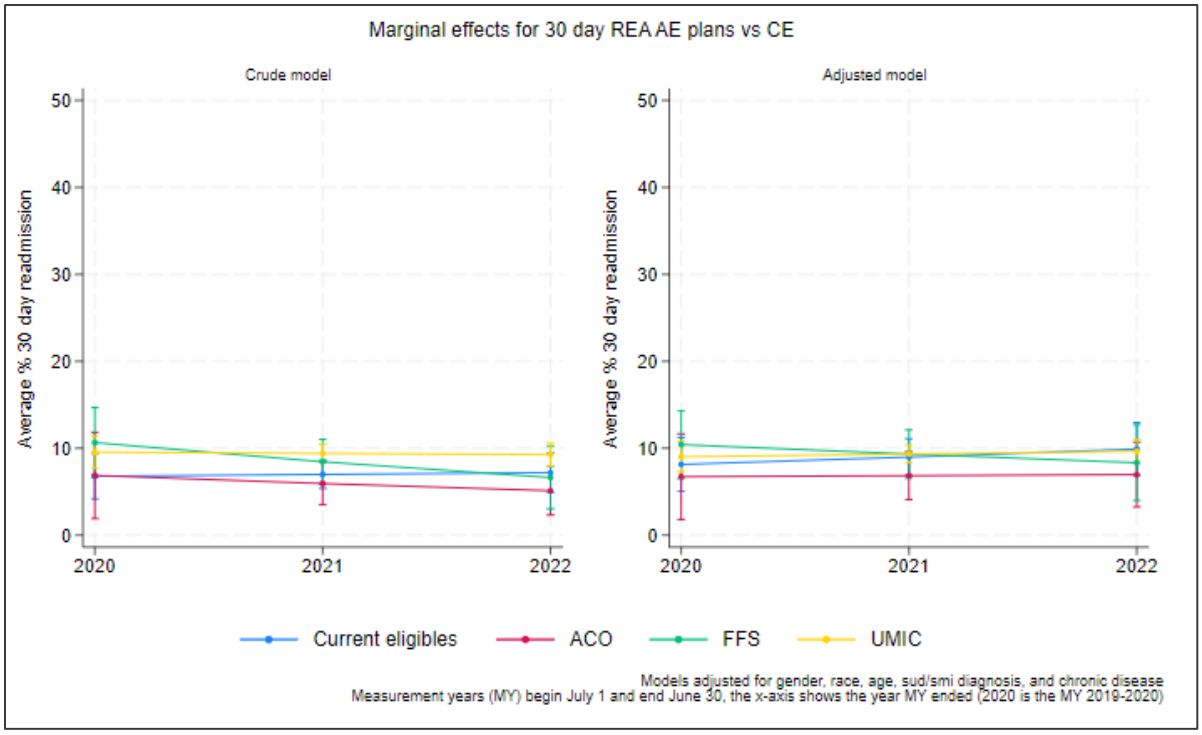


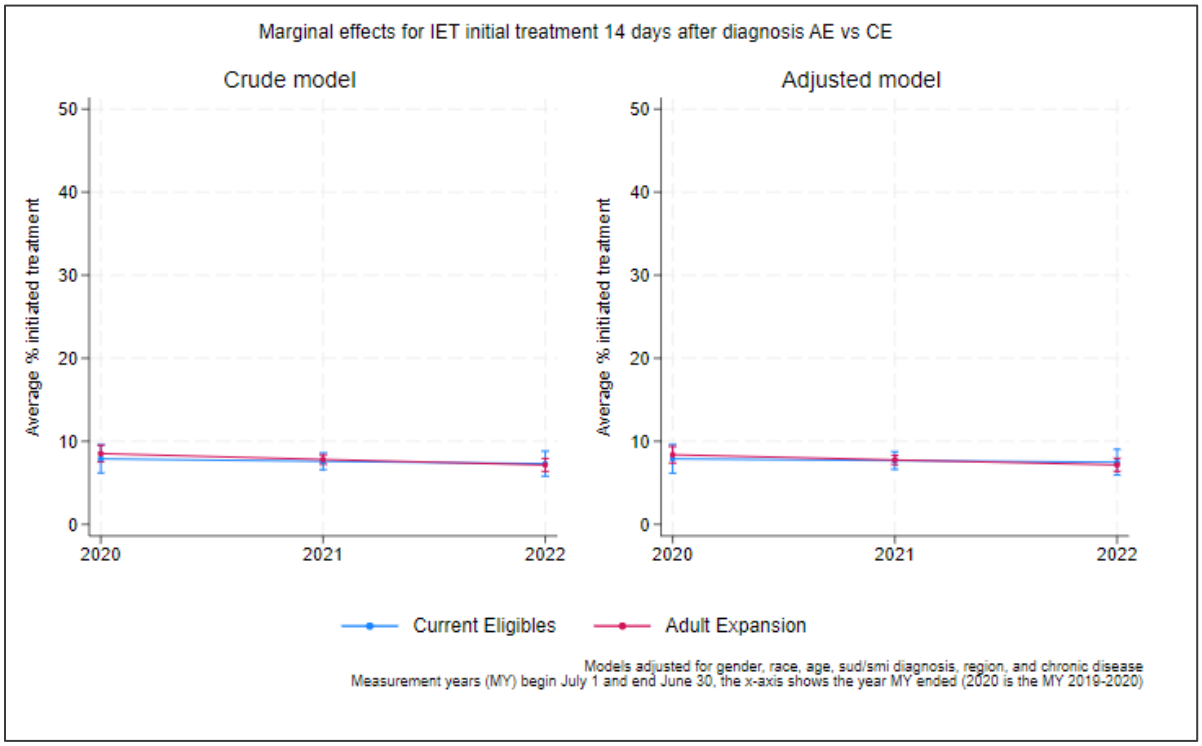
Exhibit 37: Marginal Effects for 30-day REA, AE Plan Types vs CE



The overall REA odds were 18% higher in the AE population relative to the comparison group (Exhibit 36); this was not a statistically significant difference. There was little change in the odds over time for both AE and the comparison group; the patterns are not significantly different. A similar pattern was seen across demographic subgroups, though higher odds of REA were associated with chronic disease and SMI and/or SUD diagnosis, while lower odds were associated with female gender. The same largely flat pattern was observed across all AE plan types (Exhibit 37).

Initiation and Engagement in Treatment for SUD (IET)

Exhibit 38: Marginal Effects for IET Initiation, AE vs. CE



The overall odds of IET initiation was 8% higher in the AE population relative to the comparison group. There was a 10% decrease over time in the AE population ($p<.05$), contrary to the hypothesis (Exhibit 38). A similar decrease was observed in the comparison group; the AE and CE patterns are not significantly different.

Results for the odds of engagement in SUD treatment were similar to the initiation results. The overall odds of engagement in SUD in SUD treatment were 10% lower in the AE population than the comparison group (not a statistically significant difference). The odds remained relatively stable over time in both groups. The same pattern was seen across demographic subgroups.

An analysis of IET by plan type was planned but not performed due to very small numerators and denominators when split by plan.

Follow Up After Hospitalization for Mental Illness (FUH)

The FUH measure determines engagement in behavioral health care by tracking both 7 day and 30 day follow ups after hospitalization for mental illness. Results were measured from 2020 to 2022.

Exhibit 39: Marginal Effects for 7 Day FUH, AE vs. CE

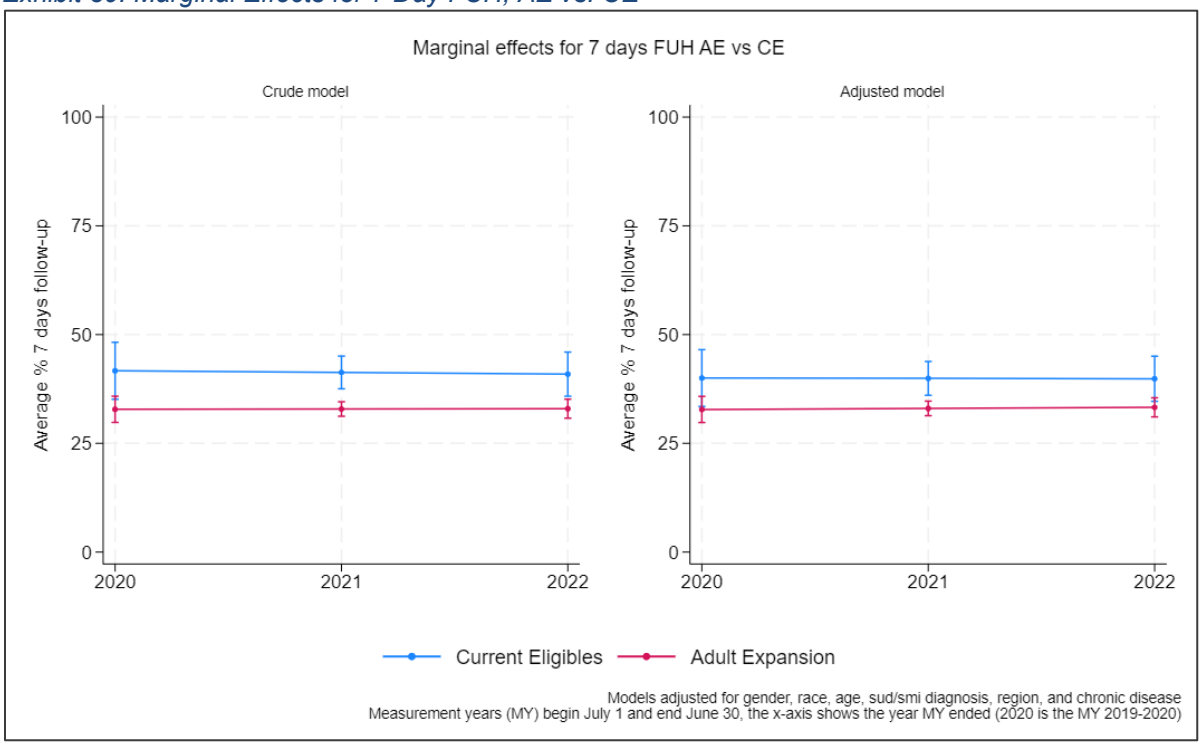


Exhibit 40: Marginal Effects for 7 Day FUH, AE Plan Types vs. CE

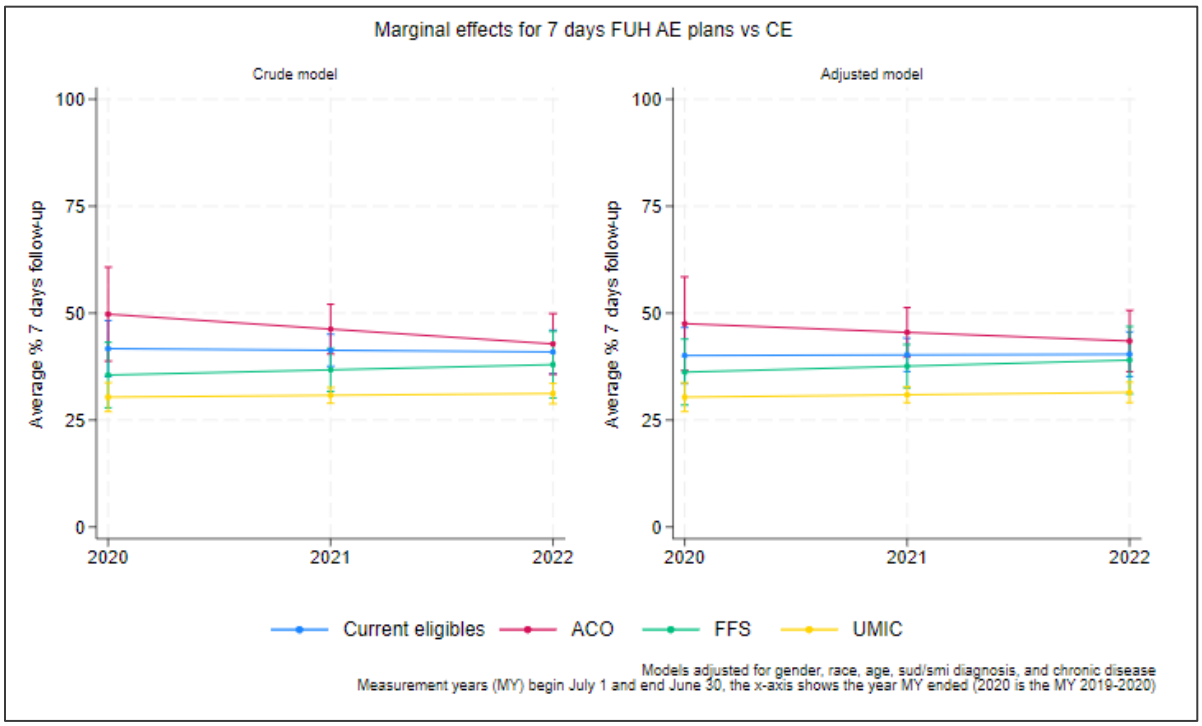


Exhibit 41: Marginal Effects for 30 Day FUH, AE vs. CE

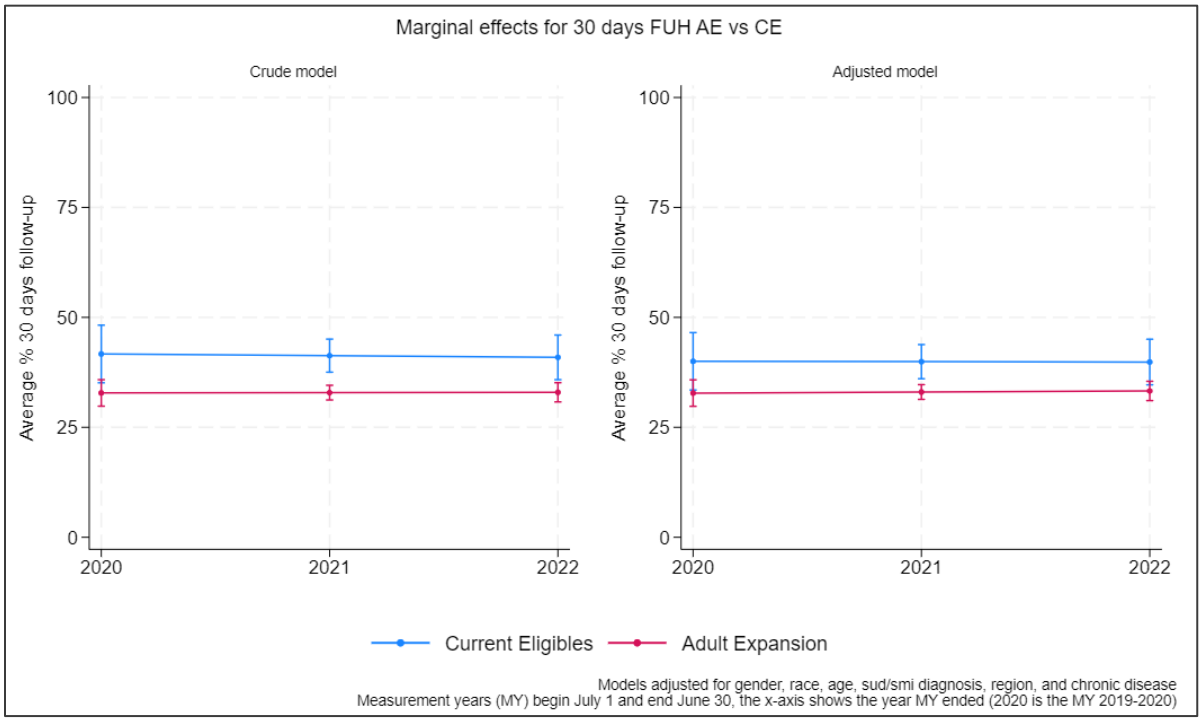
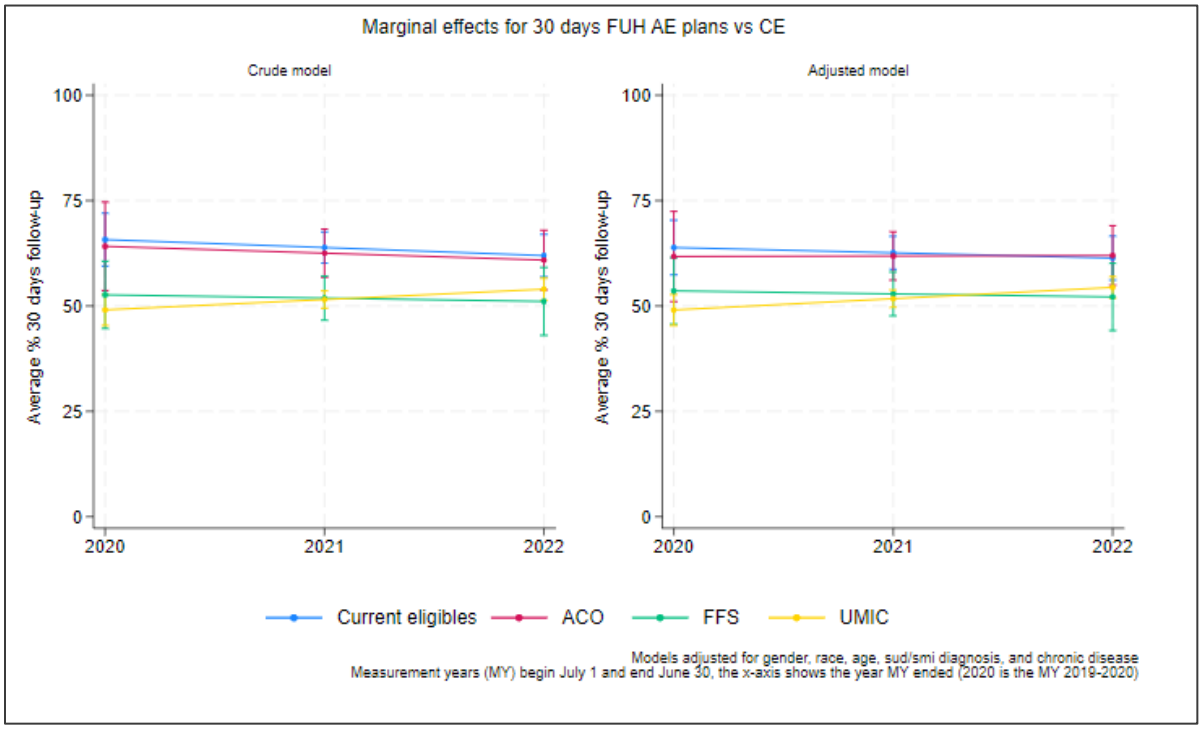


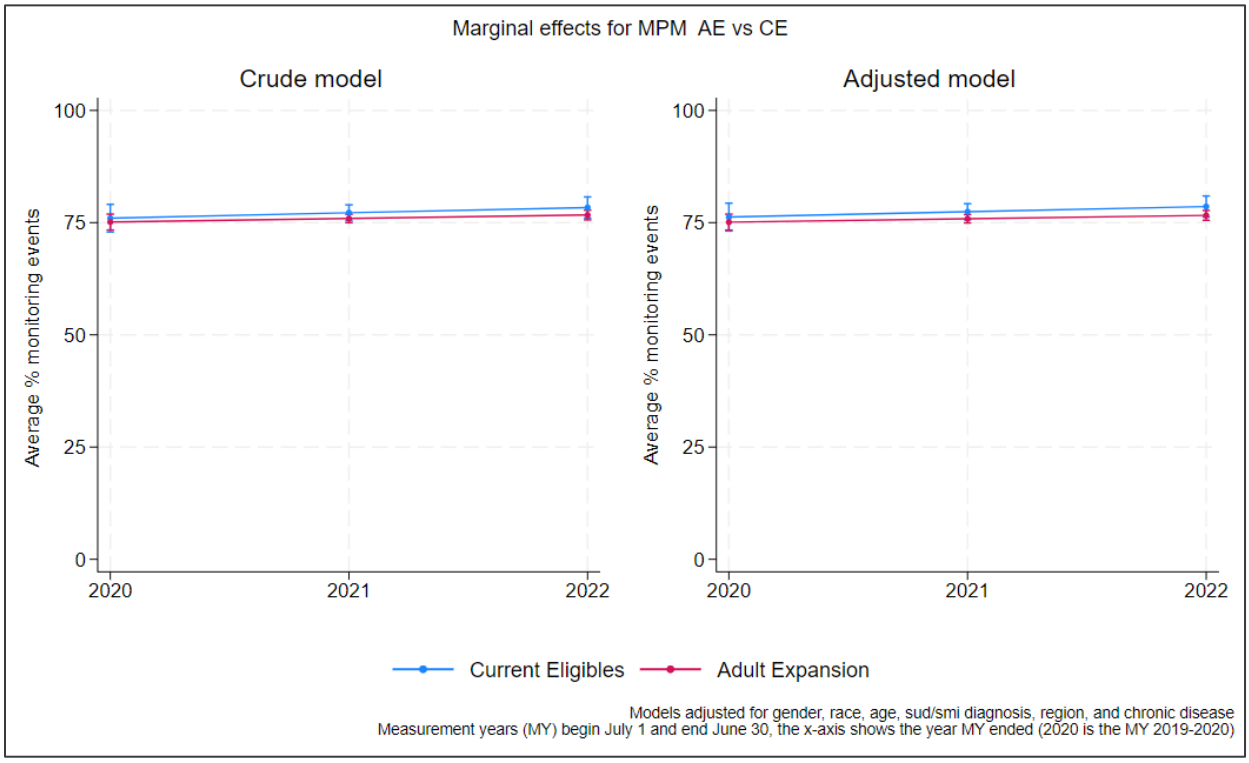
Exhibit 42: Marginal Effects for 30 Day FUH, AE Plan Types vs. CE



The overall FUH 7 Day odds were 23% lower in the AE population relative to the comparison group (Exhibit 39), this was not a statistically significant difference. There was little change over time in either group. The same relatively flat pattern was observed in all plan types (Exhibit 40). The same pattern was seen across demographic subgroups. The results were similar for the FUH 30 Day odds (Exhibit 41), with the exception that there was a 13% increase in the odds in the AE population over time (p<.05). There were no significant differences by plan type (Exhibit 42).

Annual Monitoring for Patients on Persistent Medications (MPM)

Exhibit 43: Marginal Effects for Annual Monitoring for Patients on Persistent Medications, AE vs. CE



The overall odds of MPM were 7% lower in the AE population than the comparison group (Exhibit 39), this was not a statistically significant difference. There was little to no change over time in either group. The same pattern was observed across demographic subgroups. Lower odds of MPM were observed in the SUD only diagnosis group (p<.01).

Key Findings

- Adult Expansion members experienced improved health outcomes
  - Rates of inpatient hospitalization were reduced over time
  - Rates of ED visits, and of ED-BH visits, were reduced, over time, and relative to the comparison group.
- Trends for engagement in ambulatory and chronic disease care were similar for Adult Expansion and the comparison group.
- Trends for engagement in BH care were mixed.
  - Odds of anti-depressant medication management increased in both the acute and maintenance phases, over time and relative to the comparison group.
  - Odds of 30-day follow up after psychiatric hospitalization increased over time, and relative to the comparison group, though rates for 7-day follow up were similar to the comparison group.
  - Odds of initiation and engagement in treatment for SUD and readmission following psychiatric hospitalization were similar to the comparison group.

F.3.3 Targeted Adult Medicaid Population; Hypothesis 3

Hypothesis 3: The Demonstration will improve healthcare access and engagement for the TAM population.

Changes in access and engagement measures for the TAM population were modeled over time, and in comparison to Current Eligibles with an SMI/SUD diagnosis (CE SMI/SUD). Regression models were adjusted for gender, race/ethnicity, region, chronic disease, and age.

The results of comparisons to the CE SMI/SUD population should be interpreted cautiously because the TAM population is an exceptionally high-risk group, identified in part by social risk factors. Members of the CE SMI/SUD group are expected to present with, on average, fewer unmet health-related social needs than the TAM group.

Acute Care Utilization Summary

Research questions 3.1 and 3.2 assess health outcomes among Medicaid members by measuring acute care utilization. Decreases are hypothesized.

- Primary research question 3.1: Did inpatient hospital utilization decrease over time for the TAM population?
- Primary research question 3.2: Did ED visits decrease over time for the TAM population?
  - Subsidiary research question 3.2.a: Did ED visits for BH conditions decrease over time for the TAM population?

Exhibit 44: Mixed Logistic Regression Models: Targeted Adult Medicaid vs Current Eligibles with SMI/SUD diagnoses, Acute Care Measures

	Crude	CI	Adjusted	CI
IPU, discharges				
TAM	0.75	[0.55,1.03]	0.98	[0.72,1.34]
DY	0.97	[0.92,1.02]	0.94*	[0.90,0.99]
TAM*DY	0.95	[0.87,1.03]	0.98	[0.91,1.07]
TAM over time (N=31864)	0.92**		0.93**	
IPU, length of stay				
TAM	1.05	[0.87,1.27]	1.01	[0.83,1.22]
DY	1.05**	[1.01,1.09]	1.04*	[1.01,1.08]
TAM*DY	1.00	[0.95,1.06]	1.01	[0.95,1.07]
TAM over time (N=2258)	1.05**		1.05**	
EDU				
TAM	1.11**	[1.03,1.19]	1.34***	[1.25,1.44]
DY	0.97***	[0.96,0.98]	0.98***	[0.97,0.99]
TAM*DY	0.92***	[0.90,0.94]	0.94***	[0.92,0.96]
TAM over time (N=37916)	0.89***		0.92***	
EDU BH				
TAM	1.54***	[1.29,1.84]	1.63***	[1.36,1.96]
DY	0.91***	[0.88,0.94]	0.93***	[0.90,0.96]
TAM*DY	0.96	[0.90,1.02]	0.99	[0.93,1.05]
TAM over time (N=37916)	0.87***		0.92***	

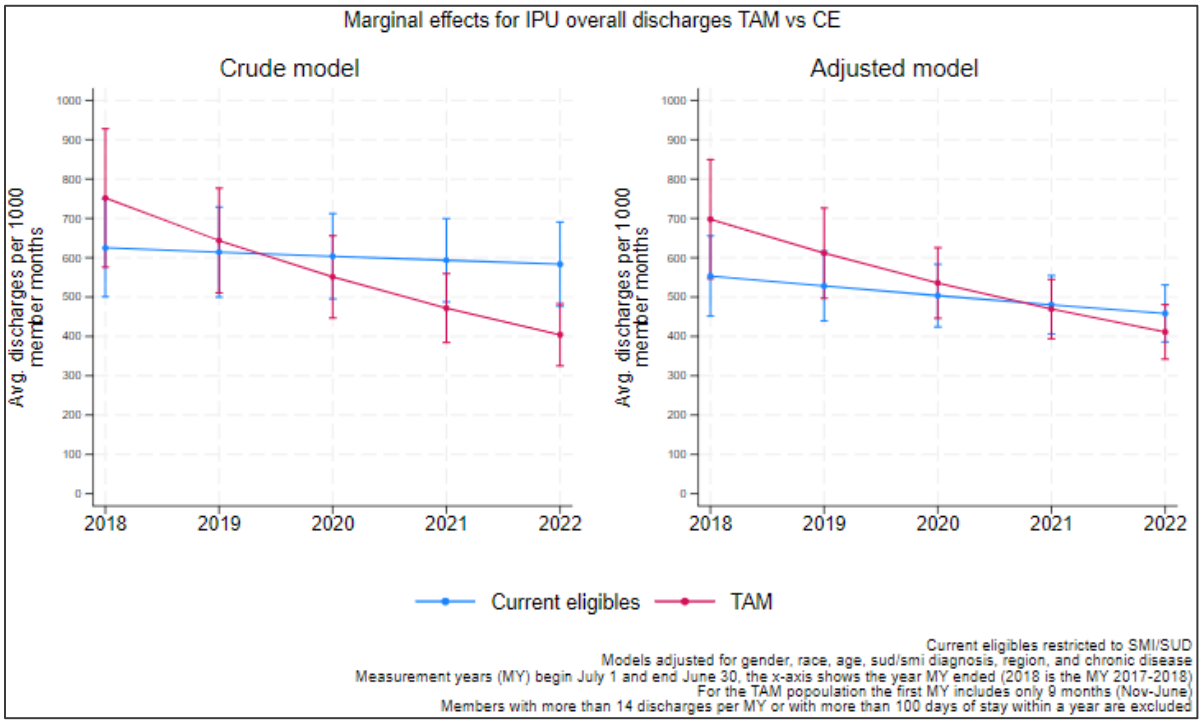
Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Reductions over time in acute care utilization – both inpatient and ED – were observed for the TAM population. Similar reductions were observed for the comparison group for most measures, with the exception of EDU, suggesting that factors outside of the TAM Demonstration contributed to the decreases, such as the SMI/SUD demonstrations, and the COVID-19 PHE. (Exhibit 44)

Acute Care Utilization Details

Inpatient Utilization: Discharges

Exhibit 45: Marginal Effects for Inpatient Utilization Overall Discharges, TAM vs CE SMI/SUD



Inpatient utilization (medical and surgical discharges) decreased for both TAM and the comparison group. The pattern of change over time was similar for the two groups. There was a 7% decrease in IPU over time within the TAM population ($p < 0.01$) . The pattern of change was seen across demographic subgroups, though higher rates of IPU were associated with older age group, presence of chronic disease, and SMI and/or SUD diagnosis while lower rates were seen in rural areas

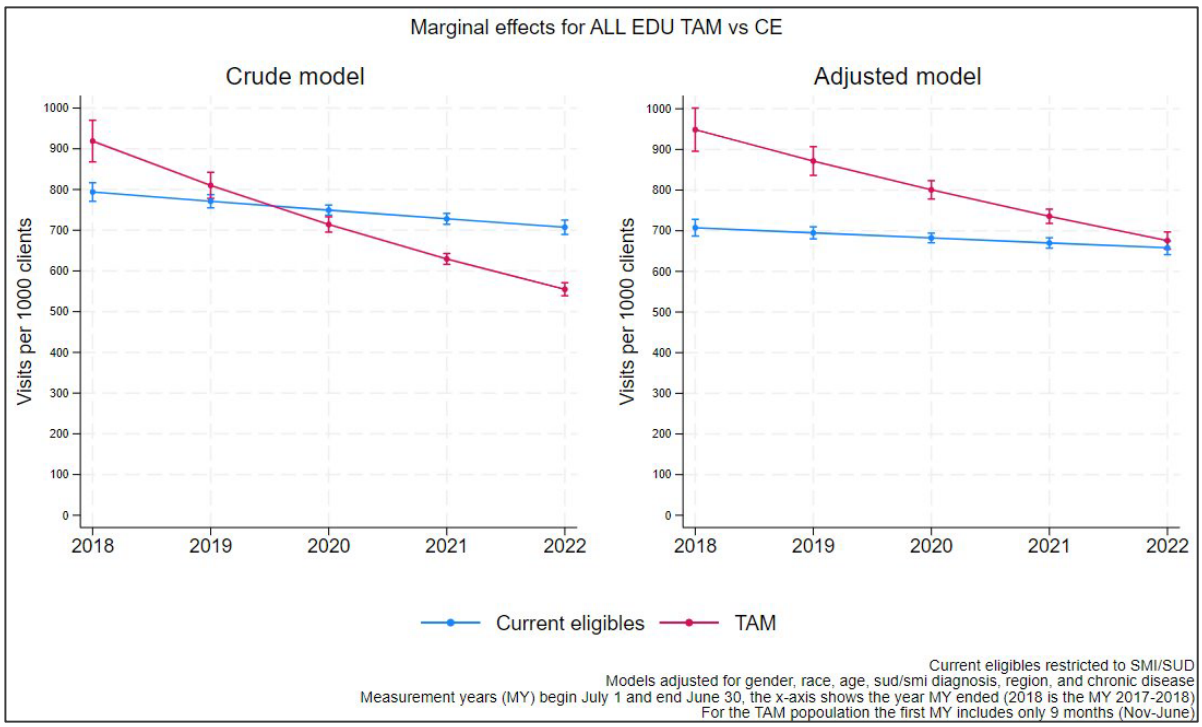
The same pattern was evident for medical discharges and surgical discharges when analyzed separately.

Inpatient Utilization: Length of Stay

The IPU overall length of stay (LOS) increased slightly over time for both the TAM population and the comparison group.

Emergency Department Utilization: Overall

Exhibit 46: Marginal Effects for Emergency Department Utilization, TAM vs CE SMI/SUD



Emergency Department Utilization (EDU) was 34% higher overall for the TAM population relative to the comparison group. EDU decreased by 8% over time in the TAM population (p<.001), with the rate being comparable to that of the comparison group by the end of the Demonstration period. The pattern of change is significantly different in the TAM population relative to the comparison group (p<.001)The pattern of change was seen across demographic subgroups, though higher rates of EDU were associated with female gender, presence of chronic disease, and SMI and/or SUD diagnosis while lower rates were seen in frontier areas.

Emergency Department Utilization for BH conditions

When BH and non-BH visits were examined separately, a statistically significant decrease (p < 0.001) in ED non-BH visits for the TAM population relative to the comparison group was observed. While ED-BH visits consistently occurred at a higher rate for TAM members than for comparison group, the frequency of ED BH visits decreased for both TAM and the comparison group at a similar rate.

Ambulatory and Behavioral Health Care Summary

Research questions 3.3 and 3.4 assess engagement in primary and ambulatory care, and in behavioral health treatment through utilization measures. Increases are hypothesized for all measures except 30 Day All Cause Unplanned Readmission following Hospitalization in an Inpatient Psychiatric Facility (REA).

- Primary research question 3.3: Did engagement in primary and ambulatory care increase over time for the TAM population?
- Primary research question 3.4: Did engagement in behavioral health care increase over time for the TAM population?

Exhibit 47: Mixed Logistic Regression Models: Targeted Adult Medicaid vs Current Eligibles with SMI/SUD diagnoses, Outpatient Care Measures (non-ED)

	Crude	CI	Adjusted	CI
AAP				
TAM	0.41***	[0.34,0.50]	0.95	[0.78,1.15]
DY	0.87***	[0.84,0.90]	0.88***	[0.85,0.91]
TAM*DY	0.76***	[0.71,0.80]	0.82***	[0.78,0.87]
TAM over time (N=43003)	0.66***		0.72***	
FUH 7 Day				
TAM	0.35***	[0.19,0.64]	0.38**	[0.20,0.71]
DY	1.04	[0.93,1.16]	1.05	[0.94,1.17]
TAM*DY	1.07	[0.87,1.31]	1.05	[0.85,1.29]
TAM over time (N=1940)	1.11		1.10	
FUH 30 Day				
TAM	0.43**	[0.23,0.78]	0.41**	[0.22,0.76]
DY	0.94	[0.83,1.05]	0.96	[0.85,1.08]
TAM*DY	0.95	[0.77,1.16]	0.93	[0.76,1.15]
TAM over time (N=1940)	0.89		0.89	
REA				
TAM	4.69***	[2.30,9.59]	3.11**	[1.49,6.50]
DY	1.10	[0.95,1.27]	1.13	[0.97,1.31]
TAM*DY	0.71**	[0.55,0.91]	0.71**	[0.55,0.91]
TAM over time (N=2625)	0.78**		0.80**	
IET, Initiation				
TAM	0.93	[0.66,1.31]	0.91	[0.64,1.29]
DY	1.01	[0.93,1.09]	1.02	[0.94,1.10]
TAM*DY	1.18**	[1.04,1.33]	1.18**	[1.04,1.33]
TAM over time (N=8241)	1.19***		1.20***	
IET, Engagement				
TAM	0.81	[0.45,1.46]	0.84	[0.45,1.54]
DY	0.96	[0.83,1.10]	0.97	[0.85,1.12]
TAM*DY	1.30*	[1.05,1.61]	1.29*	[1.05,1.60]
TAM over time (N=8241)	1.25***		1.26***	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

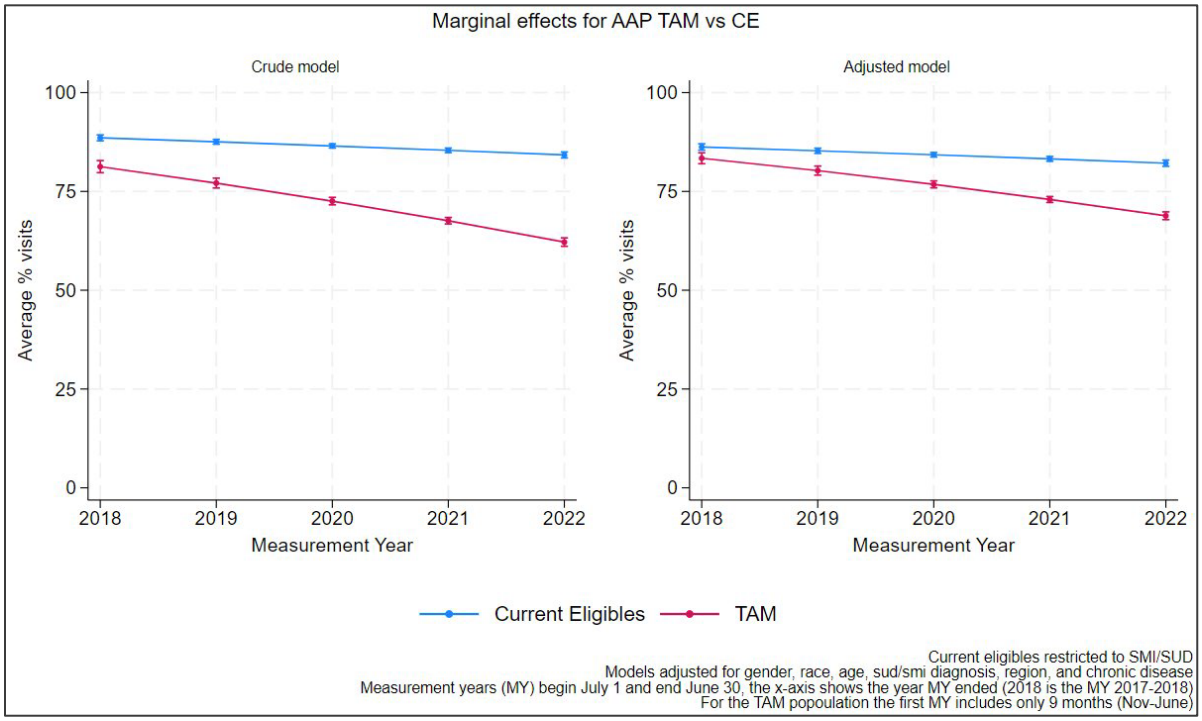
The critical measure of initiation and engagement in SUD treatment (IET) increased significantly for the TAM population relative to the comparison group. The improvement was evident for both treatment initiation (p<.01) and engagement (p<.05). Mental health measures were mixed; there was a statistically significant reduction (p<.01) in readmission after psychiatric hospitalization (REA) for the TAM population relative to the comparison group, but no relative change was seen for follow up after psychiatric hospitalization (FUH). Rates of FUH at 7 and 30 days were relatively flat for both groups.

A significant decrease in adult access to preventive/ambulatory health services was observed for all members, and the decrease was steeper for the TAM population relative to the comparison group (p<.001); the opposite of the hypothesized direction.

Ambulatory and Behavioral Health Care Details

Adult Access to Ambulatory and Preventive Care

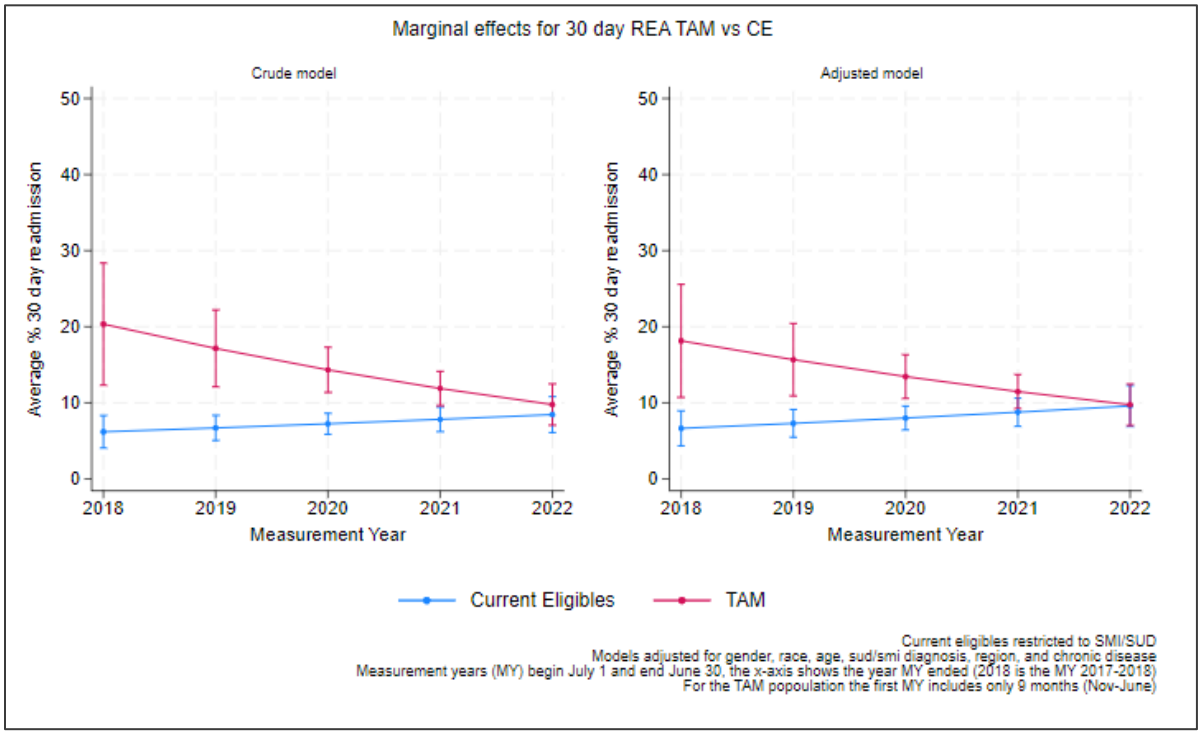
Exhibit 48: Marginal Effects for Adult Access to Ambulatory/Preventive Care, TAM vs CE SMI/SUD



There was a statistically significant decrease ($p<.001$) in AAP for the TAM population compared to the comparison group. The pattern was the same for males and females and across age groups. The decreases in ambulatory care began in 2018 and persisted through 2022.

30-Day All-Cause Unplanned Readmission Following Psychiatric Hospitalization in an Inpatient Psychiatric Facility (REA)

Exhibit 49: Marginal Effects for REA, TAM vs CE SMI/SUD



There was a statistically significant reduction (p<.01) in REA for the TAM population relative to the comparison group. The findings were consistent when stratified by gender and age.

Initiation and Engagement in Treatment for SUD: Initiation

Exhibit 50: Marginal Effects for Initiation of SUD Treatment, TAM vs CE SMI/SUD

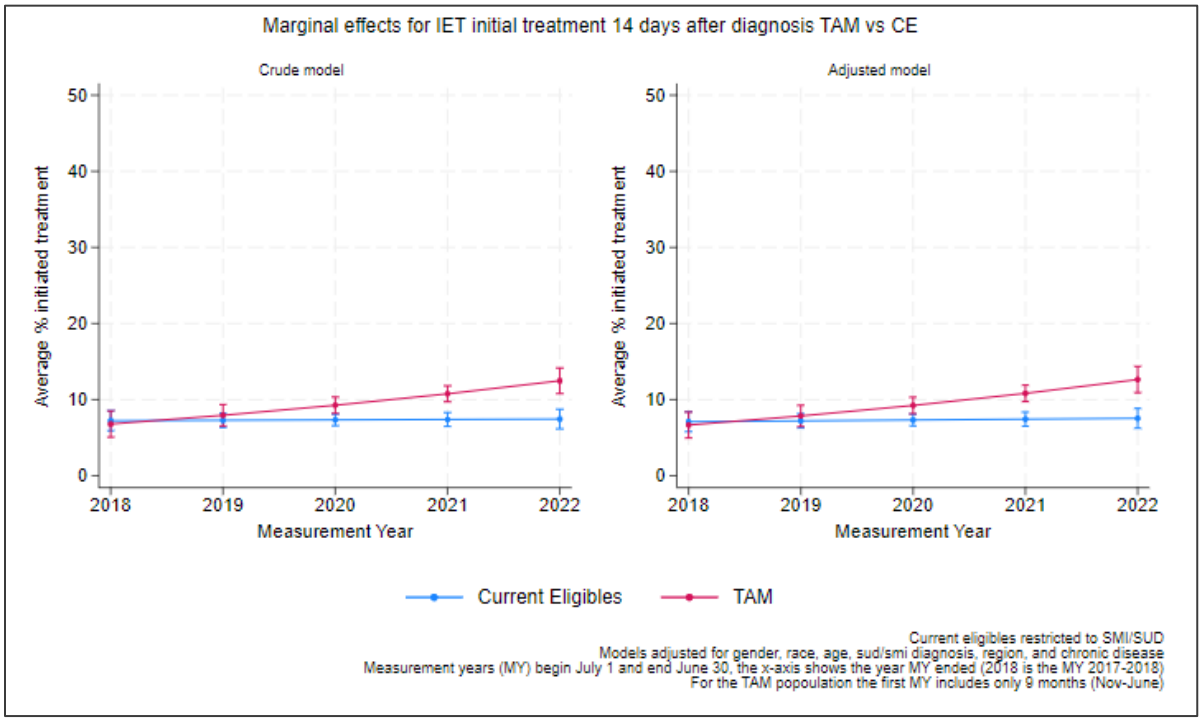
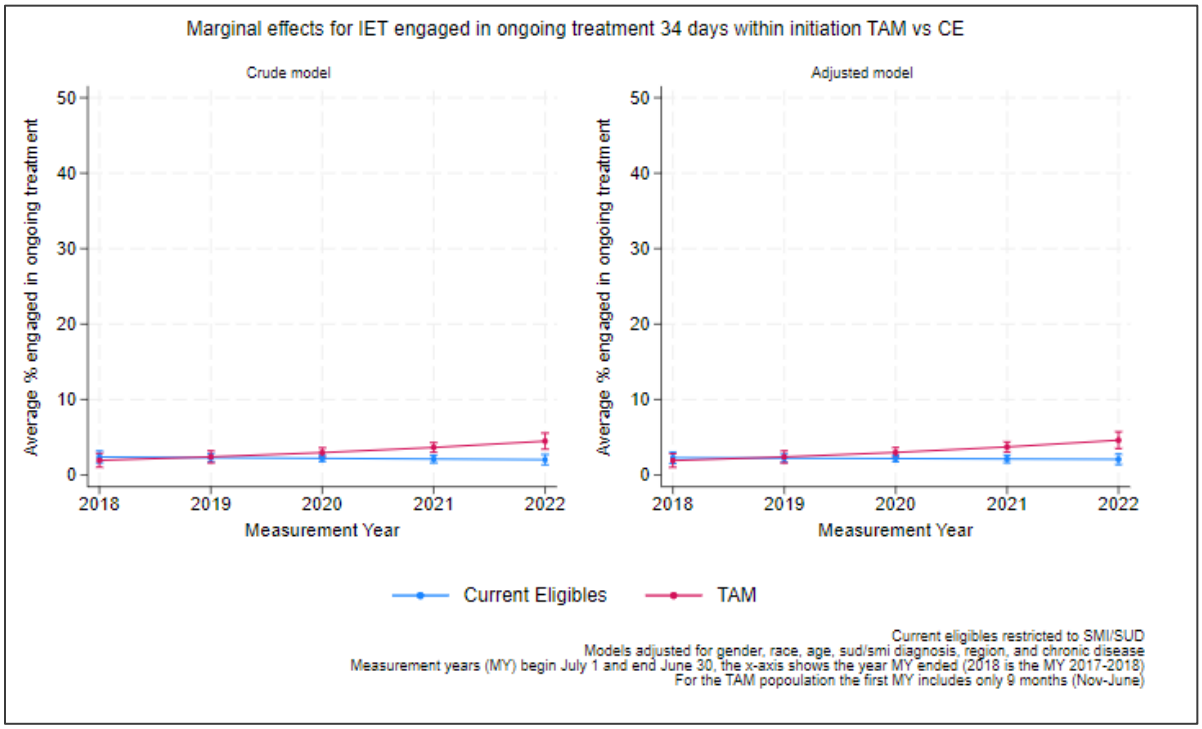


Exhibit 51: Marginal Effects for Engagement of SUD Treatment, TAM vs CE SMI/SUD



The IET odds increased significantly for the TAM population both over time and relative to the comparison group. The improvement was evident for groups experienced statistically significant change of ED utilization ranging from 6-8%, with the largest changes being in both treatment initiation ($p<.01$) and engagement ($p<.05$).

Key Findings

- The TAM population experienced improved engagement in treatment for SUD; indicators are mixed for engagement in other forms of ambulatory and BH care.
    - There was a statistically significant increase in initiation and engagement in treatment for SUD for the TAM population over time, and relative to the comparison group.
    - There was a statistically significant decrease in readmission following psychiatric hospitalization for the TAM population over time, and relative to the comparison group.
    - The rate of seven day follow-up after hospitalization for BH in the TAM population increased when compared to the current eligible population while the odds of 30-day follow-up decreased; neither findings were statistically significant
    - There was a statistically significant decrease in ambulatory care for the TAM population from 2018 – 2022 when compared to the current eligible population.

- The TAM population experienced improved health outcomes, shown by a decrease in utilization of acute care.
    - There was a statistically significant decrease in ED utilization, and ED visits for BH conditions for the TAM populations from 2018 -2022 over time. ED visits also decreased significantly relative to the comparison group.
    - There was a statistically significant decrease in inpatient hospitalization for the TAM population over time from 2018- 2022, though the change was similar to the comparison group.

F.3.4 Exploratory Research Questions

In addition to the outcome-related hypotheses, there were two exploratory research questions (ERQ):

- ERQ 1 - what challenges, successes and lessons learned were experienced by stakeholders during implementation?
- ERQ2 - how did the Demonstration influence integration of behavioral health services for Medicaid members?"

These questions were explored through Key Informant Interviews with 23 Demonstration participants, including community-based providers (3), health plan representatives (13), and state administrators (7).

Adult Expansion increased perceived access

In interviews, interviewees from providers and health plans universally agreed that Utah's Medicaid expansion improved access to health care. Stakeholders noted that many newly eligible Medicaid members

were previously uninsured or underinsured and were not receiving care they needed. One care manager described feeling "…so grateful that now they qualify for Medicaid, because I remember before working with members who were on our individual plans and they … would have super high deductibles and … couldn't really use [their insurance]." Behavioral health providers in particular observed newly covered individuals getting SUD and mental health services they had not previously received. Stakeholders were emphatic that adult expansion coverage enabled many individuals, particularly those with SUD, to receive life-altering and lifesaving services. Clinicians cited the prevalence of overdose deaths among patients with Opioid Use Disorder (OUD) and stressed that expanded eligibility meant that more individuals were able to receive MAT and primary care that kept them alive.

In addition to the impact on individuals, BH providers described systemic change, relating how the expansion enabled them to expand service offerings, add staff, and reduce or eliminate waitlists.

> *It's been incredibly meaningful for the individuals that we serve and it's also allowed us as an agency to significantly expand to meet the community need. So since 2019, we've been able to add additional single adult residential space. We've also been able to double our outpatient capacity and so that has really created an environment where we don't have waiting lists for particularly for the SUD side of our services. (Clinician)*

Care Delivery and Population Health for Utah Medicaid managed care members

Utah's Medicaid health plans all expressed pride in providing person-centered care delivery and care management. All plans discussed the use of CHWs to engage members. Plans varied in their stage of CHW adoption; some CHW programs are new and early stage, while others have been developing for years.

> *I guess it would probably be four or five years ago hiring CHWs and integrating them into a model...that was embedded within our care management team and that has gone over extraordinarily well…what the care management team learned was individuals that they weren't able to engage the care, the community health workers could engage them.(Health Plan)*

Plans vary in how they employ CHWs – directly or through a contracted entity – and in how they deploy them. Some CHWs function as in-person extenders to phone-based nurse case managers. In some cases CHWs may use home visits to build relationships, and others are embedded in clinical sites. The plans that have more mature programs have felt that in-person contact between CHWs and members is more personalized and effective than telephonic outreach. Interviewees were enthusiastic about the value of these allied professionals, and hoped to expand and integrate them further in the future.

Health plans are at varying stages of adopting systematic population health practices. Some, but not all, reported using stratification and quality tools to identify populations with unmet needs. Using data to identify members with hospital readmissions or frequent ED visits was a typical strategy, though none mentioned locating care coordination staff in EDs to connect with such patients in real time.

> *…we use a population health tool. … called decision point and it assesses all the claims data on any member and then it risk ranks …It also shows what they're missing for HEDIS scores. So if they haven't had a mammogram or they haven't had their A1C or they're not maintaining their diabetes visits, the care managers have access to that when they're reaching out to a member. (Health Plan)*

When asked about population health, interviewees from health plans mostly focused on physical health, but indicated they are becoming more cognizant of behavioral and social care needs. Health equity and health-related social needs is an increasing area of interest for plans, though only one health plan interviewee explicitly mentioned health equity unprompted. Some described efforts to better connect members with social services, including the use of technology tools for referrals. Some plans described

working through data challenges around quality improvement for behavioral health, and a lack of measures for addressing health-related social needs.

Challenges in addressing intertwined Behavioral Health and Social Needs

Behavioral health providers noted that even before the PHE, patients with SMI and/or SUD typically required intense support and management, and presented with multiple unmet HRSNs. The most frequently cited barrier to stabilizing individuals in treatment was lack of stable housing. One provider highlighted that about 30-40% of their patients were experiencing major strain in paying for housing, or housing instability in general. According to the provider, "the wait list with all the subsidized housing is so long that it's not meaningful for people who need help," and complained that rising rents have meant that many patients cannot use their Section 8 vouchers because apartments within that range are rarely available.

Clinicians also described a lack of available options for individuals in need of long-term supportive housing or residential programs. Interviewees repeatedly described downward spirals and dire outcomes such as lethal overdose that they felt helpless to prevent due to the impossibility of sustaining treatment for vulnerable individuals without stable housing.

> *...I think if we had more [supportive housing] and safe discharge housing for folks that graduate from residential treatment…and they just had a safe roof over their head and a supportive environment where they didn't have to stress about where do I sleep tonight and how do I get enough food and this bill and that bill, they could just focus on them. (Health Plan)*

In addition to lack of housing, the PHE worsened the longstanding shortage of behavioral health providers. Interviewees described an especially acute shortage in rural areas, and for patients needing specialty care, such as treatment for eating disorders. Stakeholders cited concerns about payment, as a factor exacerbating the shortage of providers available to Medicaid members. Some wished for coverage for room and board, to increase availability of residential treatment programs. Others mentioned the administrative burden of registering as a deterrent for solo or small providers, and suggested that the state could improve access by simplifying the process, and/or providing assistance to interested BH providers.

> *It's like a needle in a haystack trying to find a therapist who has availability to see my member within a couple of weeks. It's really hard to find that. And if we can create an organization that would make it easy for these providers to get on board with Medicaid, I think they would be more willing to do it. And if the reimbursement rates for some of this specialized care were a little bit better, I think that would help too. (Health Plan)*

UMIC and Behavioral Health Integration

Health Plans were highly enthusiastic about the BH carve-in in UMIC plans. Leaders at health plans felt the integrated plans allow them to more effectively manage costs, and they expect to improve case management as well. They described fragmentation of care resulting from the separation of physical and BH coverage. One illustrated the problem with a hypothetical individual who receives ED services and medical detoxification for SUD. The acute care is traditionally covered as a physical health service, but the necessary follow up and ongoing SUD treatment were carved out. In an integrated plan, the emergency episode can trigger the ACO case management to coordinate and track those services.

> *We're just really excited about the opportunity to actually be able to manage that whole person for the integrated population and not have to punt to other managed care organizations and see the Member kind of fall into what usually ends up being a black hole of care coordination. (Health Plan)*

ACO leaders and case managers described PMHPs as essential partners, and wanted to build a collaborative relationship. An interviewee commented, "..we always felt like we couldn't see like half of our body, … our right arm was missing. So it was really exciting when they said we could finally start working together on that."

Still, from the PMHP perspective, the interface with health plans is not yet smooth. PMHP staff cited administrative hiccups including claims incorrectly rejected, and a lack of efficient process for resolving these snags with ACOs. One health plan had established a designated contact for PMHPs' administrative concerns, and PMHPs found this extremely helpful. Multiple stakeholders mentioned prior authorization; while ACOs would prefer more PA, and PMHPs would prefer less, all agreed that standardization across plans was important.

A broader concern was expressed at PMHPs about ACOs' capabilities to manage care coordination for members with BH conditions. PMHP leaders discussed extensive non-billable services they typically provide for their patient population, often related to unmet health-related social needs, or the need for additional staff support to enable patients to participate in treatment. One described their finding that 35% of their clinical staff time was spent on non-billable patient services.

> *...we're going to drug court hearings and working with judges and drug court teams, prosecutors, defense attorneys. None of that is billable. .... They've got a child in DCFS custody and DCFS wants information from us about how the client is doing and wants reports and letters and wants us to attend family meetings to keep these DCFS cases well informed. None of that's billable. (PMHP)*

> *A client needs a food box from [a local food bank]…They could go on their own. They just don't have any transportation and [they are not] going [to go] on the bus to pick up a big food box…so we transport them. But that's not [billable as] case management because they don't need that service because of a mental illness. They need that service because of lack of transportation. (PMHP)*

One health plan interviewee expressed a wish that PMHPs would "reach out to us more" about arranging these kinds of services, while PMHPs did not seem confident in ACOs' offerings, citing their perception that ACOs lack their deep and longstanding relationships with CBOs and social services. Some examples of effective coordination were discussed, in particular one plan which had established monthly meetings for care coordination with a PMHP partner, and shared a dashboard tracking some shared patients.

Given the complex needs of many individuals with longstanding BH conditions, PMHPs felt the ability to provide non-billable services was essential, and most expressed a preference for capitated payment, which allows them to integrate some non-billable supports. PMHPs described the FFS relationship with ACOs as a step backward for this reason, and worried that "the interconnectedness that we have with all the other social services, be it housing, be it DCFS, be it food and care, shelter services, be it the jails, ..might get more fragmented."

Both ACOs and BH providers expressed interest in VBP arrangements. Some interviewees reported engaging in collaborative discussions about possible models:

> *...we meet with the Behavioral Health Association at least once a month. ... we've talked about doing some things, maybe some different payment methodologies with value based payments or some prepayments ...if I understand it correctly [PMHPs previously received] a capitated prepayment amount from the Department of Health, ..they're able to use that chunk of money basically in any way that they want ..[such as] to help with housing ..they can have supervisors oversee them and make sure that they're getting medications and going to their appointments and those kind of things. I think they're using that for that ..if they can do that more power to them. (Health Plan)*

Others described their own organization as interested in "a creative financing model," but hadn't connected with potential partners about possible arrangements. The perception that "there are a lot of services that .., our community is really in need of that **just can't be stood up with traditional funding models or sustained with traditional funding models**" appeared to be shared across stakeholder organizations.

Delivering care through the PHE and unwinding

In 2020, the onset of the Covid-19 PHE forced health plans to pause many planned care delivery initiatives such piloting or expanding use of CHWs, and to dramatically change their strategies for enrolling and communicating with members. Planned outreach based in clinics, offices, and other in-person settings was put on hold. Plans and providers described a multitude of care delivery challenges, including patients' fear of going to the doctor, avoidance of dental care, difficulty arranging in-home services for members who needed caregivers, and bumpy transition of care. Disruptions in treatment for SMI and SUD were a major concern. Health plans described an increased focus on social determinants of health, recognizing that unmet HRSN factors would be exacerbated during the pandemic and spiral into further issues for patients. Thus, plans and providers created multiple forms of virtual outreach to patients and increased focus on populations such as disabled individuals and SUD patients who sought behavioral health care. Knowing the increase in food insecurity at this time, plans and providers also collaborated with the existing CHWs in their system to help deliver food from the local food bank to patients who had COVID and could not leave their homes.

Developing and expanding practices for telehealth was a key focus through the PHE. Most stakeholders indicated that they had some experience with telehealth before the PHE, but all described expanding their use of phone and video-based care, and using it in new ways. As the Covid-19 vaccine became available, plans and providers focused on strategies to roll out the vaccine to as many patients as possible. Stakeholders described trying a variety of strategies for vaccine education, sometimes offering incentives, and for making vaccines accessible.

> *We did a lot of work around making sure that they understood about the COVID vaccine and did outreach to especially our disabled members ….We had some people that had… bad food insecurities, couldn't leave their homes. They had COVID, our community health workers would help us get food delivered from the local food bank. So we did a lot around the social determinants of that time… the need went up.* (Provider)

At the time of interviews (2022), health plans indicated they were beginning to restart the care delivery initiatives that had been shelved in 2020. They noted that the unusual patterns of service utilization during the PHE complicated efforts to track quality and cost. The reduced churn of members due to the PHE continuous enrollment policy was cited as a huge positive, and preparing for PHE unwinding was a priority concern. Some plans expressed concern about members failing to complete the eligibility redetermination process, noting that it could be confusing and cumbersome particularly for disadvantaged individuals. Stakeholders expressed a hope that administrative processes and paperwork for members would be minimized to reduce loss of coverage. Health plans prioritized reaching out to members to encourage them to update their contact info and to notify them of upcoming determinations. Some described data-driven approaches, such as the plan that stated that they were working on "predictive modeling to identify individuals who are at risk of losing eligibility."

Telehealth

In 2020, as the PHE limited the ability to provide services in-person, health plans and providers dramatically scaled up their use of telehealth, added new use cases, and took advantage of more flexible rules. Health plans and providers saw telehealth as an effective way to offer many services when in-person care was not possible and described a wide range of creative uses of telehealth for routine care. Some described sending blood-pressure cuffs to patients, enabling members who are pregnant or are managing hypertension to monitoring themselves at home in consultation with a clinician.

> *One way we have been able to use telehealth is when we are in a situation within our residential settings where we have individuals or an entire program that's on quarantine. We've been able to continue to provide services to them via telehealth. The therapist may just be sitting downstairs in their office and meeting with the individuals who were in a dorm room running a group. (Health Plan)*

All stakeholders considered telehealth an essential tool during the PHE and believed it should and will continue going forward, and all consider coverage for telephone-only services to be critical. Telephonic services were mentioned as highly valuable for connecting patients with resources, and seen as less disruptive to patients' schedules. Most providers expressed reservations about telehealth for certain services or populations, and felt that best practices and appropriate use cases should be better defined over time. Some stakeholders expressed concern that telehealth might be substituted for more effective in-person services to serve provider convenience, rather than patient needs.

Telehealth was seen as ideal for many BH patients who need ongoing psychotherapy or medication maintenance, or who have difficulty going to facilities due to anxiety or agoraphobia. Stakeholders also described multiple populations for whom they saw telehealth improving access to care, and who could benefit from ongoing telehealth offerings, including rural members, older members who do not drive or others without transportation, and low-wage workers who could not afford time off work. Stakeholders noted that worries about missing work is a significant barrier to attending appointments for many Medicaid members. One interviewee highlighted the flexibility on location and timing, noting that telehealth allows patients to "have an appointment virtually from their home or…from their job on their lunch break.".

Cross-stakeholder collaboration

Strikingly, multiple stakeholders described a positive working relationship with the state Medicaid agency, and a history of collaboration among stakeholders, including the health plans. Some mentioned PHE-related meetings involving the four plans and the state as an example of valuable cross-institution efforts. Others described some pre-pandemic collaboration related to tracking of high-need patients across EDs. Decision makers in both provider and health plan sectors expressed openness to future collaboration to support care coordination, telehealth best practices, and development of payment models, and welcomed the idea of the state acting as a convener for these efforts.

> *During COVID when we were trying to get vaccine rates up we would have every two week meetings with the health department and all the ACOs and [state staff] would present, 'This is the numbers where you guys are at with your vaccines ..' and we'd say well what's [another ACO] doing ..how can we boost our numbers?' and so we all came together and learned from each other. (Health Plan)*

Key Findings

- Qualitative observations from providers and health plans consistently found perceptions of improved access due to expansion.
- Health plans were forced to pause some planned care delivery initiatives during the PHE, but are enthusiastic about providing integrated care.
- BH providers stressed the need for flexibility to provide non-billable services for members with BH conditions.
- Stakeholders expressed concern about loss of coverage for Medicaid members during PHE unwinding, and discussed efforts to assist members in retaining coverage.
- Stakeholders discussed their experience with the expansion of telehealth during the PHE. All felt that telehealth will remain a valuable tool for care delivery, though not appropriate for all populations and services.
- Stakeholders described positive recent experiences of cross-institution and cross-sector collaboration, and expressed interest in further collaboration to support care delivery, including development of VBP models to support integrated BH care.

F.4 MEMBER EXPERIENCE; HYPOTHESIS 4

Hypothesis 4: The Demonstration will result in maintained or improved member experience and satisfaction.

- Primary research question 4.1: Did UMIC members report member experience and satisfaction equal to or better than ACO members?
- Primary research question 4.2: Did member experience and satisfaction change over time?

F.4.1 CAHPS®

The 2022 CAHPS® assessment, administered by the health plans to their Medicaid members, sought to understand consumer/patient perceptions of various composites, including getting needed care, getting care quickly, how well doctors communicate, and customer service experiences.

The respondents of the 2022 CAHPS® assessment cover a wide range of demographics. In both the ACO plans and the UMIC plans, there were more female than male respondents and the majority of the respondents were non-Hispanic White. ACO plan respondents were more likely to be in the 25 – 44-year-old-group compared to the UMIC plan respondents which were more likely to be in the 45 – 64-year-old age group.

A large majority of respondents indicated that they usually or always got needed care (83%) and were able to get care quickly (81%). Even higher percentages reported usually or always experiencing good communication with doctors (92%) and good customer service (95%).

ACO and UMIC plan members gave very similar responses to all questions; no significant differences were observed between the plan types, indicating that UMIC plans maintained the high levels of member satisfaction as ACO plans.

Exhibit 52: Getting Needed Care

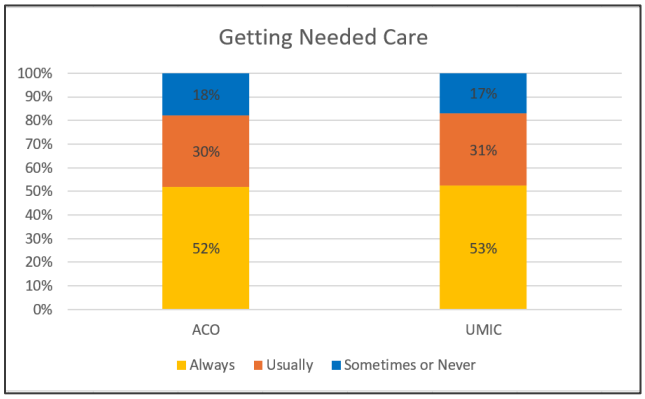


Exhibit 53: Getting Care Quickly

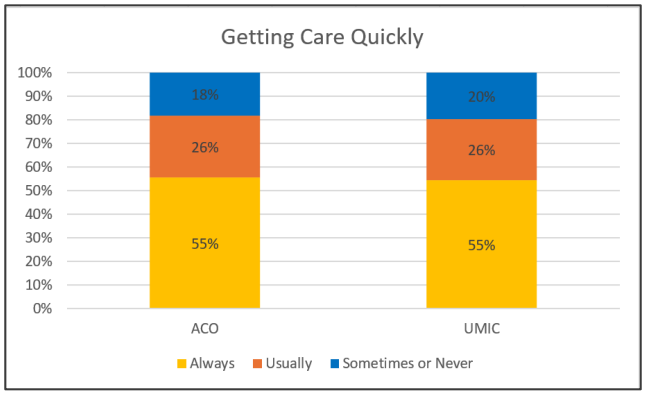


Exhibit 54: How Well Doctors Communicate

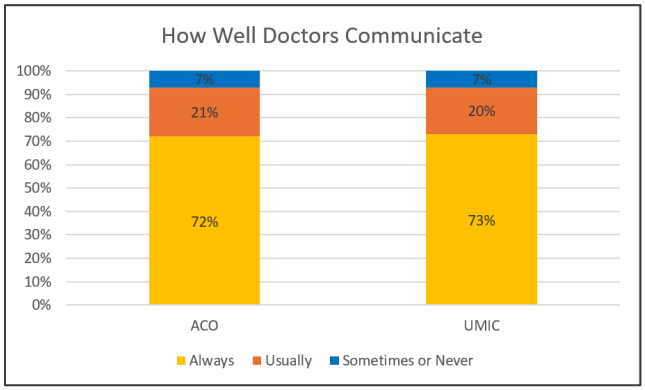
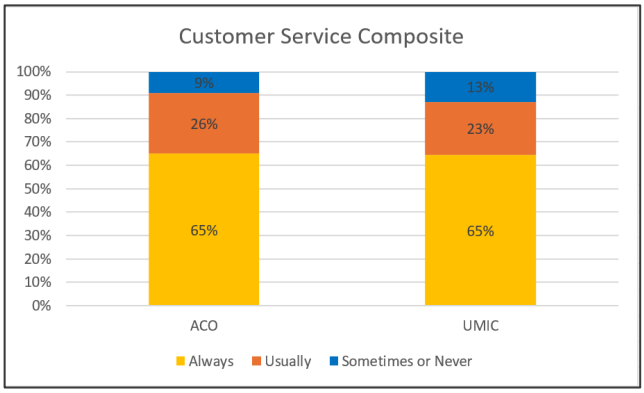


Exhibit 55: Customer Service Composite



F.4.2 Grievances

ACO Grievance Data

ACO plans began reporting grievance data in July 2020 (DY4 – Q1). In each month from July through December 2020, individuals in the current eligible Demonstration group submitted more grievances than individuals in the adult expansion group. In those 6 months, current eligibles submitted a total of 169 grievances, whereas adult expansion submitted a total of 97 grievances. The month with the highest number of grievances was December for both groups, potentially meaning that as the year progressed, individuals became more familiar with the grievance submission process, which may have then contributed to a higher number.

ACO grievance data for the second half of DY4 (January to June 2021) is not available, so it is unclear whether grievances have increased substantially from DY4 to DY5.

The pattern of difference in grievances between Demonstration groups continued in DY5, with more grievances submitted by CE members than AE. The DY5 total for current eligibles was 276, whereas adult expansion was 178. Despite having more than twice as many AE members enrolled, health plans received 35% fewer grievances from AE members. This may indicate that AE members are having fewer negative experiences, and/or that they are newer to the plans, and less familiar with the grievance process.

Constituent Affairs Grievance Data

Grievance data received by Utah's Medicaid Constituent Affairs Representative began to be reported at the start of DY4 – Q3 (January 2021) and continued until the end of DY5 – Q4 (June 2022). Constituent Affairs received a total of 20 grievances by the end of DY4, and only 8 in all of DY 5. A majority of these (86%) were from AE members.

Most of the 24 grievances among the adult expansion group were regarding medications, billing, and issues with obtaining medical, dental, and mental health coverage. These included examples of included difficulty obtaining prescriptions due to third party liability and not using an approved provider as well as inability to find and/or access a specialist for specialized care services such as behavioral health.

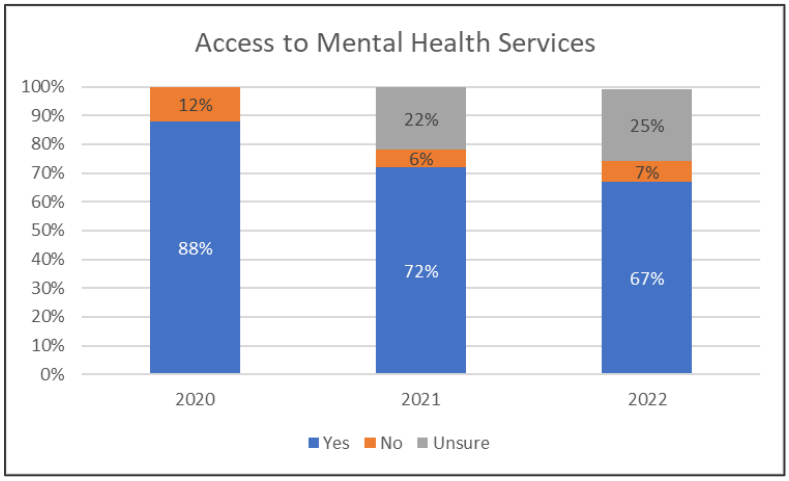
F.4.3 Custom Member Survey

A custom member survey, designed and fielded by the University of Utah, was conducted annually in the final three years of the Demonstration. A purchased panel (from Qualtrics) of Medicaid members received the survey. Approximately 400 responses were received each year (2020 n=420; 2021 n=397; 2022 n=404) The following four questions were analyzed to gauge access to mental health services, access to community resources, access to counseling treatment, and the extent to which treatment helped beneficiaries throughout 2020 to 2022.

1. Are mental health services covered as part of your plan?
2. If you felt depressed, needed assistance with drug or alcohol use, or mental or emotional illness are there places in your community you could go to get the help needed?
3. In the last 12 months, when you or a member of your household needed counseling, treatment, or medicine, how often were you or a family member able to see someone as soon as needed?
4. In the last 12 months, how much were you or a member of your household helped by counseling, treatment, or medicine received?

Q1: Are mental health services covered as part of your plan? (Y/N/Unsure)

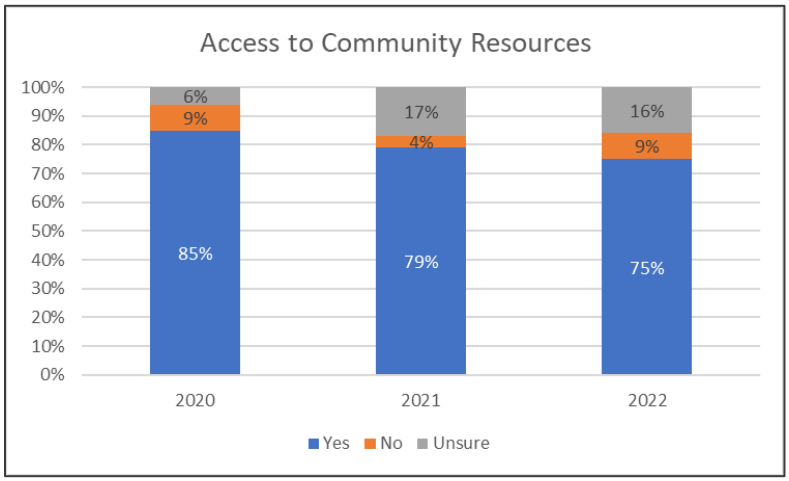
Exhibit 56: Access to Mental Health Services



The majority of members indicated "yes" when asked if mental health services are covered as part of their plan for each of the years, with 2020 having the highest percentage (88%). Over the three years, the number of "yes" responses decreased while the number of "unsure" responses increased. This suggests that while members may have had coverage for mental health services, there was decreased awareness of their benefits or how to access them.

Q2: If you felt depressed, needed assistance with drug or alcohol use, or mental or emotional illness are there places in your community you could go to get the help needed? (Y/N/Unsure)

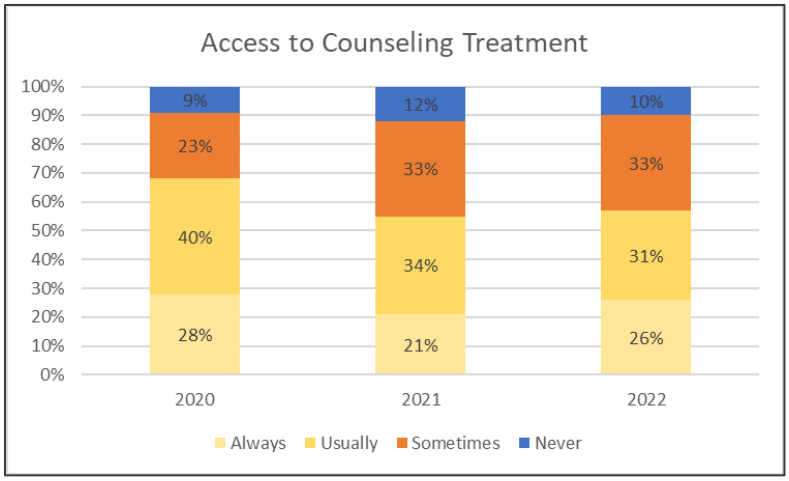
Exhibit 57: Access to Community Resources



The majority of members responded "yes" when asked if there were places within their community to receive assistance with behavioral health concerns, with 2020 having the highest percentage (85%). Over the three years, the number of "yes" responses decreased while the number of "unsure" responses increased. These data suggest that over time, members may have had a change in their need of these community resources or that they may have not been aware of the community resources available.

Q3: In the last 12 months, when you or a member of your household needed counseling, treatment, or medicine, how often were you or a family member able to see someone as soon as needed? (Never, Sometimes, Usually, Always, Likert Scale from 1-4)

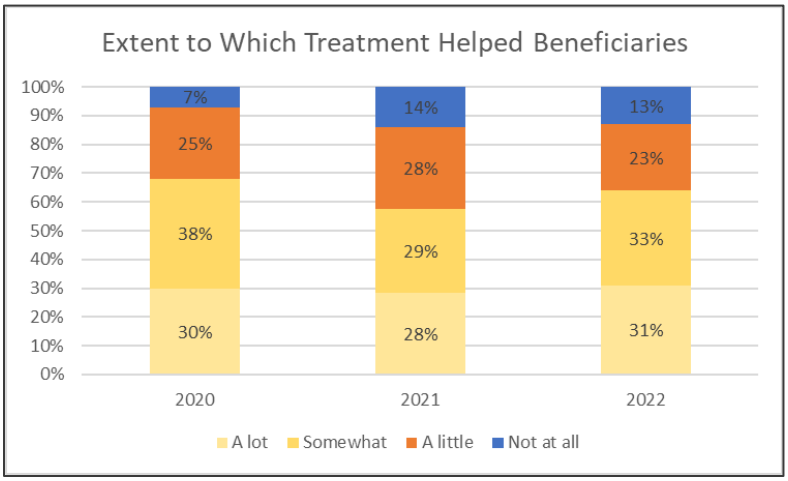
Exhibit 58: Access to Counseling Treatment



The percentage of members who reported that they or their family members were "usually or always" able to receive counseling, treatment, or medicine as soon as needed decreased from 68% in 2020 to 55% in 2021 and 57% in 2022. Across all three years, the number of members that reported to "never" have access when needed ranged from 9% (2020) to 12% (2021). This indicates members perceive slight decreases in timely access over time.

Q4: In the last 12 months, how much were you or a member of your household helped by counseling, treatment, or medicine received? (Not at all, a little, somewhat, a lot, Likert 1-4)

Exhibit 59: Extent to Which Treatment Helped Beneficiaries



A majority of members reported that treatment for themselves or a household member was "somewhat" or "a lot" helpful of the time for each of the three years. The distribution of responses stayed relatively similar throughout the years, but it is important to note that the percentage of enrollees responding with "Not at all" doubled from 2020 to 2021 and stayed close to that percentage for 2022 (7% to 14% to 13%), suggesting an increase over time in enrollees feeling that treatment was not helpful.

Key Findings

- Members responding to the CAHPS survey reported a high level of satisfaction with their plans
  - Most members answered usually or always to questions about Getting Needed Care, Getting Care Quickly, How Well Doctors Communicate, and Customer Service
  - Satisfaction with UMIC plans was the same as ACO plans
- A majority of members responding to the custom member experience survey reported that they have access to mental health care, but the fraction who reported good access declined each year from 2020-2022.
  - The fraction of members who are unsure whether their health plan covers mental health services jumped from insignificant in 2020 to 22% in 2021, and 25% in 2022, suggesting an increase in confusion about benefits.

F.5 SMI AND SUD DEMONSTRATIONS; HYPOTHESIS 5

Hypothesis 5: The SMI and SUD Demonstrations increased access to appropriate treatment.

F.5.1 Population Size

The number of enrolled individuals diagnosed with SUD only, SMI only, and both SUD and SMI increased throughout the Demonstration (Exhibit 56). Over the five year Demonstration period, the number of members with either or both diagnoses increased by 45%, with the largest increase seen in members with SUD. Individuals diagnosed with both SMI and SUD increased by 34% from DY 1 to DY5, but accounted for a consistent fraction of this population through the Demonstration – one-quarter of the total, and one-half of those with SMI.

Exhibit 60: Population Size

Demonstration Year	SUD only	SMI only	SUD and SMI	Total
DY1 (2017-2018)	24,864	13,401	12,630	50,895
DY2 (2018-2019)	29,425	13,686	14,329	57,440
DY3 (2019- 2020)	34,757	14,335	16,011	65,103
DY4 (2020-2021)	38,571	14,974	15,187	70,446
DY5 (2021-2022)	41,574	15,187	16,943	73,704
% Increase	*67%****	*13%***	*34%***	*45%****

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

F.5.2 Access to Appropriate Treatment; Medicaid Members with SMI/SUD Diagnoses

- Primary research question 5.1: Did the number of individuals receiving services for SMI and/or SUD increase over time?

For this analysis, individuals were considered to have an SUD or SMI if a diagnosis was observed at any time during the Demonstration, in order to capture the unmet needs of individuals who have not yet, or not recently, received any care for their condition. As seen in Exhibit 57, The number of individuals receiving any treatment in a measurement year increased over the five year Demonstration for both SUD (160%) and SMI (39%). Despite the large increase in the number of members with SMI/SUD diagnoses, the percent of these individuals receiving any treatment for SUD in the measurement year increased by nearly 80% over the five year period to 32.3%, and the percent receiving any SMI treatment remained largely constant at 13-15%.

Exhibit 61: Members Receiving Treatment

Demonstration Year	Total Members with SMI/SUD	Members Receiving any SUD Treatment	%of SMI/SUD population receiving SUD Treatment	Members Receiving any SMI Treatment	%of SMI/SUD population receiving SMI Treatment
DY1 (2017-2018)	50,895	9,162	18.0%	7,208	14.2%
DY2 (2018-2019)	57,440	13,312	23.2%	7,879	13.7%
DY3 (2019- 2020)	65,103	18,787	28.9%	9,418	14.5%
DY4 (2020-2021)	70,446	21,993	31.2%	10,096	14.3%
DY5 (2021-2022)	73,704	23,835	32.3%	9,995	13.6%
% Increase over 5 years of Demonstration	*44.8%***	*160%***	*79.6%***	*39%**	*-4.2%*

*p<.05, **p<.01, ***p<.001

- Primary research question 5.2: Did ED visits for BH conditions decrease among individuals with SMI and/or SUD diagnoses over time?
- Primary research question 5.3: Did engagement in SUD treatment increase among individuals with SUD diagnoses relative to baseline?
- Primary research question 5.4: Did follow up following hospitalization for psychiatric treatment increase among individuals with SMI relative to baseline?

Exhibit 62: Time-series Regression Models: SMI/SUD

	Crude	CI	Adjusted	CI
ED visits for BH conditions (EDU BH)				
DY1	1	[1,1]	1	[1,1]
DY2	1.17**	[1.05,1.29]	1.17**	[1.06,1.30]
DY3	1.20***	[1.10,1.31]	1.22***	[1.12,1.34]
DY4	0.93	[0.85,1.01]	0.95	[0.88,1.04]
DY5	0.77***	[0.71,0.84]	0.81***	[0.74,0.88]
Observations			*84744*	
Initiation of treatment for SUD (IET-I)				
DY1	1	[1,1]	1	[1,1]
DY2	1.25	[0.91,1.73]	1.25	[0.91,1.72]
DY3	1.44*	[1.09,1.90]	1.44*	[1.09,1.90]
DY4	1.28	[0.97,1.68]	1.28	[0.97,1.67]
DY5	1.32*	[1.01,1.73]	1.33*	[1.01,1.74]
Observations				
Engagement in treatment for SUD (IET-E)				
DY1	1	[1,1]	1	[1,1]
DY2	1.31	[0.76,2.24]	1.32	[0.77,2.27]
DY3	1.24	[0.77,1.99]	1.27	[0.79,2.06]
DY4	1.15	[0.72,1.83]	1.18	[0.74,1.89]
DY5	1.34	[0.84,2.12]	1.38	[0.86,2.19]
Observations				
7-day Follow up after psychiatric hospitalization				
DY1	1	[1,1]	1	[1,1]
DY2	0.85	[0.53,1.36]	0.86	[0.54,1.37]
DY3	0.87	[0.59,1.29]	0.92	[0.62,1.36]
DY4	0.97	[0.66,1.41]	1.04	[0.71,1.51]
DY5	0.88	[0.60,1.28]	0.95	[0.65,1.38]
Observations			*5107*	
30-day Follow up after psychiatric hospitalization				
DY1	1	[1,1]	1	[1,1]
DY2	0.65	[0.39,1.08]	0.67	[0.40,1.11]
DY3	0.50**	[0.33,0.77]	0.54**	[0.35,0.83]
DY4	0.64*	[0.42,0.97]	0.70	[0.46,1.06]
DY5	0.54**	[0.36,0.82]	0.60*	[0.40,0.91]
Observations			*5107*	

Exponentiated coefficients; 95% confidence intervals in brackets
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Coefficient for each year indicates the difference between that year and DY1.

ED visits for BH conditions among individuals with SMI/SUD was used to assess health outcomes, on the expectation that improved access to appropriate treatment for SMI and SUD should reduce the need for ED visits for these conditions. ED-BH visit rates initially increased, but then went down in DY4 and DY5,

an overall decrease of nearly 20% from DY1 to DY5. (Exhibit 56). The pattern of change was seen across demographic subgroups, though higher rates of ED-BH visits were associated with male gender, urban residence, younger age group, and the presence of chronic disease.

Initiation and engagement in treatment for SUD (IET) was used to assess access to and engagement in treatment for SUD. This measure assesses the rate of beginning treatment after a new diagnosis of SUD. Odds of initiating treatment within 14 days of diagnosis fluctuated during the Demonstration period, ending 33% higher in DY5 than DY1. Odds of engaging in ongoing treatment within 34 days of initiation visit did not change significantly during the Demonstration period. Lower odds of initiation were associated with female gender and frontier residence.

For individuals with SMI, follow up after psychiatric hospitalization was used to assess care-coordination and engagement in services. Odds of follow up within seven days of discharge did not change significantly during the Demonstration period, and odds of follow up within 30 days fluctuated, ending 40% lower in DY5 than DY1. Higher odds of follow up were associated with female gender and rural residence.

F.5.3 Access to Appropriate Treatment; Low-income Utah Residents

National Survey of Drug Use and Health (NSDUH) Data

The IE analyzed data from the National Survey of Drug Use and Health, conducted annually by the Substance Abuse and Mental Health Services (SAMHSA) to evaluate whether the SUD and SMI Demonstrations increase access to appropriate treatment for Utah residents during the Demonstration period. The IE utilized the synthetic control method to create a "synthetic Utah" which represents Utah in the absence of the Demonstration, and accounts for demographic and other differences between Utah and other states.

- Primary research question 5.5: Did utilization of any mental health service increase among low-income residents, relative to comparison states?
- Primary research question 5.6: Did the number of individuals needing but not receiving SUD treatment decrease among low-income residents, relative to comparison states?

Exhibit 63: Summary of Adjusted Changes in Self-Reported Receipt of Mental Health Services and Needing But Not Receiving Treatment for SUD

Overall changes from baseline (2010 – 2015) to the Demonstration (2017 - 12019)[1]			
	Outcome[2] (%)	**Difference (95% CI)[3]**	**P-Value[4]**
Received Mental Health Services in the Past Year			
Utah	18.8	1.4 (0.5, 2.2)	0.0292
Comparison	17.5	--	--
Needed but Did Not Receive Treatment for SUD at a Specialty Facility in the Past Year			
Utah	5.8	-0.7 (-0.9. -0.5)	0.0594
Comparison	6.5	--	--

[1] Analysis of data from the 2010-2019 National Survey on Drug Use and Health (NSDUH). The table displays synthetic control estimates of percentage-point changes in outcomes during 2017-2019. All states were included in the donor poor regardless of Medicaid expansion status, except those that expanded during the outcome period (ID, NE, OK, MO). [2]Mean value during outcome period. [3]Taylor series linearization is used to identify whether the changes observed in Utah are statistically different from the control. [4]Permutation testing involves iteratively reassigning treatment status to each control state and then re-running the analyses to generate placebo effect estimates. This step identifies whether the observed effect in the treated state is likely to have occurred by chance given the empirical distribution of placebo effect estimates.

In 2017---2019, an average of 18.8% of respondents to the NSDUH in Utah reported receiving mental health services in the past year, compared to a predicted 17.5% for "synthetic Utah". The additional 1.4% increase in mental health services can be attributed to the Demonstration.

In 2017—2019, an average of 5.8% of respondents in Utah reported needing but not receiving treatment for substance use at a specialty facility in the last year, compared to the predicted 6.5% for "synthetic Utah." The decrease of 0.7% in needing but not receiving treatment can be attributed to the Demonstration.

Key Findings

- Compared to other states, Utah increased access to SUD and SMI treatment over the 5-year Demonstration period, and the difference can be attributed to the Demonstration.
  - The percent of Utahns who reported that they received mental health services in the past year increased more than in comparison states,
  - The percent of Utahns who reported that they needed, but did NOT receive, SUD treatment in the past year decreased more than in comparison states,
- The number of Utah Medicaid members with SMI and SUD diagnoses increased by 44% during the Demonstration.
- For Utah Medicaid members with SMI and SUD diagnoses, access to SUD treatment improved, but access to SMI treatment did not.
  - The percent of these members receiving any service for SUD in the past year increased; the percent who received any service for SMI did not.
  - Rates of initiation and engagement in treatment for SUD increased.
  - Rates of follow up after psychiatric hospitalization did not increase.
- Overall health outcomes improved for members with SMI/SUD
  - Rates of ED visit for BH conditions decreased significantly.

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F.6 SMI AND SUD DEMONSTRATIONS; HYPOTHESIS 6 COST

Hypothesis 6: The SMI and SUD Demonstrations stabilized or reduced cost of care for these populations.

SUD Demonstration target group members were identified based on claims and encounters with an SUD diagnosis and/or procedure code, and/or pharmacy claims and encounters with a dispensed drug for Medication Assisted Treatment (MAT), at any time during the five-year Demonstration.

There are three levels of cost analyses:

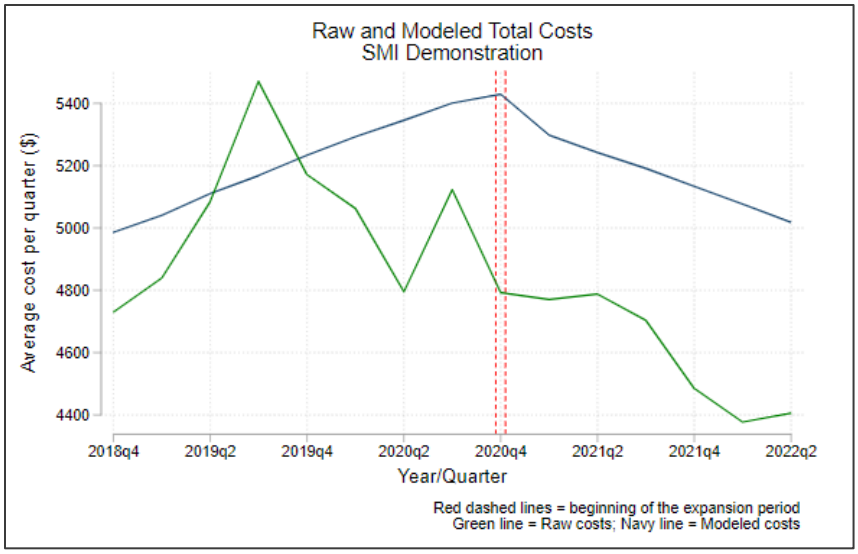
I. Total Cost of Care = Total Medicaid Costs (claims and managed care capitation payments) + federal costs (Total Medicaid Costs * the Utah specific Federal Financial Participation rate)
II. Costs related to the diagnosis and treatment of SUD = SUD-IMD costs + other SUD costs + non-SUD costs
III. Source of care cost drivers = inpatient (non-IMD) + non-ED outpatient, + ED outpatient + pharmacy

Given the lack of a comparison group, an interrupted time series model was used to estimate the linear effects of the Demonstration. Separate generalized linear models [GLM] were used to examine the change in cost per member per month (PMPM) between baseline and expansion for each cost outcome.

SMI Demonstration Cost Analysis

- Primary research question 6.1: Did the total cost of care for individuals with SMI diagnoses change over time?
  - Subsidiary research question 6.1.a: Did costs related to the diagnosis and treatment of SMI change over time? (SMI-IMD costs + other SMI costs + non-SMI costs)?
  - Subsidiary research question 6.1.b: What types of care (inpatient + non-ED outpatient, + ED outpatient + pharmacy, + long-term care) are the primary drivers of the cost of care for the SMI population?

Exhibit 64: Total Cost of Care for individuals with SMI diagnosis



The trend in total cost of care PMPM for individuals with SMI diagnoses (Exhibit 59) following the implementation of the demonstration was positive (ME=114.61, p<.001), indicating significantly decreasing costs, relative to the pre-implementation trend. Prior to the implementation, total costs were declining by an average of $64.80 per quarter (p,>001). Following implementation, costs declined dramatically, an average of $935.05 per quarter (p<.001). A positive trend (ME=100.63, p<.001) is also seen in costs specifically for the diagnosis and treatment of SMI. The source of care driver analysis (Exhibit 60) reveals that the positive trends in ED costs (ME=154.90, p<.001) and inpatient (non-IMD) costs (ME=449.07,p<.05) are the primary drivers of the decrease in total cost of care for individuals with an SMI diagnosis.

Exhibit 65: Interrupted Time-Series for Total Cost of Care and Costs for Diagnosis and Treatment of SMI

	Total costs		Costs SMI dx/tx	
Quarter	-64.80***	(11.739)	-41.51***	(9.010)
Period:				
Baseline	Ref	-	Ref	-
Demonstration	-935.05***	(165.797)	-815.98***	(124.943)
Baseline*Quarter	Ref	-	Ref	-
Demonstration*Quarter	114.61***	(15.198)	100.63***	(11.486)

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Exhibit 66: General Linear Models for Source of Care Drivers of Total Cost of Care

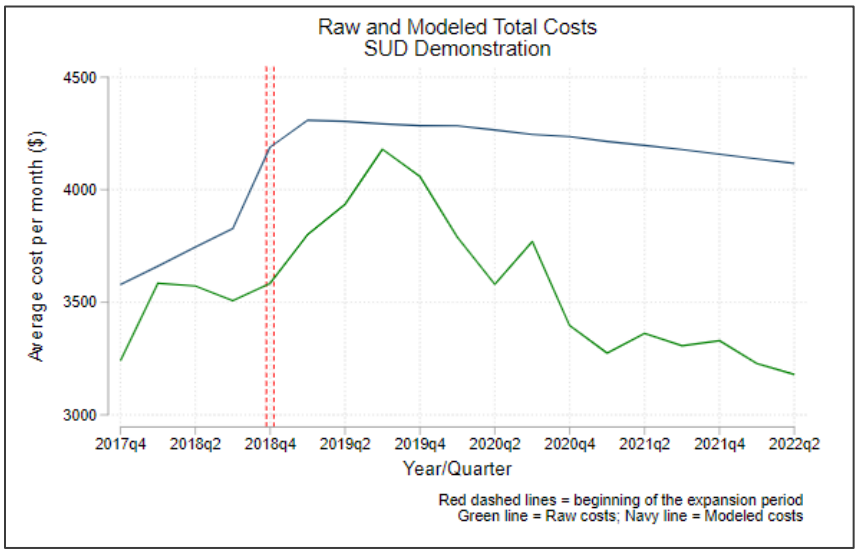
	ED costs		IP costs (non-IMD)		RX costs		non-ED OP costs	
Quarter	-96.72***	(21.903)	-208.64	(143.437)	32.40***	(3.449)	-0.91	(3.009)
Period:								
Baseline	Ref	-	Ref	-	Ref	-	Ref	-
Demonstration	-1623.50***	(298.232)	-5140.32**	(1964.509)	176.58***	(47.459)	31.87	(39.941)
Baseline*Quarter	Ref	-	Ref	-	Ref	-	Ref	-
Demonstration*Quarter	154.90***	(25.453)	449.07*	(177.319)	-4.03	(5.362)	2.32	(3.950)

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

SUD Demonstration Cost Analysis

- Primary research question 6.2: Did the total cost of care for individuals with SUD diagnoses change over time?
  - Subsidiary research question 6.2.a: Did costs related to the diagnosis and treatment of SUD change over time? (SUD-IMD costs + other SUD costs + non-SUD costs)?
  - Subsidiary research question 6.2.b: What types of care (inpatient + non-ED outpatient, + ED outpatient + pharmacy, + long-term care) are the primary drivers of the cost of care for the SUD population?

Exhibit 67: Total Cost of Care for individuals with SUD diagnosis



The trend in total cost of care PMPM for individuals with SUD diagnoses (Exhibit 61) following implementation of the demonstration was positive (ME=96.70, p<.001), indicating significantly decreasing costs, relative to the pre-implementation trend. Prior to the implementation, costs were declining an average of $31.49 per quarter (p<.001). Following the implementation, costs declined dramatically, to an average of $898.68 per quarter. A positive trend (ME=43.96, p<.01) is also seen in costs specifically for the diagnosis and treatment of SUD. The source of care driver analysis (Exhibit 62) shows significantly positive trends in pharmacy costs (ME=10.85, p<.01) and non-ED outpatient costs (ME=14.53, p<.05). Prior to implementation, pharmacy costs were increasing an average of $7.59 per quarter. Following the

implementation, pharmacy costs decreased an average of $497.97 per quarter. Non-ED outpatient costs were declining prior to the implementation an average of $2.21 per quarter. Following the implementation, non-ED outpatient cost decreased an average of $42.14 per quarter.

Exhibit 68: Interrupted Time-Series for Total Cost of Care and Costs for Diagnosis and Treatment of SUD

	Total costs		Costs SUD dx/tx	
Quarter	-31.49***	(3.807)	-7.92**	(2.910)
Period:				
Baseline	Ref	-	Ref	-
Demonstration	-898.68***	(81.405)	-497.97***	(62.748)
Baseline*Quarter	Ref	-	Ref	-
Demonstration*Quarter	96.70***	(20.084)	43.96**	(15.669)

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Exhibit 69: General Linear Models for Source of Care Drivers of Total Cost of Care

	ED costs		IP costs		RX costs		non-ED OP costs	
Quarter	12.68*	(5.277)	115.84*	(56.153)	7.59***	(1.076)	-2.21	(1.191)
Period:								
Baseline	Ref	-	Ref	-	Ref	-	Ref	-
Expansion	-245.84*	(115.837)	1535.01	(1236.096)	-121.14***	(19.450)	-42.14	(23.823)
Baseline*Quarter	Ref	-	Ref	-	Ref	-	Ref	-
Expansion*Quarter	2.70	(31.937)	-574.05	(339.060)	10.85*	(4.368)	14.53*	(5.961)

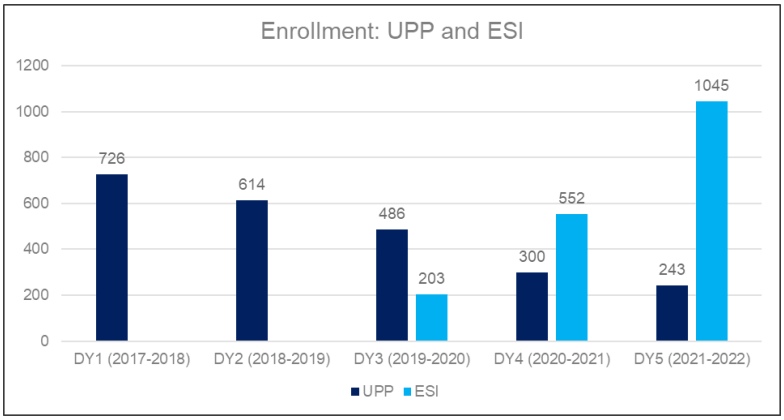
Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

F.7 SMALLER DEMONSTRATION POPULATIONS; HYPOTHESIS 7

F.7.1 Utah Premium Partnership for Health Insurance Program

Under the current 1115 Demonstration, premium assistance helps pay the individual's or family's share of monthly premium costs of ESI or COBRA and is aggregated under Utah's Premium Partnership for Health Insurance Program (UPP). Individuals in the AE population with access to employer-sponsored insurance are required to enroll, with few exceptions. The state increased the maximum assistance reimbursement amount in July 2021 making this program more substantial and potentially increasing the number of individuals covered by UPP. The increases in enrollment and total cost summarized below were anticipated due to these policy changes.

Exhibit 70: UPP and ESI Enrollment



Enrollment in UPP has decreased substantially between DY1 and DY5 (Exhibits 70-72). Exhibit 70 depicts the decreasing enrollment in UPP relative to enrollment counts for ESI within the same year. The number of unique individuals enrolled in ESI increased five-fold between DY3 and DY5. Consequently, premium payments covered by the state for ESI members have increased over 7-fold from baseline (Exhibit 71).

The state has maintained a relatively consistent per member per month (PMPM) cost of about $500 for the ESI members, despite increasing premium payments and cost of claims (Exhibit 64).

Exhibit 71: ESI Enrollment and Cost

Demonstration Year	Enrollment (unique individuals)	Total Claims Payments	Total Premium Payments	Total Cost	PMPM Cost
DY3 (2019- 2020)	203	$281,382	$104,118	$385,500	$491
DY4 (2020-2021)	552	$1,282,282	$491,198	$1,773,480	$490
DY5 (2021-2022)	1045	$2,827,470	$746,762	$3,574,233	$486
% Change	*+418%*	*+905%**	*+617%*	*+827%**	*-1%*

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

Exhibit 72: UPP Enrollment and Cost

Demonstration Year	Enrollment (unique individuals)	Total Claims Payments	Total Premium Payments	Total Cost	PMPM Cost
DY1 (2017-2018)	726	$1,053,244	$0	$1,053,244	$184
DY2 (2018-2019)	614	$1,078,286	$0	$1,078,286	$223
DY3 (2019- 2020)	486	$774,582	$372,795	$1,147,376	$297
DY4 (2020-2021)	300	$288,444	$278,286	$566,729	$194
DY5 (2021-2022)	243	$155,045	$304,383	$459,428	$183
% Change	*-67%***	*-85%*	*-18%*	*-56%*	*-1%*

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

F.7.2 Aged, Blind and Disabled Dental

In the Aged, Blind and Disabled Dental (ABDD) population, enrollment fluctuated between the Demonstration years. Enrollment initially increased from DY1 to DY2, decreased from DY2 to DY4, and then increased again from DY4 to DY5. The number of services provided increased with the increase in enrollment from DY1 to DY2 and decreased with the decrease in enrollment from DY2 to DY3, but services provided increased from DY3 to DY4 even though enrollment decreased.

As for total cost of dental services, cost changed according to the changes in services provided for the most part, but when services provided decreased by approximately 6,000 from DY2 to DY3, the total cost of dental services increased. This may mean that the services provided were inherently costlier in DY3 than DY2.

PMPM cost fluctuated throughout the Demonstration, but overall increased by approximately $20 from the beginning to the end of the Demonstration. There were only 4 ED visits with a primary diagnosis of dental for the BDD population throughout the Demonstration.

Exhibit 73: BDD Enrollment and Costs

Demonstration Year	Enrollment (Unique Individuals)	Services Provided	Total Cost of Dental Services	PMPM Cost
DY1 (2017-2018)	13,464	38,302	$7,709,478	$52
DY2 (2018-2019)	16,980	46,661	$9,110,115	$49
DY3 (2019- 2020)	16,150	40,750	$9,275,945	$52
DY4 (2020-2021)	15,742	44,251	$11,320,859	$64
DY5 (2021-2022)	16,458	47,491	$13,867,574	$74
% Change	*+22%*	*+24%*	*+80%**	*+42%**

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

Blind disabled dental (BDD, Exhibit 66) and Aged dental (AD, Exhibit 67) enrollment increased throughout the years, and services provided also increased accordingly. The number of services provided was substantially higher than the number of enrolled individuals for all years. The highest increase in enrollment and services provided was between DY3 and DY4, which also contributed to the highest increase in total cost of dental services between DY3 and DY4. PMPM cost increased by approximately $60 from the beginning to the end of the Demonstration. For the ABDD population, there were no ED visits with a primary diagnosis of dental throughout the Demonstration.

Exhibit 74: AD Enrollment and Costs

Demonstration Year	Enrollment (unique individuals)	Services Provided	Total Cost of Dental Services	PMPM Cost
DY1 (2017-2018)	539	899	$136,612	$27
DY2 (2018-2019)	843	1,415	$220,432	$29
DY3 (2019- 2020)	895	1,453	$246,041	$29
DY4 (2020-2021)	1,702	4,568	$1,198,120	$69
DY5 (2021-2022)	2,288	6,620	$2,021,144	$86
% Change	*+324%***	*+636%***	*+1,379%***	*+219%**

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

F.7.3 Targeted Adult Medicaid Dental

The number of TAM enrollees receiving dental services along with service counts have increased steadily between DY1 and DY5 (Exhibits 68 -70). The total cost of dental services for TAM enrollees also increased steadily alongside the number of beneficiaries receiving dental services (Exhibit 68). PMPM cost fluctuated throughout the Demonstration, with DY4 having the highest average cost of $75.69 per member during the

year. DY2 had the lowest PMPM Cost of $42.26. Overall, the number of TAM individuals receiving dental services has increased throughout the Demonstration (Exhibits 69). There were no ED visits with a primary diagnosis of dental for the TAM population during the Demonstration.

Exhibit 75: TAM Dental Enrollment and Costs

Demonstration Year	Enrollment (unique individuals)	Services Provided	Total Cost of Dental Services	PMPM Cost
DY1 (2017-2018)	232	394	$74,933.51	$63
DY2 (2018-2019)	732	1,513	$255,439.62	$42
DY3 (2019- 2020)	1,132	3,003	$674,289.13	$71
DY4 (2020-2021)	1,358	4,136	$976,743.47	$76
DY5 (2021-2022)	1,629	4,539	$1,043,747.37	$68
% Change	*+602%***	*+1,052%***	*+1,293%***	*+8%*

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

Exhibit 76: TAM Dental Enrollment

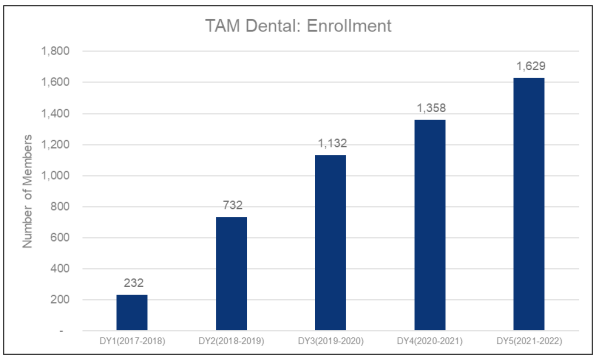


Exhibit 77: TAM Dental Services

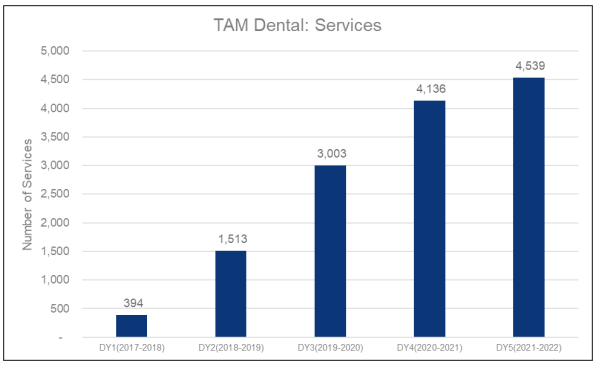
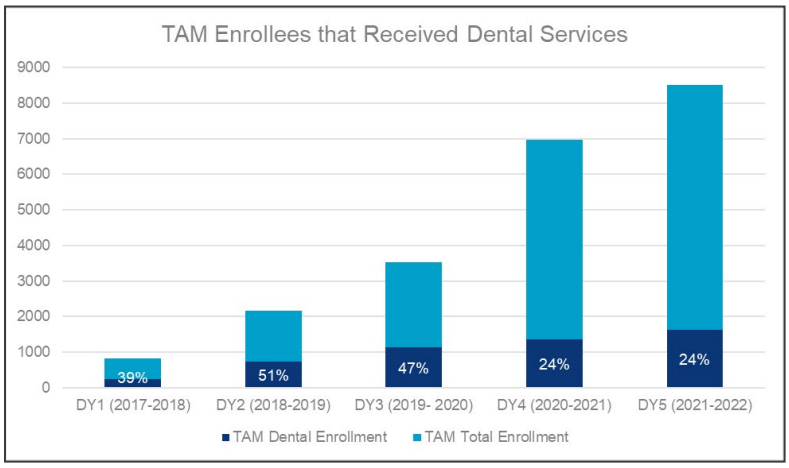


Exhibit 78: Proportion of TAM Population that Received TAM Dental Services



As the TAM population has grown over time, the proportion receiving TAM Dental Services has leveled off at 24%. The highest proportion receiving dental services was 47% in DY3.

F.7.4 Intensive Stabilization Services

Since coverage for ISS was not approved until November of DY3, providers did not begin billing for Intensive Stabilization Services until DY4 (2020-2021). In DY4, 61 members under the age of 21 received the ISS bundle, while only 29 members received the service bundle in DY5 (Exhibit 72). These numbers are lower than anticipated by the state at the outset of the ISS program, most likely due to administrative difficulties that arose during implementation. Due to the low numbers, it is not possible to conduct the analyses that were initially planned and approved in the previous evaluation design.

Stabilization and Mobile Response (SMR) Administrators contracted through the Utah Department of Human Services encountered several challenges that posed barriers to billing for ISS in DY5. The Northern Region was impacted by programmatic changes that required deviation in crisis programming and service requirements that increased the threshold for being able to bill for services. In the Southwest Region, the SMR Administrator experienced technical delays in development of their electronic health record (EHR) which led to delays in billing. Billing for ISS in the Salt Lake Region was not anticipated during the Demonstration, as the SMR Administrator in the region was funded by an in-kind donation from Intermountain Healthcare during DY5, and did not bill ISS during the donation period. The Eastern Region experienced delays in contracting and challenges with workforce shortages, both delaying billing for ISS. The Western Region also experienced staffing shortages, impacting their ability to deliver services meeting HCBS requirements, and impacting their ability to bill for the service. The Northern Region was impacted by service requirements that increased the threshold for being able to bill for services.

The state identified multiple strategies to resolve billing challenges, and to expand and build sustainability for the program and anticipates increasing enrollment in the subsequent Demonstration period. Strategies include routine quarterly meetings with the stabilization and mobile response (SMR) providers who are currently not billing under the waiver, adding the waiver to the SMR Policy and Procedure Manual in the best practices and sustainability funding strategies sections, and linking SMR providers who are billing with those providers who not, in order to provide technical support and collaboration.

Exhibit 79: Total Cost of ISS

Demonstration Year	Members	Total Cost	Member Months	PMPM Cost
DY4 (2020-2021)	61	$126,825	699	$181
DY5 (2021-2022)	29	$50,025	346	$145

Note: Significance tests were not conducted due to small n

F.7.5 Former Foster Care Youth From Another State

In February 2019, Utah received CMS approval to provide state plan Medicaid coverage to Former Foster Care Youth from another state (FFCYAS) who were ever enrolled in Medicaid in another state and are not otherwise Medicaid eligible in Utah. State plan coverage is provided to this population until 26 years of age. Inclusion of this population in Utah's waiver expanded access to coverage for a vulnerable population, who previously faced barriers to coverage due to 1) moving out of the state in which they were enrolled in foster care and 2) aged-out of the foster care system. Extending coverage through age 26 for FFCYAS aligns with the Affordable Care Act provision that similarly extended coverage for young adults on their parents' insurance.

Exhibit 80: Former Foster Care Youth from Another State

	DY1 (2017- 2018)*	DY2 (2018- 2019)	DY3 (2019- 2020)	DY4 (2020-2021)	DY5 (2021-2022)
Former Foster Care Youth average number covered per month	10	10	14	16	17

*November 2017 is the first month with any FFCY reported. The DY1 average is for the period 11/1/2017 – 6/30/2018.
Note: Significance tests were not conducted due to small n

The number of FFCYAS covered by Medicaid (Exhibit 80) has increased since the approval of the amendment to extend coverage through age 26 to this population.

Key Findings

- The ISS implementation faced challenges including issues with an administrative system, which has since been resolved.
- The number of TAM individuals receiving dental services has increased throughout the Demonstration.
    - As the TAM population has grown over time, the proportion receiving TAM Dental Services has leveled off at 24%. The highest proportion receiving dental services was 47% in DY3. There were no ED visits with a primary diagnosis of dental for the TAM population during the Demonstration.

F.8 ADDITIONAL CONTEXT

F.8.1 Wind-down of Current Eligibles

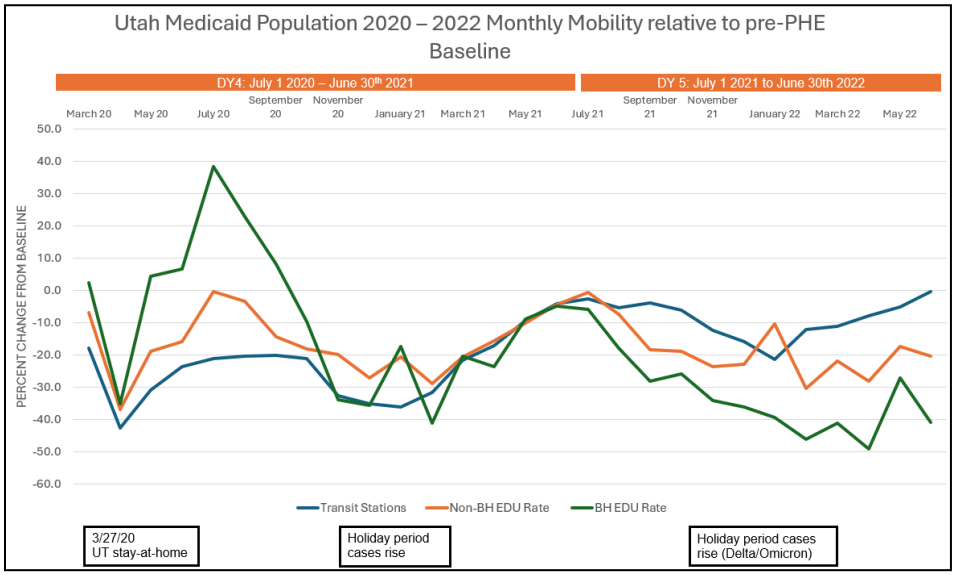
The Demonstration provides a slightly reduced benefit package for the CE population, by not providing 19- and 20-year-olds with early and periodic screening, diagnosis, and treatment services. In 2002, the state received approval to create savings to fund Demonstration Population I, formerly known as PCN, or non-disabled individuals ages 19-64 with incomes at or below 95 percent of the federal poverty level (FPL) (effectively 100 percent with the five percent income disregard). With Medicaid expansion, however, PCN program participants became eligible for full state plan benefits and merged with the AE population, and the PCN benefit was phased out. CMS renewed the Demonstration on June 30, 2022, for the next five-year waiver period. With this renewal, CMS requires the state to move these populations fully into the state plan, effectively phasing out the Current Eligible population from the Demonstration, eliminating disparities in benefit packages by parental status, and most relics of the original waiver. CMS allows the state a transition period to ensure timely system changes and beneficiary notifications. The state must complete this transition by December 31, 2023.

F.8.2 Public Health Emergency

The Demonstration coincided with the Medicaid Continuous Enrollment requirement associated with the Covid-19 pandemic beginning in 2020. Enrollment in Medicaid remained high as states were required to keep current Medicaid beneficiaries enrolled. During the Demonstration, the state prepared an unwinding plan. The date of the unwinding of continuous eligibility for Medicaid was uncertain through the end of the Demonstration period, and eventually was set for March 1, 2023.[13].The redetermination process will likely affect enrollment numbers in the years following this Demonstration, as some individuals move from one eligibility category to another, and individuals above income limits are transitioned off Medicaid coverage.

In order to explore the relationship of acute care utilization to the Covid-19 Public Health Emergency (PHE), the IE used publicly available community mobility data. This data, aggregated from smartphones by Google, represents the percent change in the number of people going to a given type of location on a given day, relative to a pre-PHE baseline. Exhibit 81 shows monthly rates of BH and non-BH ED visits. ED visit rates are plotted with attendance at public transit stations, used as a proxy for overall level of going out in public. (Rates of attendance at other community location types, such as workplaces and retail stores, had similar patterns.) The Utah governor's voluntary stay-at-home directive on March 27, 2020 was followed by a nearly 50% decrease in trips to transit stops. Both BH and non-BH ED visits also dropped sharply in April 2020. Transit stop attendance then trended back towards baseline, but fell again in Nov 2020, corresponding to the rise in Covid cases during the holiday season. ED visits followed a similar pattern, but fluctuations were more extreme for BH visits. In May-July 2020, ED-BH visits well above pre-PHE levels, and then plummeted to 20-40% below baseline in Nov 2020-Feb 2021. In 2021-2022, around the time of the Delta/Omicron spike in Covid-19 cases, transit attendance and ED rates fell again in parallel. The mirroring of community mobility patterns in ED visit rates suggests that the PHE did discourage many individuals from seeking treatment in the ED. This may include some who went without care, and others who obtained care in other settings, including telehealth.

Exhibit 80: Changes in ED visit rates and community mobility[14] relative to Pre-PHE baseline



[13] 10 Things to Know About the Unwinding of the Medicaid Continuous Enrollment Provision | KFF

[14] Data from Google LLC *"Google COVID-19 Community Mobility Reports"*. https://www.google.com/covid19/mobility/ Accessed: March 31,2022. Percent change is relative to February 2020 baseline.

G. CONCLUSIONS

G.1 INDICATORS OF IMPROVED ACCESS AMONG LOW-INCOME UTAH RESIDENTS

Progress towards the states' goal of improving access to coverage and health care services was evidenced in the findings from national survey data. Analysis comparing Utah to other states found that over the course of the Demonstration, low-income Utahns became more likely to report that they have a personal doctor or usual source of care, had a primary care appointment in the last year, and had a preventive screening. Similar improvement was seen for BH services. Compared to other states, Utahns increasingly reported receiving mental health services, and reduced unmet needs for SUD treatment. Most of this improvement occurred prior to the PHE, though it was sustained through the Demonstration period. Somewhat surprisingly, no reduction was seen in rates of low-income residents reporting they were uninsured, or avoided care due to cost, in the later Demonstration period when adult expansion was implemented. This may be due to a limitation of the out-of-state comparison during a national policy change. The continuous enrollment policy during the PHE effectively expanded Medicaid access in all states, leading to increased enrollment on a scale sufficient to mask the effects of Utah's expansion policy. Notably, uncompensated care, another proxy for lack of coverage, did decrease relative to comparison states over the Demonstration period. This contrasting result could indicate that Utah, more than other states, enrolled individuals with the highest need for coverage in greater proportions.

Qualitatively, stakeholders described organizational actions in response to adult expansion, such as hiring staff and adding capacity, which suggest that the Demonstration supported systemic changes to improve access.

G.2 COMPLEX PATTERNS OF UTILIZATION IN THE ADULT EXPANSION AND TAM POPULATIONS

The state hypothesized that the benefits provided through Adult Expansion and TAM would lead to an increase in those members receiving primary and ambulatory care, and behavioral health care, and a corresponding decrease in the need for inpatient treatment and ED visits. The observed pattern of utilization in both populations was more complex. The AE and TAM populations were compared to members eligible under traditional Medicaid to account for trends unrelated to the Demonstration. Relative to the reference population of traditionally eligible members, rates of both inpatient stays and ED visits decreased, but the intended increase in engagement with primary, ambulatory, and preventive services was not seen. As measured by engagement in preventive and ambulatory services (AAP), AE and TAM members did not increase their rates of primary care over the Demonstration period. Care for chronic conditions, measured by rates of visits for medication management for depression (AMM) and cardiovascular conditions (MPM) also did not increase.

One key marker of progress towards Demonstration goals is the increase in initiation and engagement in treatment for SUD seen in the TAM population. A goal of the Demonstration is to engage these vulnerable members in treatment, and the increased participation in treatment of this difficult-to-reach population is a meaningful success. The engagement of TAM members in treatment likely contributed to the observed reduction in ED visits for this population, and is a foundation for supporting members in stable recovery in the longer term. Moreover, the dental benefit provided to TAM members was used to provide 13,585 dental services over the Demonstration period. Each year approximately one-third of TAM members received a dental service, an unusually high rate for individuals with SUD and housing instability or other social risk

factors.[15],[16] This engagement in dental care probably avoided ED visits - no ED visits for dental conditions occurred among TAM members during the Demonstration.

While coordination of BH care is an intended benefit of UMIC plans, mental health follow up among UMIC members did not increase as measured by follow up (FUH) and readmission (REA) following hospitalization for BH conditions. Members of UMIC plans, compared to other AE plans, did experience a reduction in ED visits for BH conditions, but did not show increased rates of participation in non-acute BH services. The county-based implementation of UMIC plans in the most urban counties also complicates interpretation, since the influence of urban/rural residence can't be separated from the influence of plan type in regression models. Stakeholders offered mixed observations about the early stages of UMIC plans' care coordination for BH services; the challenges in the developing interface of health plans and PMHPs may have inhibited efforts to improve and integrate care delivery for members with BH conditions.

The mixed results seen for engagement in care during this time period are consistent with national trends. For example, Medicaid rates for primary care engagement (AAP) were approximately 5% lower in 2022 than 2019, reflecting ongoing trends in post-PHE utilization. Moreover adult expansion launched, and the TAM population reached scale, just as Covid-19 began to spread. Given the timing, the absence of relative improvement in primary care engagement for AE and TAM populations may be attributable to the PHE disruption of the member outreach and care delivery initiatives that were intended to engage newly eligible members in ongoing services.

The reduction in hospitalization and ED visits, including ED visits for BH conditions, suggests that AE and TAM members did experience improved outcomes during the Demonstration period. However, the improvement is not attributable to widespread increases in non-acute care for these members, with the exception of TAM members who engaged in SUD treatment at higher rates. A possible explanation is that although rates of primary and other routine care fell overall (in the reference population as well as AE and TAM), care coordination and services were delivered to the subset of individuals most likely to experience a hospital admission or ED visit, thus improving their health and reducing the need for acute care. All four health plans reported initiatives targeting members based on acute care utilization. These efforts may have benefitted members, even while overall engagement in preventive care was constant. Another interpretation is that newly-covered members may be more likely to seek routine care, possibly to catch up on care delayed due to cost as discussed above. That catch-up care could inflate rates in the early years of each program, when a larger proportion of members are new to coverage.

G.3 STRENGTHENING THE CARE CONTINUUM FOR SMI AND SUD

In order to better care for members with SUD and SMI, the state used waiver amendments to add IMD benefits and support systemic improvements to the BH system. During the 2017-2022 Demonstration period, the number of members with these diagnoses grew by 45%, with most of the increase in members with SUD diagnoses. The fraction of these members who received any SUD treatment in the measurement year increased about 5% per year through DY3, and then showed smaller increases in DY4-5. The percent of individuals with these diagnoses who received SMI treatment remained consistent through the Demonstration period. About half of members with an SMI diagnosis also have a diagnosed SUD, and these dually diagnosed individuals may be receiving treatment that addresses both needs, but is recorded with a primary diagnosis of SUD.

In comparison to other states, low income UT residents reported improved access to both SUD and SMI services over the course of the Demonstration period. However, the improvement was most significant in the early years of the Demonstration. During the PHE, these relative gains were maintained, but further progress was not observed. This timing suggests that the improvement can be attributed both to systemic

[15] Witton R, Paisi M. *Dental care for homeless persons: Time for National Health Service reform*. Public Health Pract (Oxf). 2021 Nov;2:100194. doi: 10.1016/j.puhip.2021.100194. Epub 2021 Oct 1. PMID: 34617069; PMCID: PMC8483995.
[16] Watt, R. G., Venturelli, R., & Daly, B. (2019). *Understanding and tackling oral health inequalities in vulnerable adult populations: from the margins to the mainstream. British dental journal*, *227*(1), 49–54. https://doi.org/10.1038/s41415-019-0472-7

improvement in BH care delivery, and the addition of SUD IMD services. The impact of adding coverage for SMI IMD services in 2020 is not apparent, which may be partly due to the lower rate of SMI compared to SUD in the Medicaid population, but is also likely related to the system-wide disruption caused by the PHE. Within the UT Medicaid population, the percent of members who reported that they were confident that they had coverage for BH services, that BH services were available in their community, that they had been easily able to access needed BH services, and that the services helped them, all decreased from 2020 to 2022. Given the national trends of increased demand for BH services, reduced provider availability, and unprecedented stress on the health care system, the decrease is unsurprising. Still, even with this discouraging trend, a majority of members still reported having access to BH care, being able to get help easily, and benefitting from these services, and the number of members using the newly covered IMD services increased each year.

H. INTERPRETATIONS, POLICY IMPLICATIONS AND INTERACTIONS WITH OTHER STATE INITIATIVES

H.1 HISTORIC CONTEXT: COVID-19 PANDEMIC AND PHE UNWINDING

The COVID-19 public health emergency impacted Utah Medicaid profoundly during this Demonstration period through multiple mechanisms. In 2020 at the onset of the pandemic, many facilities cancelled non-emergency services, and many individuals avoided going to health care facilities, as reflected in the dramatic drop in community mobility and in ED visits described in this report. Health plans altered or paused their planned care delivery initiatives, including outreach to individuals newly eligible under Adult Expansion, and rollouts of care coordination programs. As the PHE progressed, telehealth expanded from a small fraction of care delivery into a critical tool in routine use for primary care, behavioral health, chronic disease management, and urgent care. Vaccines became available, and vaccinating the patient population became a priority for all providers, health plans, and state agencies. By the end of the Demonstration period in 2022, approximately two-thirds of adult Utah residents had been fully vaccinated, and health plans were resurrecting their plans for population health programs.

The continuous enrollment policy also impacted the Medicaid system. Nationally, Medicaid enrollment increased by roughly 30%, reflecting both new enrollments and paused redeterminations of enrolled members. Continuous enrollment nearly eliminated the churn typically seen as individuals on the edge of income eligibility cycle in and out of eligibility. When interviewed in 2022, stakeholders in Utah expressed concern about the unwinding process, particularly about the possibility of many individuals losing coverage. At that stage, key goals were using existing data to identify individuals at risk of losing coverage and reaching out to members to obtain accurate contact information. When unwinding officially began in March of 2023, CMS urged states to improve call center assistance for renewing members, and Utah reviewed and streamlined processes in order to reduce call wait times, and improve messaging to members. Utah Medicaid worked with DWS to leverage existing data, and partnered with health plans to provide more assistance to members. Before the PHE, Utah had discussed automating the process of ex parte renewal to reduce administrative burden and avoidable loss of coverage; in 2022 this initiative gained urgency. Utah developed a custom tool for renewals, including a smartphone app that went live in January 2023. Among individuals whose coverage was renewed during the unwinding process by October 2023, 54% experienced successful ex parte renewals, similar to national rates.[17]

National trends show that health care utilization remained lower through 2021, and did rebound in 2022, though not fully to pre-PHE levels.[18] ED utilization remained about 4% below historical levels. For BH services, in-person services remain about 20% below pre-PHE levels, but telehealth BH appointments in the post-acute stage of the PHE were at more than 10 times the pre-PHE rate.[19] The observation that overall mental health utilization stayed 10% higher than pre-PHE rates[20] suggests that replacement of some in-person BH services with telehealth is a permanent change in care delivery. Telehealth utilization is highest among Medicaid members, with 28% of Medicaid members nationally reporting that they received a telehealth service in the 2021-22 survey period.[21] This adds urgency to the development of evidence-

[17] Corallo, B. and Tolbert, J., 2023. *Understanding Medicaid Ex Parte Renewals During the Unwinding.* KFF Accessed 02/15/2024. Understanding Medicaid Ex Parte Renewals During the Unwinding | KFF

[18] McGough, M. et al., 2023 *How has healthcare utilization changed since the pandemic?* KFF.org Accessed 02/15/2024 How has healthcare utilization changed since the pandemic? - Peterson-KFF Health System Tracker

[19] Cantor, J., McBain, R., Ho, P., 2023. *Telehealth and In-Person Mental Health Service Utilization and Spending, 2019 to 2022.* Jama Health Forum Accessed 02/29/2024. Telehealth and In-Person Mental Health Service Utilization and Spending, 2019 to 2022

[20] 2023. *COVID-19 Pandemic Impacted Behavioral Health in D.C. and Drove Significant Growth in Telehealth Care*. Georgetown University Medical Center Accessed 02/29/2024. COVID-19 Pandemic Impacted Behavioral Health in D.C. and Drove Significant Growth in Telehealth Care

[21] Lee, E., Grigorescu, V., Enogieru, I., et al., 2023. *Updated National Survey Trends in Telehealth Utilization and Modality (2021-2022)*. HHS ASPE Office of Health Policy Accessed 02/29/2024. Updated National Survey Trends in Telehealth Utilization and Modality (2021-2022)

based policies and guidelines for telehealth use, which in turn depends on ongoing research and collective sharing of emerging practices.

H.2 UTAH'S MEDICAID STRATEGY

The Medicaid Reform Demonstration is being implemented in the context of Utah's long-term strategy of using managed care to increase access and quality while containing cost. The transition to managed care plans for beneficiaries began in 1982 under Utah's 1915(b) waiver program. Utah's Primary Care Network Section 1115 Demonstration waiver was first approved in 2002 and included a pre-ACA coverage expansion (called the Primary Care Network) to certain non-disabled adults. Since 2013, four full-risk ACOs have managed physical health care for all residents of designated counties and for other beneficiaries who opt in to ACO plans. Utah has also operated a 1915(b)-waiver program called the Prepaid Mental Health Plan (PMHP) since July 1, 1991. The PMHP was designed to maximize the contractors' flexibility to effectively and responsibly use Medicaid funds to ensure Medicaid beneficiaries have access to BH services and to improve BH outcomes for Medicaid beneficiaries. Under the PMHP, Medicaid beneficiaries have access to a spectrum of inpatient and outpatient mental health care and outpatient substance use disorder care.

In November of 2018, Utah voters supported a ballot initiative to expand the state's Medicaid program consistent with the Affordable Care Act. This expansion would include coverage for childless adults with income at or below 133% FPL and parents/caretakers with incomes from 60% to 133% of the FPL. The subsequently passed Senate Bill 96 "Medicaid Expansion Adjustments", signed into law on February 11, 2019, required the Department of Health to seek approval of a waiver request to the federal government for partial expansion for eligible individuals below 100% of the FPL.

Utah Medicaid incorporated the expansion into its managed care strategy through a series of waiver amendments. On March 29, 2019, CMS approved an amendment to Utah's existing Primary Care Network Section 1115 Demonstration waiver to expand Medicaid to a capped number of adults with income up to 100% FPL beginning on April 1, 2019. The state requested authority through the UMIC amendment to cover additional services authorized under Utah's 1915(b) PMHP waiver. With the creation of the UMIC plans, the state carved in BH benefits for the majority of ACO Medicaid members, beginning the process of connecting the PMHP and physical health care delivery systems.

H.3 INTEGRATION OF PHYSICAL, BH, AND HRSNS

The number of individuals receiving SUD or SMI services increased over the Demonstration period, in part as a function of the increased enrollment numbers brought by adult expansion. Expansion of Medicaid benefits to higher income thresholds has been found to be associated with reduced overdose deaths,[22, 23] suggesting that the increased availability of coverage alone is a key step towards addressing SUD. This report finds that compared to other states during the Demonstration period, Utah's low-income residents were increasingly likely to report receiving any mental health services, and less likely to report unmet needs for SUD treatment. This was consistent with reports from providers that they observed more patients receiving treatment, and were expanding their service offerings. This trend can be at least partially attributed to the state's ongoing investment in the BH system through multiple waiver programs and other initiatives. In addition to the services added through the SUD and SMI waiver amendments, the state passed legislation including "Crisis Services Amendments" that established Behavioral Health Receiving Centers to increase access for beneficiaries needing crisis stabilization services.

[22] Kravitz-Wirtz, N., Davis, C. S., Ponicki, W. R., Rivera-Aguirre, A., Marshall, B. D. L., Martins, S. S., & Cerdá, M. (2020). Association of Medicaid Expansion With Opioid Overdose Mortality in the United States. *JAMA network open*, *3*(1), e1919066. https://doi.org/10.1001/jamanetworkopen.2019.19066

[23] Snider, J. T., Duncan, M. E., Gore, M. R., Seabury, S., Silverstein, A. R., Tebeka, M. G., & Goldman, D. P. (2019). Association Between State Medicaid Eligibility Thresholds and Deaths Due to Substance Use Disorders. *JAMA network open*, *2*(4), e193056. https://doi.org/10.1001/jamanetworkopen.2019.3056

The enhancements to the BH care system dovetail with Utah's ongoing managed care strategy in the creation of the Utah Medicaid Integrated Care plans, which combine the delivery of physical health and BH services in five Utah counties (Weber, Davis, Salt Lake, Utah, and Washington) for Medicaid expansion members. This report did not find evidence of increased engagement in behavioral health care (as measured by claims) attributable to the integration of BH services, and observed that perceptions varied among stakeholders of the rollout of UMIC plans. Other states have also had mixed experiences with integrated health plans. Researchers found that in Oregon, carving in BH services "was associated with greater access to behavioral health services, particularly for individuals with mild or moderate mental health conditions and for black enrollees";[24] while in Washington state, carve-in "did not appear to drive clinical transformation and was disruptive to behavioral health providers."[25] [26] Those findings suggest that integrated plans can be effective, but that carve-in does not guarantee integrated care. The additional challenges associated with the PHE may have also inhibited BH integration; the state may observe better care coordination over time as the care delivery system normalizes.

The Targeted Adult population, defined by SUD and social risk factors, has remained FFS, and receives a tailored benefit package. Rates of initiation and engagement in treatment for SUD increased more, and ED visits decreased more, in this population than in non-TAM members with similar diagnoses. Participation in dental services was markedly high for this population, given their risk factors. Dental care is associated with better treatment outcomes for SUD,[27] so the utilization of this targeted benefit may also have contributed to positive change. Keeping this highly vulnerable population distinct appears to have been beneficial.

Fully integrated care delivery provides an opportunity to build on the state's investments in BH care, and recommendations are provided below to support the state in meeting its goals for integrated care delivery. New amendments approved for the 2022-7 waiver period include the addition of housing-related services and supports, enabling Medicaid to address unmet HRSNs. Currently pending amendments propose to add services including LTSS for members with complex BH needs, medical respite, chronic condition care including telehealth services, and transitional services for justice-involved individuals. These proposed amendments aim to expand the services available to serve the needs of vulnerable populations holistically.

[24] Charlesworth, C.J. et al., 2021. *Use of behavioral health care in Medicaid managed care carve-out versus carve-in arrangements.* Health Serv Res. 2021;56:805–816.
[25] McConnell, K.J., et al., 2023. *The effects of behavioral health integration in Medicaid managed care on access to mental health and primary care services—Evidence from early adopters.* Health Serv Res. 2023;58:622-633.
[26] McConnell, K.J., et al., 2023. *Access, Utilization, and Quality of Behavioral Health Integration in Medicaid Managed Care. JAMA Health Forum. 2023;4(12):e234593.*
[27] Hanson GR, McMillan S, Mower K, Bruett CT, Duarte L, Koduri S, Pinzon L, Warthen M, Smith K, Meeks H, Trump B. *Comprehensive oral care improves treatment outcomes in male and female patients with high-severity and chronic substance use disorders.* J Am Dent Assoc. 2019 Jul;150(7):591-601. doi: 10.1016/j.adaj.2019.02.016. Epub 2019 May 20. PMID: 31122616; PMCID: PMC6599580.

I. LESSONS LEARNED AND RECOMMENDATIONS

We underscore the importance of not only identifying current effective strategies but also highlighting future opportunities for informed decision-making among Medicaid policymakers, advocates, and stakeholders. In the Interim Evaluation Report, we highlighted several key observations and recommendations, which are restated here, with updates from current findings:

1. *Expect gradual change:* Previous studies have demonstrated that insurance coverage is necessary but not sufficient to increase engagement in care and improve health status, underscoring the importance of active outreach and population health programs in improving outcomes for Medicaid members, particularly for those who were recently uninsured or underinsured. **Update:** Some indicators show outcomes improving for Utah Medicaid members, though the PHE interrupted efforts to increase engagement in care.

2. *Persist in integrating Behavioral Health (BH) care:* Substantial unmet behavioral health needs were identified, largely through ED-BH visits. However, there was notable success in BH follow-up and ongoing care participation. The state's plan to improve integration of BH services, and the waiver's coverage expansions, are opportunities to enhance outcomes. **Update:** Rates of ED-BH visits fell for Adult Expansion and TAM populations. Stabilizing individuals with BH conditions remains a challenge, and opportunities for integrating BH services were identified.

3. *Target members with high ED utilization:* Frequent ED visits were identified as markers of unmet healthcare needs, presenting opportunities for outreach and intervention. Strategies such as care coordination and electronic notification systems are recommended to address underlying causes and reduce excessive ED utilization. **Update:** Health plan efforts to target patients with frequent ED use may have contributed to falling rates of ED visits. Additional practices such as co-location of care-coordination staff in EDs could be consider by health plans, and statewide initiatives supporting event notification systems could facilitate plans' efforts to connect with these patients.

4. *Seek opportunities to increase enrollment in Employer-Sponsored Insurance (ESI):* Increasing ESI enrollment highlights a potential avenue to impact state Medicaid costs, particularly among younger members. Continued efforts to provide information and support for job searching may facilitate ESI enrollment during the economic recovery period. **Update:** ESI enrollment did increase, but remains a small percentage of the Medicaid population.

Building upon these findings, our evaluation seeks to uncover key insights derived from the Demonstration and provide actionable recommendations for other states considering similar approaches. By leveraging the insights gleaned from the Interim and Annual Reports, we aim to facilitate informed decision-making and drive positive outcomes in Medicaid programs nationwide. The IE offers these observations and recommendations to the state, and to the health plans serving Medicaid members:

1) Move from integrated payment to deeper integration of BH care

Implementing integrated care models is vital to expanding access to BH services. With the introduction of UMIC plans, the state took a step to promote stronger collaboration and incentivize outcomes-based care delivery. Engaging more BH providers, particularly specialty providers, should be prioritized; the state should consider strategies to educate providers about reimbursement rates and to streamline administrative processes. Promoting best practices in care management would require a multifaceted approach, including doubling down on reaching hard-to-reach patients, embedding services within EDs to provide timely interventions, and fostering one-on-one relationships through the evidence-based integration of community health workers (CHWs) for personalized support and engagement. This strategy aims to enhance the integration and quality of BH care, ultimately improving outcomes for patients across the healthcare continuum. Additionally, efforts to support common Electronic Health Records (EHR), enhance data

access, and facilitate Health Information Exchange (HIE) to streamline communication will improve care coordination across providers.

2) Leverage VBP opportunities to address BH and HRSNs

Utilizing Value-Based Payment (VBP) creates opportunities to tackle behavioral health and Health-Related Social Needs (HRSNs) more effectively. Interviews with leaders at health plans and PMHPs found that stakeholders expressed interest in VBP arrangements in order to support a wider range of services for members with BH needs. Stakeholders reported a history of cooperation among organizations and with the state. This indicates a good environment for the state to act as a convener to explore possible models, and to develop policies that promote robust arrangements. Other states that have engaged community-based provider organizations in Medicaid managed care arrangements have found that these organizations feel disadvantaged in negotiations with ACOs. CBOs are typically smaller and less-resourced than health plans, and look to the state to promote balanced arrangements. A common complaint when a community provider must interface with multiple health plans is that each plan develops distinct administrative processes and requirements for reporting. The variation can be highly burdensome for these organizations and they often request more standardization. At the same time, health plans often want more flexibility. A cross-sector workgroup could help develop creative solutions that promote efficient and mutually beneficial arrangements.

The institutional interface of health plans and PMHPs will be especially critical if the state incorporates the TAM population into VBP arrangements. In creating the TAM waiver population, the state established a foundation for serving individuals with high needs for BH and HRSN services, recognizing the need for enhanced care coordination and HSRN referrals. Utah could build on this foundation by developing specialized VBP plans to further address the unique needs of these members, considering successful models like New York's Health and Recovery Plan (HARP). Additionally, Utah should explore incorporating alternative housing payment options, leveraging CMS's approval of transitional housing payments tied to medical care, as seen in initiatives like Alabama's Permanent Supportive Housing Strategic Plan. As in New York's Health and Recovery Plan (HARP), creating specialty plans tailored to individuals with HRSNs can provide comprehensive coverage for housing needs. Adding covered services such as "Inclusive treatment" and meal delivery options can provide options enabling a holistic approach to members' needs. Following the example of Massachusetts' flexible services model, Utah could require plans to contract with community based HRSN providers and explore creating regional structures to facilitate collaboration among providers.

Strong oversight mechanisms are essential to monitor service delivery and outcomes associated with HRSN-inclusive plans. An effective oversight strategy depends on developing and adopting appropriate measures, and on consistent data collection. By tracking services and outcomes, Utah can demonstrate the effectiveness of interventions in promoting follow-up care, continuity of care, and reducing hospitalizations or readmissions. Moreover, outcome measures should be stratified in order to identify disparities and develop health equity strategies. This report found that in Utah's MMIS claims, data on race/ethnicity was collected so inconsistently that no reliable analysis could be conducted of racial disparities. No data was available on homelessness or other unmet HRSN. Strengthening data collection on race/ethnicity, and on HRSN, can enable targeted interventions to address disparities in healthcare access and outcomes. Utah has historically laid a strong foundation for data-driven policy by establishing the Office of Healthcare Statistics, and the Utah Health Data Committee. The All-Payer Claims Database, Healthcare Facility Data, and Health Plan Quality and Satisfaction dataset represent major data collection and analysis initiatives. These have been leveraged for years to understand cost and quality trends, and to stimulate quality initiatives by health plans. By prioritizing collection and analysis of race/ethnicity and HRSN data, Utah can also develop a data-driven VBP approach to address HRSNs and improve health outcomes for vulnerable populations.

3) ***Support workforce development***

Amidst the ongoing challenges in the healthcare landscape, workforce shortages in the field of behavioral health have intensified, exacerbated by the strains of the COVID-19 PHE. As demands for mental health and substance abuse services escalate, the shortage of qualified BH providers becomes increasingly pronounced, posing significant barriers to accessing essential care. Utah, like many states, is grappling with these workforce challenges, highlighting the urgent need for a concerted effort towards workforce development. A commitment to addressing these shortages is imperative to ensure the delivery of quality BH services and support the well-being of individuals and communities across the state.

In response to these challenges, some states have implemented innovative workforce development strategies, emphasizing the importance of loan forgiveness and training programs to attract and retain BH providers. One model is New York's Strengthening the Workforce Initiative, approved by CMS in 2023 as a component of the Health Equity Reform amendment to the state's 1115 Demonstration. This initiative funds training programs to expand and diversify the health care workforce, and student loan repayment for providers who commit to serving Medicaid members. Such programs could be tailored to improve availability specifically of BH providers, and could target rural and underserved geographic areas. Additionally, Utah can prioritize initiatives to support BH providers in enrolling in Medicaid, educating them about increased reimbursement rates, and assisting with the enrollment process to ensure adequate access to BH services for Medicaid beneficiaries. By drawing inspiration from successful models and demonstrating a robust commitment to workforce development, Utah can address critical shortages in the BH workforce and enhance access to essential mental health and substance abuse services for its residents.

4) ***Promote best practices in telehealth***

Utah has historically been a leader in incorporating telehealth into care delivery. Following the COVID-19 PHE, the utilization of telehealth to facilitate access to care for Medicaid enrollees has become more important than ever. This report shared perspectives from multiple Utah providers and health plans, all of whom agreed that telehealth is an important tool for expanding access to services, while noting some concerns about the need to identify which patients and services are appropriate for telehealth. CMS has found that telehealth is especially effective for improving access to BH services.[28] Telehealth is also a critical tool in rural and other remote areas that lack sufficient health care services, including specialty care. This high utilization amplifies a need to not only continue building robust telehealth infrastructure, but also to definitively consider the parameters of telehealth services, including service definitions implementing guardrails for telehealth-only services. Utah stakeholders agreed that phone-only services should continue to be available, consistent with the policies in most states.[29]

Promoting best practices in telehealth will require prioritizing the guidance and standards set forth by CMS, including ensuring patient privacy and security and providing clear communication and informed consent procedures. Monitoring telehealth utilization will also be crucial to ensure that telehealth services are being utilized effectively and efficiently, and to identify trends, patterns, and potential areas for improvement, enabling healthcare providers to refine their telehealth programs and address emerging needs. The state should consider sponsoring webinars and workgroups to enable Medicaid providers to share experiences and best practices as they emerge. With these considerations in place, Utah can maximize the benefits of telehealth while upholding standards of care and patient safety.

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[28] Center for Medicaid & CHIP Services, 2023. *Mental Health and Substance Use Disorder Action Plan.* Accessed 02/01/2024 CMCS Mental Health and Substance Use Disorder Action Plan (medicaid.gov)

[29] Guth, M. 2023. *Telehealth Delivery of Behavioral Health Care in Medicaid: Findings from a Survey of State Medicaid Programs* Accessed 02/01/2024 Telehealth Delivery of Behavioral Health Care in Medicaid: Findings from a Survey of State Medicaid Programs | KFF

J. ATTACHMENTS

J.1 Evaluation Design: Provide the CMS-approved Evaluation Design

J.2 Evaluation Design Tables

J.3 BRFSS Event Study Plots

J.4 Additional Results Tables: BRFSS and NASHP HCT

J.5 Adult Expansion: Regression Results by Measure

J.6 Targeted Adult Medicaid: Regression Results by Measure

J.7 SMI/SUD Demonstrations: Regression Results by Measure

J.1 EVALUATION DESIGN DOCUMENT

TO: Centers for Medicare & Medicaid Services (CMS)
DATE: December 15, 2022
FROM: Jessica Lang, Public Consulting Group
CC: Laura Belgique, Utah Department of Health
REGARDING: Summative Evaluation Report for Utah ‘s Medicaid Reform 1115 Demonstration

Public Consulting Group is requesting CMS approval of a single comprehensive Summative Report for the Utah Medicaid Reform 1115 Demonstration (formerly “Utah Primary Care Network, based on our previously approved approach for the evaluation of the Utah Medicaid Integrated Care (UMIC) component of the Demonstration. We have reviewed the existing evaluation plans covering the Adult Expansion, Current Eligible, Targeted Adult Medicaid (TAM), Targeted Adult Dental (TAM-Dental), Blind and Disabled Dental (BDD), Aged Dental, Employer-Sponsored Insurance (ESI), Utah Premium Partnership (UPP), and Intensive Stabilization Services (ISS) populations of the 1115 Demonstration, as well as for the Serious Mental Illness (SMI) and Substance Use Disorder (SUD) components. We noted that these plans were prepared at different times, and the measures are not aligned with each other. The various evaluation plans use different measures for similar outcomes, which would result in an inefficient analytic process and a fragmented Summative Report.

In order to develop a coherent and useful Summative Report, we propose updating the evaluation plan to simplify and align across the populations being studied. This plan prioritizes understanding access to and engagement in care across populations, in particular behavioral health care. As summarized in the outline below, our proposed approach would retain the quasi-experimental approach we described for the Adult Expansion/UMIC evaluation, employing interrupted time series and difference-in-difference where appropriate, and use a subset of the same measures for each of the other populations. This will build on the analysis that has already been done for the Adult Expansion population and allow cross-population comparisons. For smaller populations where regression analysis is not feasible, the evaluation will focus on trends over time in service delivery.
The overarching research questions to be addressed will be:

1) Does the 1115 Demonstration overall improve access to coverage and engagement in health care for low-income UT residents?
2) Does the 1115 Demonstration improve healthcare access and engagement for the Adult Expansion, Current Eligible, and TAM populations?
3) Do the SUD and SMI Demonstrations increase access to appropriate treatment?
4) Is the 1115 Demonstration delivering coverage/ services appropriately to individuals in the smaller populations (see below)?

Below we list the applicable measures for each population. These will replace the measures listed in earlier evaluation designs. At the end of the outline, we list the evaluation designs that are being modified and note the key changes for each. The summative report will include a detailed evaluation table covering all research questions and measures for each population.

1115 Demonstration evaluation – comprehensive combined outline

1. Does the 1115 Demonstration overall improve access to coverage and engagement in health care for low-income UT residents?
    a. Approach: Quasi-Experimental
        i. National Survey Data (BRFSS)
        ii. Beneficiary survey
    b. Measures
        i. Having any coverage
        ii. Having a personal doctor/source of care
        iii. Avoiding care due to cost
        iv. Primary appointment and Preventive Screening in the last year
        v. Patient satisfaction

2) Does the 1115 Demonstration improve healthcare access and engagement for these enrolled populations?

For the Adult Expansion, UMIC, Current Eligible, and TAM populations, the IE will use a consistent set of measures for acute care, primary & preventive care, and behavioral health care.

	Acute care	Primary& preventive	BH integration
Adult Expansion (with UMIC analysis)	• *Inpatient (IPU)* • *ED visits (EDU)* • *ED-BH visits*	• *Adults' Access to Preventative/Ambulatory Health Services (AAP)* • *Annual Monitoring for Patients on Persistent [cardiac] Medications (MPM)* • *Comprehensive Diabetes Care (CDC)* • *Antidepressant Medication Management (AMM)* • *Breast Cancer Screening (BCS)* • *Cervical Cancer Screening (CCS)*	• *Follow-Up After Hospitalization for Mental Illness (HEDIS-FUH/NQF 0576)* • *30-day all-cause unplanned readmission following psychiatric inpatient hospitalization* • *Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment (IET)*
Current Eligible-PCR	• *ED visits (EDU)* • *ED-BH visits*	• *Adults' Access to Preventative/Ambulatory Health Services (AAP)*	
TAM	• *Inpatient (IPU)* • *ED visits (EDU)* • *ED-BH visits*	• *Adults' Access to Preventative/Ambulatory Health Services (AAP)*	• *Follow-Up After Hospitalization for Mental Illness (HEDIS-FUH/NQF 0576)* • *30-day all-cause unplanned readmission following psychiatric inpatient hospitalization* • *Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment (IET)*

3) Do the SUD and SMI Demonstrations increase access to appropriate treatment?

a. SUD/SMI (Services)
   vi. Number of individuals receiving services
   vii. Number of services, Cost of claims
   viii. Interrupted Time Series (ITS), in-state comparison to pre-Demonstration baseline
      1. SUD: IET, ED-BH
      2. SMI: 30 Day All-Cause Unplanned Readmission Following Psychiatric Inpatient Hospitalization, ED-BH
   ix. Difference-in-difference, out of state comparison

1. SMI/SUD service utilization (TEDS, NSDUH)
2. SMI/SUD services needed but not received (NSDUH)

4) Is the 1115 Demonstration delivering coverage/ services appropriately to these smaller populations?

b. UPP/ESI (Coverage)
   x. Number of enrollees
   xi. Total claims, Total premium payments, average per member per month (pmpm) expenditure by UDOH
c. BDD, Aged Dental, TAM dental (Services)
   xii. Number of individuals receiving services
   xiii. Number and type of services, Cost of claims
d. ISS (coverage)
   xiv. Number of individuals receiving services
   xv. Number and type of services, Cost of claims

Summary of Changes to Evaluation Designs

Evaluation Design	Changes to Research Questions
Utah Medicaid Integrated Care Approved 11/29/21	None
Adult Expansion Employer Sponsored Insurance Targeted Adult Dental Approved 11/30/2020 [1]	Adult expansion research questions were updated in the Interim Report approved 11/15/22. No further changes planned. ESI: RQ 2 removed ("Did beneficiaries enrolled in ESI access primary care and care for chronic conditions at rates similar to other beneficiaries?") because the APCD analysis originally proposed is not a high priority for the state, given the small population.
Substance Use Disorder Approved 10/25/21	RQ 3 removed ("Are rates of opioid-related overdose deaths impacted by the Demonstration?") because these rates are heavily impacted by other initiatives, such as distribution of overdose-reversal medication. ED visits for SUD, including nonfatal overdose, will be measured as part of RQ 2 ("Do members receiving SUD services experience improved health outcomes?")
Serious Mental Illness Aged Dental Intensive Stabilization Services Approved 9/1/22	SMI: RQ about service utilization will be retained under the umbrella RQ " Does the 1115 Demonstration increase access to appropriate treatment for individuals with SMI?" One RQ regarding BH services provided at FQHCs will not be included in the Summative. ISS: The RQ " Did the availability of crisis stabilization services increase?" is reframed as " Is the 1115 Demonstration delivering services appropriately to the ISS population?" and will be addressed with the measures listed above, focusing on service delivery rather than availability.
PCN Current Eligible Utah Premium Partnership Targeted Adults Blind and Disabled Dental Approved 9/1/22	TAM: RQs concerning costs of specific services removed because they are low priority for the state. Total PMPM cost for the TAM population will be measured. Current eligible: Multiple research questions removed. Because this element is winding down, the evaluation will focus on access to primary care, and ED utilization for this population. UPP: Removed RQ "What is the total number and percentage being denied subsidy assistance?" because of data availability and population size.

J.2. EVALUATION DESIGN TABLES

Hypothesis 1: The Demonstration overall will improve access to coverage and engagement in health care for low-income UT residents.				
Comparison Strategy	**Measure Name**	**Measure Description**	**Data source**	**Analytic Approach**
Primary research question 1.1: Did the fraction of low-income residents with health care coverage increase, relative to comparison states?				
Comparison states	Any coverage	Fraction with any health insurance coverage	BRFSS	Difference-in-difference Synthetic control model
Primary research question 1.2: Did the cost of uncompensated care decrease relative to comparison states?				
Comparison states	Uncompensated care cost	Uninsured/bad debt as a percentage of net patient revenue, and as a percentage of operating expenditures	NASHP HCT	Difference-in-difference Synthetic control model
Primary research question 1.3: Did the fraction of low-income residents who avoided care due to cost decrease, relative to comparison states?				
Comparison states	Avoided care due to cost	Fraction who delayed or avoided needed care because of cost	BRFSS	Difference-in-difference Synthetic control model
Primary research question 1.4: Did the fraction of low-income residents who have a personal doctor or usual source of care increase, relative to comparison states?				
Comparison states	Has a personal doctor	Fraction who says they have one person they think of as their person doctor or provider	BRFSS	Difference-in-difference Synthetic control model
Primary research question 1.5: Did the fraction of low-income residents who had a routine check-up (a primary or specialty care appointment) in the last year increase, relative to comparison states?				
Comparison states	Had a primary or specialty appointment	Had a checkup or visit with a specialist in the last 12 months	BRFSS	Difference-in-difference Synthetic control model
Primary research question 1.6: Did the fraction of low-income residents who had a preventive screening (mammogram) in the last year increase, relative to comparison states?				
Comparison states	Had a preventative screening	Fraction who reported having a mammogram in the last 12 months	BRFSS	Difference-in-difference Synthetic control model

Hypothesis 2: The Demonstration will improve healthcare access and engagement for the Adult Expansion population.				
Comparison Strategy	**Measure Name**	**Measure Description**	**Data source**	**Analytic Approach**
Primary research question 2.1: Did inpatient hospital utilization decrease over time for the Adult Expansion population?				
Compare to Current Eligibles	Inpatient Utilization (IPU)	Inpatient admissions per member per year	Claims	Trend over time, mixed effects regression
Primary research question 2.2: Did ED visits decrease over time for the Adult Expansion population?				
Compare to Current Eligibles	ED visits (EDU)	ED visits per member per year	Claims	Trend over time, mixed effects regression
Subsidiary research question 2.2.a: Did ED visits for BH conditions decrease over time for the Adult Expansion population?				
Compare to Current Eligibles	ED-BH visits (EDU-BH)	ED visits for BH condition per member per year	Claims	Trend over time, mixed effects regression
Subsidiary research question 2.2.b: Did UMIC plans reduce ED visits for BH conditions for Adult Expansion population, relative to FFS or physical health-only ACO plans?				
Plan Type Comparison: UMIC, FFS/PMHP, ACO/PMHP	ED-BH visits (EDU-BH)	ED visits for BH condition per member per year	Claims	Trend over time, mixed effects regression
Primary research question 2.3: Did engagement in primary and ambulatory care increase over time for the Adult Expansion population?				
Compare to Current Eligibles	Adults' Access to Preventative/Ambulatory Health Services (AAP)	Fraction of beneficiaries who had an ambulatory or preventive care visit during the measurement year	Claims	Trend over time, mixed effects regression
Primary research question 2.4: Did engagement in behavioral health care increase over time for the Adult Expansion population?				
Compare to Current Eligibles	Antidepressant Medication Management (AMM)	Adults with a diagnosis of major depression who were newly treated with antidepressant medication and remained on their antidepressant medications.	Claims	Trend over time, mixed effects regression
Compare to Current Eligibles	Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment (IET)	Fraction with a new episode of alcohol or other drug dependence who: 1) initiated treatment within 14 days of diagnosis. 2) engaged in	Claims	Trend over time, mixed effects regression

		continued treatment within 34 days of the initiation visit.		
Compare to Current Eligibles	Follow-Up After Hospitalization for Mental Illness (FUH)	Following discharge for mental illness or intentional self-harm, fraction with outpatient follow-up in 7 days, and within 30 days.	Claims	Trend over time, mixed effects regression
Compare to Current Eligibles	30-Day All-Cause Unplanned Readmission Following Psychiatric Hospitalization in an Inpatient Psychiatric Facility (REA)	The rate of unplanned, 30-day, readmission for Demonstration beneficiaries with a primary discharge diagnosis of a psychiatric disorder or dementia/Alzheimer's disease.	Claims	Trend over time, mixed effects regression
Subsidiary research question 2.4.a: Did UMIC plans improve engagement in behavioral health care for Adult Expansion population, relative to FFS or physical health-only ACO plans?				
Plan Type Comparison: UMIC, FFS/PMHP, ACO/PMHP	Antidepressant Medication Management (AMM)	Adults with a diagnosis of major depression who were newly treated with antidepressant medication and remained on their antidepressant medications.	Claims	Trend over time, mixed effects regression
Plan Type Comparison: UMIC, FFS/PMHP, ACO/PMHP	Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment (IET)	Fraction with a new episode of alcohol or other drug dependence who: 1) initiated treatment within 14 days of diagnosis. 2) engaged in continued treatment within 34 days of the initiation visit.	Claims	Trend over time, mixed effects regression
Plan Type Comparison: UMIC, FFS/PMHP, ACO/PMHP	Follow-Up After Hospitalization for Mental Illness (FUH)	Following discharge for mental illness or intentional self-harm, fraction with outpatient follow-up in 7 days, and within 30 days.	Claims	Trend over time, mixed effects regression

Plan Type Comparison: UMIC, FFS/PMHP, ACO/PMHP	30-Day All-Cause Unplanned Readmission Following Psychiatric Hospitalization in an Inpatient Psychiatric Facility (REA)	The rate of unplanned, 30-day, readmission for Demonstration beneficiaries with a primary discharge diagnosis of a psychiatric disorder or dementia/Alzheimer's disease.	Claims	Trend over time, mixed effects regression
Primary research question 2.5: Did engagement in treatment for chronic conditions increase over time for the Adult Expansion population?				
Compare to Current Eligibles	Monitoring for persistent medications (MPM)	Assesses adults who received at least 180 treatment days of ambulatory medication therapy for a select therapeutic agent (for hypertension or heart disease) during the measurement year and received at least one therapeutic monitoring event for the therapeutic agent during the measurement year:	Claims	Trend over time, mixed effects regression

Hypothesis 3: The Demonstration will improve healthcare access and engagement for the TAM population.				
Comparison Strategy	**Measure Name**	**Measure Description**	**Data source**	**Analytic Approach**
Primary research question 3.1: Did inpatient hospital utilization decrease over time for the TAM population?				
Compare to Current Eligibles with an SMI/SUD diagnosis	Inpatient Utilization (IPU)	Inpatient admissions per member per year	Claims	Trend over time, mixed effects regression
Primary research question 3.2: Did ED visits decrease over time for the TAM population?				
Compare to Current Eligibles with an SMI/SUD diagnosis	ED visits (EDU)	ED visits per member per year	Claims	Trend over time, mixed effects regression
Subsidiary research question 3.2.a: Did ED visits for BH conditions decrease over time for the TAM population?				
Compare to Current Eligibles with an SMI/SUD diagnosis	ED-BH visits	ED visits for BH condition per member per year	Claims	Trend over time, mixed effects regression
Primary research question 3.3: Did engagement in primary and ambulatory care increase over time for the TAM population?				
Compare to Current Eligibles with an SMI/SUD diagnosis	Adults' Access to Preventative/Ambulatory Health Services (AAP)	Fraction of beneficiaries who had an ambulatory or preventive care visit during the measurement year	Claims	Trend over time, mixed effects regression
Primary research question 3.4: Did engagement in behavioral health care increase over time for the TAM population?				
Compare to Current Eligibles with an SMI/SUD diagnosis	Follow-Up After Hospitalization for Mental Illness (FUH)	Following discharge for mental illness or intentional self-harm, fraction with outpatient follow-up in 7 days, and within 30 days.	Claims	Trend over time, mixed effects regression
Compare to Current Eligibles with an SMI/SUD diagnosis	30-Day All-Cause Unplanned Readmission Following Psychiatric Hospitalization in an Inpatient Psychiatric Facility (REA)	The rate of unplanned, 30-day, readmission for Demonstration beneficiaries with a primary discharge diagnosis of a psychiatric disorder or dementia/Alzheimer's disease.	Claims	Trend over time, mixed effects regression
Compare to Current Eligibles with an SMI/SUD diagnosis	Initiation and Engagement of Alcohol and Other Drug Abuse	Fraction with a new episode of alcohol or other drug dependence who: 1) initiated treatment within 14 days of diagnosis. 2) engaged in	Claims	Trend over time, mixed effects regression

	or Dependence Treatment (IET)	continued treatment within 34 days of the initiation visit.		

Hypothesis 4: The Demonstration will result in maintained or improved member experience and satisfaction.				
Comparison Strategy	**Measure Name**	**Measure Description**	**Data source**	**Analytic Approach**
Primary research question 4.1: Did UMIC members report member experience and satisfaction equal to or better than ACO members?				
UMIC to ACO	Member Experience, CAHPS®	Member perceptions: Getting needed care Getting needed care quickly How well doctors communicate	CAHPS®	Descriptive statistics
Primary research question 4.2: Did member experience and satisfaction change over time?				
Counts over time	Grievances	Number of grievances reported by month	Medicaid administrative data	Descriptive statistics
Survey fielded 2020, 2021, 2022, responses over time	Member Experience, custom member survey	Member perceptions: Coverage of mental health services Availability of community resources for behavioral health care Ability to obtain behavioral health care when needed Effectiveness of behavioral health care received	Custom Member Survey	Descriptive statistics

Hypothesis 5: The SMI and SUD Demonstrations increased access to appropriate treatment.				
Comparison Strategy	**Measure Name**	**Measure Description**	**Data source**	**Analytic Approach**
Primary research question 5.1: Did the number of individuals receiving services for SMI and/or SUD increase over time?				
Annual counts	Service Counts: SUD	Number of members receiving SUD treatment	Claims	Time-series regression
Annual counts	Service Counts: SMI	Number of members receiving SUD treatment	Claims	Time-series regression
Primary research question 5.2: Did ED visits for BH conditions decrease among individuals with SMI and/or SUD diagnoses over time?				
Pre-Demonstration baseline Stratify by: SMI only, SUD only, SMI/SUD dually diagnosed	ED-BH visits	ED visits for BH condition per member per year	Claims	Time-series regression
Primary research question 5.3: Did engagement in SUD treatment increase among individuals with SUD diagnoses over time?				
Pre-Demonstration baseline	Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment (IET)	Fraction with a new episode of alcohol or other drug dependence who: 1) initiated treatment within 14 days of diagnosis. 2) engaged in continued treatment within 34 days of the initiation visit.	Claims	Time-series regression
Primary research question 5.4: Did follow up following hospitalization for psychiatric treatment increase among individuals with SMI relative to baseline?				
Pre-Demonstration baseline	Follow-Up After Hospitalization for Mental Illness (FUH)	Following discharge for mental illness or intentional self-harm, fraction with outpatient follow-up in 7 days, and within 30 days.	Claims	Time-series regression
Primary research question 5.5: Did utilization of any mental health service increase among low-income residents, relative to comparison states?				

Comparison states	Mental health treatment	Percentage who reported receiving mental health (non-SUD) treatment in the last 12 months	NSDUH	Difference-in-difference; Synthetic control model
Primary research question 5.6: Did the number of individuals needing but not receiving SUD service decrease among low-income residents, relative to comparison states?				
Comparison states	SUD treatment	Percentage who reported needing, but not receiving SUD treatment in the last 12 months	NSDUH	Difference-in-difference; Synthetic control model

Hypothesis 6: The SMI and SUD Demonstrations stabilized or reduced cost of care for these populations.				
Comparison Strategy	**Measure Name**	**Measure Description**	**Data source**	**Analytic Approach**
Primary research question 6.1: Did the total cost of care for individuals with SMI diagnoses change over time?				
Pre-Demonstration baseline	Total Cost of Care	Total costs per beneficiary per month is the sum of the state's Medicaid costs (inpatient, outpatient, pharmacy, long-term care, IMD, and MCO capitated payments) and the federal cost (total Medicaid * FMAP for Utah).	Claims	Interrupted time series
Subsidiary research question 6.1.a: Did costs related to the diagnosis and treatment of SMI changeover time? (SMI-IMD costs + other SMI costs + non-SMI costs)?				
Pre-Demonstration baseline	Costs related to the diagnosis and treatment of SMI	These costs include *SMI-IMD costs + other SMI costs + non-SMI costs*	Claims	Interrupted time series
Subsidiary research question 6.1.b: What types of care (inpatient + non-ED outpatient, + ED outpatient + pharmacy, + long-term care) are the primary drivers of the cost of care for the SMI population?				

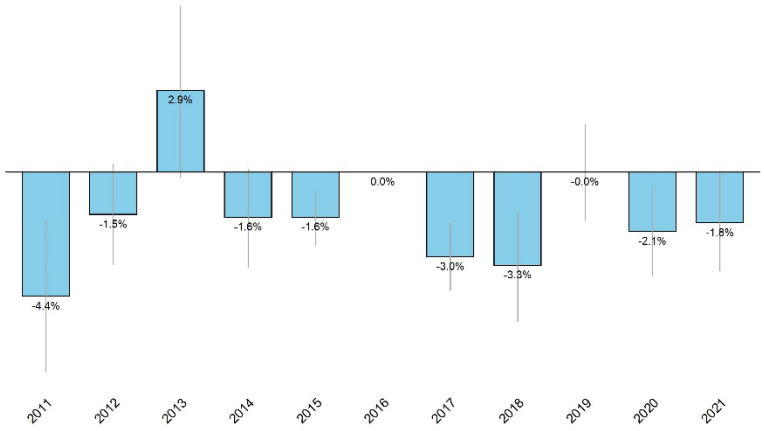
Pre-Demonstration baseline	Source of treatment cost drivers	These costs include inpatient + non-ED outpatient, + ED outpatient + pharmacy, + long-term care	Claims	Interrupted time series
Primary research question 6.2: Did the total cost of care for individuals with SUD diagnoses change over time?				
Pre-Demonstration baseline	Total Cost of Care	Total costs per beneficiary per month is the sum of the state's Medicaid costs (inpatient, outpatient, pharmacy, long-term care, IMD, and MCO capitated payments) and the federal cost (total Medicaid * FMAP for Utah).	Claims	Interrupted time series
Subsidiary research question 6.2.a: Did costs related to the diagnosis and treatment of SUD change over time? (SUD-IMD costs + other SUD costs + non-SUD costs)?				
Pre-Demonstration baseline	Costs related to the diagnosis and treatment of SMI	These costs include *SMI-IMD costs + other SMI costs + non-SMI costs*	Claims	Interrupted time series
Subsidiary research question 6.2.b: What types of care (inpatient + non-ED outpatient, + ED outpatient + pharmacy, + long-term care) are the primary drivers of the cost of care for the SUD population?				
Pre-Demonstration baseline	Source of treatment cost drivers	These costs include *inpatient + non-ED outpatient, + ED outpatient + pharmacy, + long-term care*	Claims	Interrupted time series

Hypothesis 7: The Demonstration delivered coverage/ services appropriately to individuals in the smaller Demonstration populations.				
Comparison Strategy	**Measure Name**	**Measure Description**	**Data source**	**Analytic Approach**
UPP/ESI				
Primary research question 7.1: Did the number of individuals receiving coverage increase over time?				
Plot over time	Enrollment	Number of unique individuals enrolled in each plan (UPP/ESI)	Claims	Descriptive statistics, time-series regression
Primary research question 7.2: What was the average total Medicaid cost of care for enrollees?				
Plot over time	Total cost of care	Total cost of care (paid claims plus premium payments) for each plan (UPP/ESI)	Claims	Descriptive statistics, time-series regression
Primary research question 7.3: Did the pmpm cost for enrollees change over time?				
Plot over time	Average pmpm expenditure	Total per member per month cost of care (paid claims plus premium payments) for each plan (UPP/ESI)	Claims	Descriptive statistics, time-series regression
ISS				
Primary research question 7.4 Did the number of individuals receiving ISS increase over time?				
Plot over time	ISS Service Recipients	Number of unique individuals who received ISS	Claims	Descriptive statistics
ABD Dental, TAM Dental				
Primary research question 7.5: Did dental service provision increase over time?				
Plot over time Stratify by Dental type: Aged, Blind/Disabled, TAM	Dental Service Recipients	Number of unique individuals who received dental services	Claims	Descriptive statistics, time-series regression

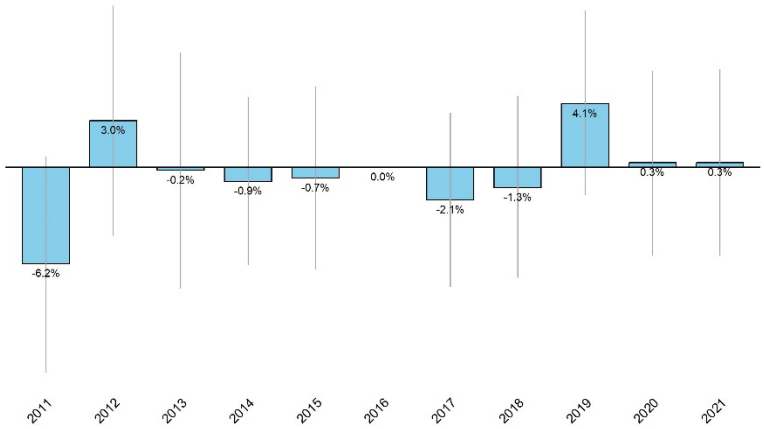
Plot over time, stratify by Dental type: Aged, Blind/Disabled, TAM	Dental Services	Number of dental services provided	Claims	Descriptive statistics, time-series regression
Primary research question 7.6: Did the rate of ED visits for dental conditions decrease over time?				
Plot over time , stratify by Dental type: Aged, Blind/Disabled, TAM	ED Visits for Dental diagnoses	Number of ED visits with a primary diagnosis for a dental condition	Claims	Descriptive statistics, time-series regression
Primary research question 7.7: What was the average cost of dental services?				
Plot over time , stratify by Dental type: Aged, Blind/Disabled, TAM	Cost of Dental Claims	Total cost of claims paid for dental services	Claims	Descriptive statistics, time-series regression
FFCYAS				
Primary research question 7.8: How many FFCYAS received coverage?				
Plot over time	Number of FFCYAS	Number of unique individuals in FFCYAS coverage group	Required Monitoring Reports	Counts

J.3 BRFSS EVENT STUDY PLOTS

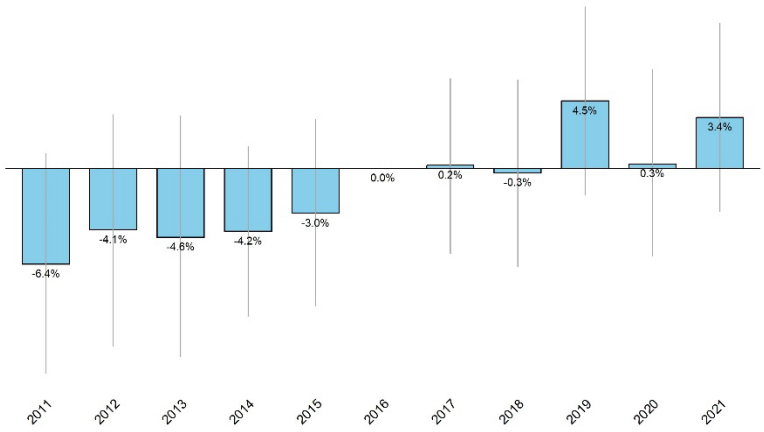
Event study estimates for the effects of UT Medicaid expansion on insurance coverage



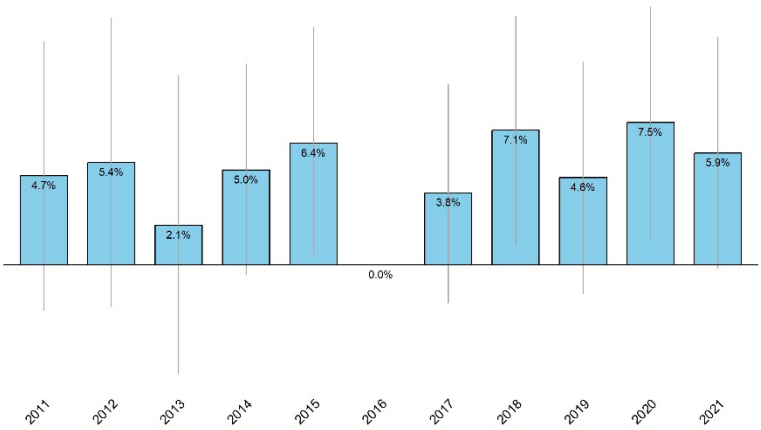
Event study estimates for the effects of UT Medicaid expansion on having a personal doctor



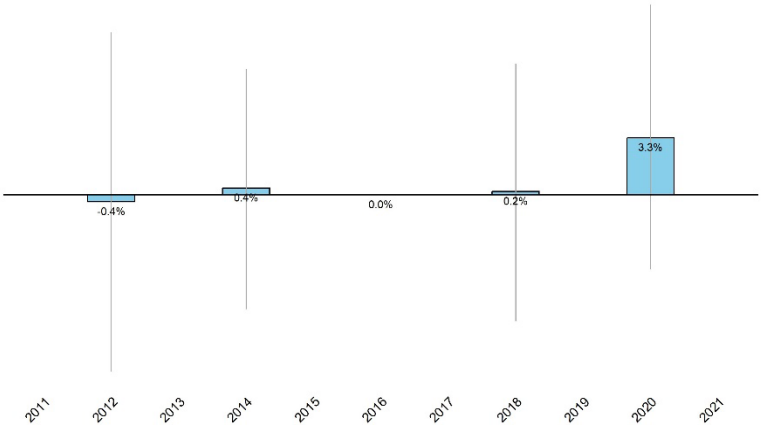
Event study estimates for the effects of UT Medicaid expansion on having an annual checkup



Event study estimates for the effects of UT Medicaid expansion on having avoided care due to cost



Event study estimates for the effects of UT Medicaid expansion on receipt of mammogram in past 12 months



J.4 ADDITIONAL RESULT TABLES: BRFSS AND NASHP HCT

Table. Synthetic control estimates for the changes in health care access & service utilization for Utah and control states

		Basline Outcome[1]	Differential Change in Post Period (95% CI)[2]	Permuted P-Value[3]
Have Health Care Coverage	Utah	72.8	-1.3 (-2.8, 0.3)	0.1043
	Control	70.5	--	
Have Personal Doctor	Utah	59.9	2.5 (1.5, 3.6)	<0.0001
	Control	61.6	--	
Last Routine Checkup	Utah	51.3	-0.1 (-2.0, 1.9)	0.9574
	Control	52.5	--	
Avoided Care Due to Cost	Utah	22.7	3.7 (2.4, 4.9)	<0.0001
	Control	24.1	--	
Last Mammogram	Utah	14.4	3.2 (0.8, 5.7)	0.0108
	Control	12.4	--	

Source: Analysis of data from the January 2011 to June 2022 Behavioral Risk Factor Surveillance System (BRFSS).
Notes: All states were included in the donor poor regardless of Medicaid expansion status, except those that expanded during the outcome period (ID, NE, OK, MO). [1]Mean quarterly outcome at the end of 2016 for Utah and control (synthetic Utah). [2]Percentage point difference in outcomes between Utah and synthetic Utah during January 2017 to June 2022.Taylor series linearization is used to identify whether the changes observed in Utah are statistically different from the control. [3]Permutation testing involves iteratively reassigning treatment status to each control state and then re-running the analyses to generate placebo effect estimates. This step identifies whether the observed effect in the treated state is likely to have occurred by chance given the empirical distribution of placebo effect estimates.

J.5 ADULT EXPANSION: REGRESSION RESULTS BY MEASURE

AAP - Adults' Access to Preventative/Ambulatory Health Services

Mixed logistic regression models, AAP. AE vs CE

	Crude		Adjusted	
AAP visits (Yes/No)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	0.67***	[0.62,0.72]	0.77***	[0.71,0.82]
MY	0.72***	[0.70,0.75]	0.76***	[0.73,0.79]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	0.93***	[0.89,0.97]	0.97	[0.93,1.01]
Gender:				
Male			1	[1,1]
Female			2.69***	[2.58,2.80]
Race:				
White			1	[1,1]
Non-white			0.57***	[0.54,0.60]
Missing or other			0.80***	[0.76,0.83]
Region:				
Urban			1	[1,1]
Rural			1.29***	[1.23,1.35]
Frontier			1.34***	[1.22,1.47]
Chronic disease			8.50***	[8.12,8.89]
Age			1.02***	[1.02,1.02]
SMI/SUD:				
None			1	[1,1]
SMI only			4.64***	[4.10,5.26]
SUD only			1.68***	[1.59,1.77]
SMI + SUD			2.81***	[2.56,3.07]
N	221832		221832	
AE over time	0.67***		0.74***	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

AMM – Antidepressant Medication Management, *Acute Phase Treatment:*

Mixed logistic regression models, AMM Effective Acute Phase Treatment. AE vs CE

	Crude		Adjusted	
Treated for 84 days (Yes/No)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	0.79	[0.52,1.19]	0.74	[0.48,1.13]
MY	1.46**	[1.16,1.85]	1.47**	[1.16,1.87]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	1.01	[0.77,1.34]	1.00	[0.75,1.34]
Gender:				
Male			1	[1,1]
Female			1.10	[0.85,1.42]
Race:				
White			1	[1,1]
Non-white			0.44***	[0.30,0.66]
Missing or other			1.02	[0.80,1.29]
Region:				
Urban			1	[1,1]
Rural			0.84	[0.63,1.11]
Frontier			0.85	[0.45,1.62]
Chronic disease			1.11	[0.85,1.45]
Age group:				
19 to 44			1	[1,1]
45 to 54			1.75***	[1.28,2.41]
55 to 64			1.75*	[1.13,2.71]
SMI/SUD:				
None			1	[1,1]
SMI only			1.26	[0.88,1.82]
SUD only			0.66**	[0.48,0.90]
SMI + SUD			0.60**	[0.45,0.82]
N	4684		4684	
AE over time	1.49***		1.48***	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

AMM – Antidepressant Medication Management, *Acute Phase Treatment – Plan Comparison*:

Mixed logistic regression models, AMM Effective Acute Phase Treatment. AE Plan vs CE

	Crude		Adjusted	
Treated for 84 days (Yes/No)				
Plan:				
CE	1	[1,1]	1	[1,1]
ACO	0.63	[0.29,1.35]	0.55	[0.25,1.19]
FFS	0.78	[0.41,1.48]	0.82	[0.43,1.55]
UMIC	0.84	[0.52,1.37]	0.79	[0.48,1.29]
MY	1.47**	[1.16,1.87]	1.47**	[1.16,1.86]
CE*MY	1	[1,1]	1	[1,1]
ACO*MY	1.13	[0.69,1.84]	1.14	[0.70,1.87]
FFS*MY	0.96	[0.62,1.48]	0.92	[0.60,1.43]
UMIC*MY	0.99	[0.72,1.37]	0.99	[0.72,1.37]
Gender:				
Male			1	[1,1]
Female			1.10	[0.85,1.42]
Race:				
White			1	[1,1]
Non-white			0.44***	[0.30,0.66]
Missing or other			1.02	[0.80,1.29]
Chronic disease			1.11	[0.85,1.45]
Age group:				
19 to 44			1	[1,1]
45 to 54			1.74***	[1.27,2.39]
55 to 64			1.74*	[1.12,2.71]
SMI/SUD:				
None			1	[1,1]
SMI only			1.27	[0.88,1.83]
SUD only			0.65**	[0.48,0.89]
SMI + SUD			0.60**	[0.45,0.82]
N	4684		4684	
ACO over time	1.66**		1.68**	
FFS over time	1.41*		1.36	
UMIC over time	1.46***		1.46***	

Exponentiated coefficients; 95% confidence intervals in brackets
Plans over time estimates result from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(Plan)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

AMM – Antidepressant Medication Management, *Continued Phase Treatment*:

Mixed logistic regression models, AMM Effective Continuation Phase Treatment. AE vs CE

	Crude		Adjusted	
Treated for 84 days (Yes/No)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	1.11	[0.75,1.64]	1.07	[0.72,1.59]
MY	1.35**	[1.10,1.65]	1.34**	[1.09,1.64]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	0.91	[0.70,1.18]	0.92	[0.71,1.20]
Gender:				
Male			1	[1,1]
Female			1.36*	[1.07,1.73]
Race:				
White			1	[1,1]
Non-white			0.42***	[0.29,0.59]
Missing or other			1.03	[0.83,1.28]
Region:				
Urban			1	[1,1]
Rural			0.89	[0.69,1.15]
Frontier			0.74	[0.41,1.35]
Chronic disease			1.32*	[1.03,1.70]
Age			1.04***	[1.03,1.05]
SMI/SUD:				
None			1	[1,1]
SMI only			1.21	[0.88,1.66]
SUD only			0.74*	[0.56,0.98]
SMI + SUD			0.64***	[0.49,0.84]
N	4684		4684	
AE over time	1.22**		1.24**	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

AMM – Antidepressant Medication Management, *Continued Phase Treatment – Plan Comparison*:

Mixed logistic regression models, AMM Effective Continuation Phase Treatment. AE Plan vs CE

	Crude		Adjusted	
Treated for 84 days (Yes/No)				
Plan:				
CE	1	[1,1]	1	[1,1]
ACO	1.27	[0.61,2.64]	1.15	[0.55,2.41]
FFS	0.75	[0.41,1.39]	0.75	[0.40,1.39]
UMIC	1.28	[0.80,2.03]	1.23	[0.77,1.97]
MY	1.35**	[1.10,1.65]	1.34**	[1.09,1.64]
CE*MY	1	[1,1]	1	[1,1]
ACO*MY	0.86	[0.55,1.37]	0.89	[0.56,1.42]
FFS*MY	1.08	[0.72,1.61]	1.05	[0.70,1.58]
UMIC*MY	0.84	[0.63,1.13]	0.86	[0.64,1.17]
Gender:				
Male			1	[1,1]
Female			1.37*	[1.07,1.74]
Race:				
White			1	[1,1]
Non-white			0.42***	[0.30,0.59]
Missing or other			1.03	[0.83,1.28]
Chronic disease			1.32*	[1.02,1.69]
Age			1.04***	[1.03,1.05]
SMI/SUD:				
None			1	[1,1]
SMI only			1.21	[0.88,1.66]
SUD only			0.75*	[0.57,0.99]
SMI + SUD			0.65**	[0.50,0.85]
N	4684		4684	
ACO over time	1.17		1.19	
FFS over time	1.45**		1.41*	
UMIC over time	1.14		1.16	

Exponentiated coefficients; 95% confidence intervals in brackets
Plans over time estimates result from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(Plan)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

EDU – Emergency Department Utilization, *All ED Visits:*

Mixed Poisson regression models, EDU ALL, AE vs CE

	Crude		Adjusted	
Total EDU visits (#)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	0.98	[0.95,1.02]	0.98	[0.95,1.02]
MY	0.96***	[0.94,0.97]	1.01	[0.99,1.03]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	0.92***	[0.91,0.95]	0.94***	[0.92,0.96]
Gender:				
Male			1	[1,1]
Female			1.15***	[1.13,1.18]
Race:				
White			1	[1,1]
Non-white			1.16***	[1.13,1.19]
Missing or Other			0.99	[0.97,1.01]
Region:				
Urban			1	[1,1]
Rural			1.01	[0.98,1.03]
Frontier			0.83***	[0.79,0.87]
Chronic disease			2.35***	[2.30,2.39]
Age			1.00**	[1.00,1.00]
SMI/SUD:				
None			1	[1,1]
SMI only			1.95***	[1.86,2.03]
SUD only			2.30***	[2.25,2.35]
SMI + SUD			3.01***	[2.92,3.11]
N	211517		211517	
AE over time	0.89***		0.95***	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Behavioral Health Related ED Visits:

DYMixed Poisson regression models, EDU BH, AE vs CE

	Crude		Adjusted	
BH EDU visits (#)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	2.03***	[1.80,2.30]	1.66***	[1.47,1.87]
DY	0.80***	[0.75,0.86]	0.89**	[0.83,0.96]
Current Eligible*DY	1	[1,1]	1	[1,1]
Adult Expansion*DY	0.82***	[0.76,0.90]	0.84***	[0.78,0.92]
Gender:				
Male			1	[1,1]
Female			0.84***	[0.79,0.89]
Race:				
White			1	[1,1]
Non-white			1.01	[0.93,1.11]
Missing or Other			1.06	[1.00,1.13]
Region:				
Urban			1	[1,1]
Rural			1.05	[0.97,1.13]
Frontier			1.10	[0.95,1.28]
Chronic disease			1.24***	[1.16,1.32]
Age			0.98***	[0.98,0.98]
SMI/SUD:				
None			1	[1,1]
SMI only			11.7***	[10.3,13.3]
SUD only			14.3***	[13.1,15.5]
SMI + SUD			36.2***	[33.0,39.7]
N	211517		211517	
AE over time	0.66***		0.76***	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Behavioral Health Related ED Visits – Plan Comparison:

Mixed Poisson regression models, EDU BH, AE plan vs CE

	Crude		Adjusted	
BH EDU visits (#)				
Plan:				
CE	1	[1,1]	1	[1,1]
ACO	1.46**	[1.16,1.83]	1.41**	[1.13,1.76]
FFS	1.97***	[1.64,2.37]	1.55***	[1.30,1.85]
UMIC	2.15***	[1.89,2.44]	1.72***	[1.52,1.95]
MY	0.80***	[0.75,0.86]	0.89**	[0.83,0.96]
CE*MY	1	[1,1]	1	[1,1]
ACO*MY	1.04	[0.90,1.20]	1.04	[0.90,1.20]
FFS*MY	0.74***	[0.65,0.84]	0.82**	[0.72,0.93]
UMIC*MY	0.81***	[0.74,0.89]	0.82***	[0.75,0.89]
Gender:				
Male			1	[1,1]
Female			0.84***	[0.79,0.89]
Race:				
White			1	[1,1]
Non-white			1.02	[0.94,1.12]
Missing or Other			1.06	[0.99,1.13]
Chronic disease			1.24***	[1.16,1.32]
Age			0.98***	[0.98,0.98]
SMI/SUD:				
None			1	[1,1]
SMI only			11.6***	[10.2,13.2]
SUD only			14.3***	[13.2,15.6]
SMI + SUD			36.1***	[32.9,39.7]
N	211517		211517	
ACO over time	0.84***		0.93	
FFS over time	0.59***		0.73***	
UMIC over time	0.65***		0.73***	

Exponentiated coefficients; 95% confidence intervals in brackets
Plan over time estimates result from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(1)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FUH – Follow Up After Hospitalization for Mental Illness, *7 Day:*

Mixed logistic regression models, 7 days FUH. AE vs CE

	Crude		Adjusted	
7 Days Follow-up (Yes/No)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	0.73	[0.46,1.16]	0.77	[0.48,1.23]
MY	1.04	[0.94,1.15]	1.05	[0.95,1.16]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	0.97	[0.83,1.13]	0.96	[0.83,1.12]
Gender:				
Male			1	[1,1]
Female			1.07	[0.91,1.26]
Race:				
White			1	[1,1]
Non-white			0.62***	[0.48,0.79]
Missing or other			0.87	[0.74,1.02]
Region:				
Urban			1	[1,1]
Rural			1.35**	[1.10,1.65]
Frontier			1.96*	[1.08,3.53]
Chronic disease			1.14	[0.96,1.36]
Age			0.99	[0.99,1.00]
SMI/SUD:				
None			1	[1,1]
SMI only			1.74**	[1.24,2.42]
SUD only			0.85	[0.59,1.25]
SMI + SUD			1.05	[0.77,1.43]
N	5093		5093	
AE over time	1.01		1.01	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FUH – Follow Up After Hospitalization for Mental Illness, *7 Day – Plan Comparison:*

Mixed logistic regression models, 7 days FUH. AE Plan vs CE

	Crude		Adjusted	
7 Days Follow-up (Yes/No)				
Plan:				
CE	1	[1,1]	1	[1,1]
ACO	2.54	[0.71,9.09]	2.10	[0.59,7.46]
FFS	0.74	[0.26,2.05]	0.79	[0.29,2.21]
UMIC	0.61	[0.36,1.02]	0.65	[0.39,1.09]
MY	1.04	[0.94,1.15]	1.06	[0.96,1.17]
CE*MY	1	[1,1]	1	[1,1]
ACO*MY	0.81	[0.55,1.18]	0.85	[0.59,1.24]
FFS*MY	1.04	[0.74,1.44]	1.03	[0.74,1.43]
UMIC*MY	0.99	[0.84,1.16]	0.97	[0.83,1.15]
Gender:				
Male			1	[1,1]
Female			1.07	[0.91,1.26]
Race:				
White			1	[1,1]
Non-white			0.62***	[0.48,0.79]
Missing or other			0.88	[0.75,1.04]
Chronic disease			1.15	[0.97,1.37]
Age			0.99	[0.99,1.00]
SMI/SUD:				
None			1	[1,1]
SMI only			1.80***	[1.29,2.52]
SUD only			0.88	[0.60,1.28]
SMI + SUD			1.12	[0.82,1.53]
N	5093		5093	
ACO over time	0.84		0.90	
FFS over time	1.08		1.09	
UMIC over time	1.03		1.03	

Exponentiated coefficients; 95% confidence intervals in brackets
Plans over time estimates resultfrom the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(1)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FUH – Follow Up After Hospitalization for Mental Illness, *30 Day:*

Mixed logistic regression models, 30 days FUH. AE vs CE

	Crude		Adjusted	
30 Days Follow-up (Yes/No)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	0.39***	[0.24,0.66]	0.41***	[0.25,0.69]
MY	0.98	[0.87,1.09]	1.00	[0.89,1.12]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	1.13	[0.96,1.34]	1.13	[0.96,1.33]
Gender:				
Male			1	[1,1]
Female			1.12	[0.94,1.35]
Race:				
White			1	[1,1]
Non-white			0.67**	[0.52,0.88]
Missing or other			0.86	[0.72,1.04]
Region:				
Urban			1	[1,1]
Rural			1.16	[0.92,1.46]
Frontier			1.82	[0.91,3.65]
Chronic disease			1.36**	[1.12,1.65]
Age			0.99	[0.98,1.00]
SMI/SUD:				
None			1	[1,1]
SMI only			2.02***	[1.39,2.94]
SUD only			0.73	[0.48,1.10]
SMI + SUD			1.12	[0.80,1.56]
N	5093		5093	
AE over time	1.11		1.13*	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FUH – Follow Up After Hospitalization for Mental Illness, *30 Day – Plan Comparison:*

Mixed logistic regression models, 30 days FUH. AE Plan vs CE

	Crude		Adjusted	
30 Days Follow-up (Yes/No)				
Plan:				
CE	1	[1,1]	1	[1,1]
ACO	1.27	[0.29,5.53]	0.97	[0.22,4.22]
FFS	0.57	[0.19,1.75]	0.64	[0.21,1.95]
UMIC	0.33***	[0.19,0.58]	0.35***	[0.20,0.62]
MY	0.98	[0.87,1.10]	1.00	[0.89,1.12]
CE*MY	1	[1,1]	1	[1,1]
ACO*MY	0.93	[0.60,1.44]	1.01	[0.65,1.56]
FFS*MY	0.99	[0.69,1.42]	0.98	[0.68,1.40]
UMIC*MY	1.17	[0.98,1.41]	1.16	[0.97,1.39]
Gender:				
Male			1	[1,1]
Female			1.13	[0.95,1.36]
Race:				
White			1	[1,1]
Non-white			0.68**	[0.52,0.89]
Missing or other			0.87	[0.72,1.05]
Chronic disease			1.36**	[1.12,1.65]
Age			0.99	[0.98,1.00]
SMI/SUD:				
None			1	[1,1]
SMI only			2.08***	[1.43,3.02]
SUD only			0.74	[0.49,1.12]
SMI + SUD			1.16	[0.83,1.63]
N	5093		5093	
ACO over time	0.91		1.01	
FFS over time	0.96		0.98	
UMIC over time	1.15*		1.16**	

Exponentiated coefficients; 95% confidence intervals in brackets
Plans over time estimates resultfrom the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(1)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

IET – Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment, *Initiation:*

Mixed logistic regression models, IET initiate. AE vs CE

	Crude		Adjusted	
Initiated treatment within 14 days of diagnosis (yes/no)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	1.11	[0.80,1.53]	1.08	[0.78,1.50]
MY	0.95	[0.77,1.18]	0.97	[0.78,1.19]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	0.94	[0.73,1.19]	0.93	[0.73,1.19]
Gender:				
Male			1	[1,1]
Female			0.83*	[0.70,0.99]
Race:				
White			1	[1,1]
Non-white			0.82	[0.64,1.05]
Missing or other			0.98	[0.82,1.17]
Region:				
Urban			1	[1,1]
Rural			1.02	[0.82,1.26]
Frontier			0.69	[0.43,1.10]
Chronic disease			1.11	[0.93,1.32]
Age			0.99***	[0.98,0.99]
SUD only			1	[1,1]
SMI + SUD			1.54***	[1.27,1.87]
N	12233		12233	
AE over time	0.89*		0.90*	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Engagement:

Mixed logistic regression models, IET engage. AE vs CE

	Crude		Adjusted	
Engaged in ongoing treatment within 34 days of initiation visit (yes/no)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	0.87	[0.51,1.48]	0.90	[0.52,1.55]
MY	0.80	[0.56,1.16]	0.81	[0.56,1.17]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	1.22	[0.80,1.84]	1.22	[0.81,1.86]
Gender:				
Male			1	[1,1]
Female			1.17	[0.87,1.58]
Race:				
White			1	[1,1]
Non-white			0.78	[0.50,1.23]
Missing or other			1.26	[0.93,1.71]
Region:				
Urban			1	[1,1]
Rural			1.42	[1.00,2.01]
Frontier			0.98	[0.45,2.13]
Chronic disease			0.83	[0.62,1.12]
Age			0.99	[0.98,1.01]
SUD only			1	[1,1]
SMI + SUD			1.90***	[1.38,2.61]
N	12233		12233	
AE over time	0.98		0.99	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

IPU – Inpatient Utilization: General Hospital/Acute Care, *Surgical Discharges:*

Mixed Poisson regression models, IPU surgical discharges, AE vs CE

	Crude		Adjusted	
Number of discharges, IPU surgical				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	2.17***	[1.90,2.48]	1.56***	[1.35,1.80]
MY	0.85***	[0.79,0.90]	0.85***	[0.80,0.91]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	0.86***	[0.80,0.93]	0.88**	[0.82,0.95]
Gender:				
Male			1	[1,1]
Female			0.80***	[0.72,0.88]
Race:				
White			1	[1,1]
Non-white			1.38***	[1.20,1.59]
Missing or other			1.27***	[1.14,1.41]
Region:				
Urban			1	[1,1]
Rural			1.12	[1.00,1.26]
Frontier			1.15	[0.92,1.44]
Chronic disease			10.5***	[9.29,11.8]
Age			1.06***	[1.06,1.07]
SMI/SUD:				
None			1	[1,1]
SMI only			8.94***	[7.36,10.9]
SUD only			3.53***	[3.12,3.99]
SMI + SUD			9.10***	[7.77,10.7]
N	221645		221645	
AE over time	0.73***		0.75***	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
Members with more than 14 discharges or more than 100 days of stay per MY were excluded.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Medical Discharges:

Mixed Poisson regression models, IPU medical discharges, AE vs CE

	Crude		Adjusted	
Number of discharges, IPU medical				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	2.58***	[2.30,2.90]	1.66***	[1.48,1.86]
MY	1.00	[0.95,1.05]	1.02	[0.97,1.07]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	0.88***	[0.83,0.93]	0.89***	[0.84,0.94]
Gender:				
Male			1	[1,1]
Female			0.62***	[0.57,0.67]
Race:				
White			1	[1,1]
Non-white			1.59***	[1.43,1.78]
Missing or other			1.36***	[1.25,1.48]
Region:				
Urban			1	[1,1]
Rural			0.98	[0.89,1.07]
Frontier			0.92	[0.77,1.10]
Chronic disease			28.2***	[25.1,31.6]
Age			1.06***	[1.06,1.06]
SMI/SUD:				
None			1	[1,1]
SMI only			11.0***	[9.46,12.8]
SUD only			5.99***	[5.43,6.60]
SMI + SUD			17.0***	[15.1,19.0]
N	221645		221645	
AE over time	0.88***		0.91***	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
Members with more than 14 discharges or more than 100 days of stay per MY were excluded.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Overall Discharges:

Mixed Poisson regression models, IPU overall discharges, AE vs CE

	Crude		Adjusted	
Number of discharges, IPU overall				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	2.35***	[2.13,2.60]	1.55***	[1.42,1.70]
MY	0.94**	[0.91,0.98]	0.96*	[0.92,1.00]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	0.89***	[0.85,0.93]	0.90***	[0.86,0.94]
Gender:				
Male			1	[1,1]
Female			0.69***	[0.65,0.74]
Race:				
White			1	[1,1]
Non-white			1.47***	[1.34,1.60]
Missing or other			1.31***	[1.22,1.40]
Region:				
Urban			1	[1,1]
Rural			1.03	[0.95,1.11]
Frontier			1.02	[0.88,1.17]
Chronic disease			18.1***	[16.6,19.8]
Age			1.06***	[1.06,1.06]
SMI/SUD:				
None			1	[1,1]
SMI only			8.79***	[7.77,9.94]
SUD only			4.51***	[4.18,4.87]
SMI + SUD			11.3***	[10.3,12.5]
N	221645		221645	
AE over time	0.84***		0.86***	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
Members with more than 14 discharges or more than 100 days of stay per MY were excluded.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Overall Length of Stay:

Mixed Poisson regression models, IPU overall length of stay (days), AE vs CE

	Crude		Adjusted	
Length of stay (days), IPU overall				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	1.25***	[1.18,1.32]	1.18***	[1.12,1.25]
MY	1.03*	[1.00,1.06]	1.03	[1.00,1.06]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	0.97	[0.94,1.00]	0.97	[0.94,1.00]
Gender:				
Male			1	[1,1]
Female			0.91***	[0.88,0.94]
Race:				
White			1	[1,1]
Non-white			1.14***	[1.09,1.19]
Missing or other			1.04*	[1.00,1.08]
Region:				
Urban			1	[1,1]
Rural			0.94**	[0.90,0.98]
Frontier			0.95	[0.88,1.03]
Chronic disease			1.34***	[1.27,1.41]
Age			1.01***	[1.01,1.01]
SMI/SUD:				
None			1	[1,1]
SMI only			1.18***	[1.11,1.25]
SUD only			1.08***	[1.04,1.13]
SMI + SUD			1.33***	[1.28,1.39]
N	10359		10359	
AE over time	1.00		1.00	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
Models restricted to members with at least one IPU discharge
Members with stays longer than 100 days per MY were excluded.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

MPM – Annual Monitoring for Patients on Persistent Medications

Mixed logistic regression models, MPM. AE vs CE

	Crude		Adjusted	
MPM Monitoring Event (Yes/No)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	0.95	[0.78,1.17]	0.93	[0.76,1.15]
MY	1.07	[0.95,1.22]	1.07	[0.95,1.22]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	0.97	[0.85,1.12]	0.97	[0.85,1.12]
Gender:				
Male			1	[1,1]
Female			0.92	[0.84,1.01]
Race:				
White			1	[1,1]
Non-white			0.88*	[0.77,0.99]
Missing or other			0.98	[0.89,1.09]
Region:				
Urban			1	[1,1]
Rural			0.93	[0.83,1.04]
Frontier			1.03	[0.84,1.26]
Chronic disease			1.06	[0.97,1.16]
Age			1.00	[1.00,1.00]
SMI/SUD:				
None			1	[1,1]
SMI only			1.02	[0.79,1.30]
SUD only			0.86**	[0.78,0.96]
SMI + SUD			0.94	[0.80,1.10]
N	13147		13147	
AE over time	1.05		1.04	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

REA – 30 Day All-Cause Unplanned Readmission

REA – Plan Comparison:

Mixed logistic regression models, REA. AE vs CE

	Crude		Adjusted	
30 day readmission (Yes/No)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
Adult Expansion	1.52	[0.91,2.54]	1.18	[0.70,1.99]
MY	1.03	[0.75,1.43]	1.13	[0.82,1.57]
Current Eligible*MY	1	[1,1]	1	[1,1]
Adult Expansion*MY	0.91	[0.64,1.30]	0.90	[0.63,1.29]
Gender:				
Male			1	[1,1]
Female			0.69**	[0.54,0.87]
Race:				
White			1	[1,1]
Non-white			0.95	[0.66,1.37]
Missing or other			1.09	[0.86,1.38]
Region:				
Urban			1	[1,1]
Rural			0.83	[0.60,1.14]
Frontier			1.11	[0.51,2.46]
Chronic disease			1.85***	[1.36,2.51]
Age			1.01*	[1.00,1.02]
SMI/SUD:				
None			1	[1,1]
SMI only			2.82	[0.92,8.66]
SUD only			2.87	[0.96,8.58]
SMI + SUD			8.22***	[2.84,23.8]
N	6085		6085	
AE over time	0.94		1.02	

Exponentiated coefficients; 95% confidence intervals in brackets
AE over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(AE)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

J.6 TARGETED ADULT MEDICAID: REGRESSION RESULTS BY MEASURE

AAP - Adults' Access to Preventative/Ambulatory Health Services

Mixed logistic regression models, AAP. TAM vs CE

	Crude		Adjusted	
AAP visits (Yes/No)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
TAM	0.41***	[0.34,0.50]	0.95	[0.78,1.15]
MY	0.87***	[0.84,0.90]	0.88***	[0.85,0.91]
Current Eligible*MY	1	[1,1]	1	[1,1]
TAM*MY	0.76***	[0.71,0.80]	0.82***	[0.78,0.87]
Gender:				
Male			1	[1,1]
Female			2.06***	[1.86,2.29]
Race:				
White			1	[1,1]
Non-white			0.61***	[0.54,0.68]
Other or Missing			0.93	[0.84,1.02]
Region:				
Urban			1	[1,1]
Rural			1.21**	[1.07,1.36]
Frontier			1.13	[0.88,1.45]
Chronic disease			4.17***	[3.79,4.59]
Age			1.03***	[1.02,1.03]
SMI/SUD:				
None			1	[1,1]
SMI only			10.6***	[8.32,13.5]
SUD only			4.05***	[3.46,4.74]
SMI + SUD			9.41***	[7.80,11.4]
N	43003		43003	
TAM over time	0.66***		0.72***	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

EDU – Emergency Department Utilization

All ED Visits:

Mixed Poisson regression models, EDU ALL, TAM vs CE

	Crude		Adjusted	
Total EDU visits (#)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
TAM	1.11**	[1.03,1.19]	1.34***	[1.25,1.44]
DY	0.97***	[0.96,0.98]	0.98***	[0.97,0.99]
Current Eligible*DY	1	[1,1]	1	[1,1]
TAM*DY	0.92***	[0.90,0.94]	0.94***	[0.92,0.96]
Gender:				
Male			1	[1,1]
Female			1.15***	[1.11,1.20]
Race:				
White			1	[1,1]
Non-white			1.03	[0.99,1.08]
Other_Missing			0.94***	[0.91,0.97]
Region:				
Urban			1	[1,1]
Rural			0.96	[0.93,1.00]
Frontier			0.81***	[0.74,0.89]
Chronic disease			1.76***	[1.70,1.82]
Age			1.00**	[1.00,1.00]
SMI/SUD:				
None			1	[1,1]
SMI only			1.61***	[1.47,1.76]
SUD only			1.70***	[1.58,1.83]
SMI + SUD			2.22***	[2.05,2.41]
N	37916		37916	
TAM over time	0.89***		0.92***	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Behavioral Health Related ED Visits:

Mixed Poisson regression models, EDU BH, TAM vs CE

	Crude		Adjusted	
BH EDU visits (#)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
TAM	1.54***	[1.29,1.84]	1.63***	[1.36,1.96]
DY	0.91***	[0.88,0.94]	0.93***	[0.90,0.96]
Current Eligible*DY	1	[1,1]	1	[1,1]
TAM*DY	0.96	[0.90,1.02]	0.99	[0.93,1.05]
Gender:				
Male			1	[1,1]
Female			0.87**	[0.79,0.96]
Race:				
White			1	[1,1]
Non-white			1.01	[0.90,1.13]
Other_Missing			1.00	[0.91,1.10]
Region:				
Urban			1	[1,1]
Rural			0.92	[0.83,1.04]
Frontier			1.01	[0.80,1.29]
Chronic disease			1.26***	[1.16,1.38]
Age			0.99***	[0.98,0.99]
SMI/SUD:				
None			1	[1,1]
SMI only			11.6***	[7.28,18.4]
SUD only			11.7***	[7.54,18.1]
SMI + SUD			29.8***	[19.1,46.4]
N	37916		37916	
TAM over time	0.87***		0.92***	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FUH – Follow Up After Hospitalization for Mental Illness

7 Day:

Mixed logistic regression models, 7 Days FUH. TAM vs CE

	Crude		Adjusted	
7 Days Follow-up (Yes/No)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
TAM	0.35***	[0.19,0.64]	0.38**	[0.20,0.71]
MY	1.04	[0.93,1.16]	1.05	[0.94,1.17]
Current Eligible*MY	1	[1,1]	1	[1,1]
TAM*MY	1.07	[0.87,1.31]	1.05	[0.85,1.29]
Gender:				
Male			1	[1,1]
Female			0.80	[0.58,1.09]
Race:				
White			1	[1,1]
Non-white			0.80	[0.54,1.20]
Other or Missing			1.05	[0.79,1.39]
Region:				
Urban			1	[1,1]
Rural			1.21	[0.83,1.75]
Frontier			0.69	[0.23,2.10]
Chronic disease			1.35	[0.97,1.88]
Age			1.00	[0.98,1.01]
SMI/SUD:				
None			1	[1,1]
SMI only			1.32	[0.058,29.6]
SUD only			0.57	[0.025,12.8]
SMI + SUD			0.69	[0.031,15.2]
N	1940		1940	
TAM over time	1.11		1.10	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

30 Day:

Mixed logistic regression models, 30 Days FUH. TAM vs CE

	Crude		Adjusted	
30 Days Follow-up (Yes/No)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
TAM	0.43**	[0.23,0.78]	0.41**	[0.22,0.76]
MY	0.94	[0.83,1.05]	0.96	[0.85,1.08]
Current Eligible*MY	1	[1,1]	1	[1,1]
TAM*MY	0.95	[0.77,1.16]	0.93	[0.76,1.15]
Gender:				
Male			1	[1,1]
Female			0.81	[0.58,1.12]
Race:				
White			1	[1,1]
Non-white			0.96	[0.64,1.45]
Other or Missing			1.09	[0.81,1.48]
Region:				
Urban			1	[1,1]
Rural			1.03	[0.69,1.54]
Frontier			0.79	[0.25,2.51]
Chronic disease			1.43*	[1.02,2.01]
Age			1.01	[0.99,1.02]
SMI/SUD:				
None			1	[1,1]
SMI only			3.31	[0.12,92.1]
SUD only			1.27	[0.046,35.2]
SMI + SUD			2.16	[0.080,58.3]
N	1940		1940	
TAM over time	0.89		0.89	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

IET – Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment, *Initiation*

Mixed logistic regression models, IET. TAM vs CE

	Crude		Adjusted	
Initiated treatment within 14 days of diagnosis (yes/no)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
TAM	0.93	[0.66,1.31]	0.91	[0.64,1.29]
DY	1.01	[0.93,1.09]	1.02	[0.94,1.10]
Current Eligible*DY	1	[1,1]	1	[1,1]
TAM*DY	1.18**	[1.04,1.33]	1.18**	[1.04,1.33]
Gender:				
Male			1	[1,1]
Female			0.93	[0.77,1.12]
Race:				
White			1	[1,1]
Non-white			0.88	[0.70,1.10]
Other or Missing			1.00	[0.83,1.19]
Region:				
Urban			1	[1,1]
Rural			0.87	[0.69,1.09]
Frontier			0.67	[0.40,1.12]
Chronic disease			1.03	[0.87,1.22]
Age			0.99**	[0.98,1.00]
SMI/SUD				
SUD only			1	[1,1]
SMI + SUD			1.32**	[1.11,1.58]
N	8241		8241	
TAM over time	1.19***		1.20***	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Engagement:

Mixed logistic regression models, IET. TAM vs CE

	Crude		Adjusted	
Engaged in ongoing treatment within 34 days of initiation visit (yes/no)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
TAM	0.81	[0.45,1.46]	0.84	[0.45,1.54]
DY	0.96	[0.83,1.10]	0.97	[0.85,1.12]
Current Eligible*DY	1	[1,1]	1	[1,1]
TAM*DY	1.30*	[1.05,1.61]	1.29*	[1.05,1.60]
Gender:				
Male			1	[1,1]
Female			1.02	[0.74,1.40]
Race:				
White			1	[1,1]
Non-white			0.76	[0.51,1.12]
Other or Missing			0.83	[0.61,1.12]
Region:				
Urban			1	[1,1]
Rural			0.95	[0.65,1.39]
Frontier			0.98	[0.44,2.14]
Chronic disease			0.92	[0.69,1.23]
Age			0.98*	[0.97,1.00]
SMI/SUD				
SUD only			1	[1,1]
SMI + SUD			1.47*	[1.09,1.98]
N	8241		8241	
TAM over time	1.25***		1.26***	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

IPU – Inpatient Utilization: General Hospital/Acute Care

Surgical Discharges:

Mixed Poisson regression models, IPU surgical discharges, TAM vs CE

	Crude		Adjusted	
Number of discharges, IPU surgical				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
TAM	0.61	[0.36,1.03]	0.69	[0.40,1.20]
MY	0.88**	[0.80,0.96]	0.85***	[0.78,0.93]
Current Eligible*MY	1	[1,1]	1	[1,1]
TAM*MY	1.00	[0.86,1.16]	1.04	[0.90,1.21]
Gender:				
Male			1	[1,1]
Female			0.79	[0.60,1.03]
Race:				
White			1	[1,1]
Non-white			1.19	[0.87,1.63]
Missing or other			1.06	[0.83,1.37]
Region:				
Urban			1	[1,1]
Rural			0.89	[0.67,1.20]
Frontier			1.24	[0.69,2.22]
Chronic disease			9.33***	[7.00,12.4]
Age			1.08***	[1.06,1.09]
SMI/SUD:				
None			1	[1,1]
SMI only			5.12***	[2.76,9.50]
SUD only			1.74*	[1.04,2.91]
SMI + SUD			4.18***	[2.42,7.19]
N	31864		31864	
TAM over time	0.88**		0.89*	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
Members with stays longer than 14 discharges per MY were excluded.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Medical Discharges:

Mixed Poisson regression models, IPU medical discharges, TAM vs CE

	Crude		Adjusted	
Number of discharges, IPU medical				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
TAM	0.94	[0.64,1.37]	1.19	[0.82,1.73]
MY	1.00	[0.94,1.07]	0.98	[0.92,1.04]
Current Eligible*MY	1	[1,1]	1	[1,1]
TAM*MY	0.92	[0.83,1.01]	0.96	[0.87,1.06]
Gender:				
Male			1	[1,1]
Female			0.87	[0.72,1.06]
Race:				
White			1	[1,1]
Non-white			1.26*	[1.01,1.56]
Missing or other			1.04	[0.87,1.24]
Region:				
Urban			1	[1,1]
Rural			0.83	[0.67,1.01]
Frontier			0.81	[0.53,1.25]
Chronic disease			15.6***	[12.2,19.8]
Age			1.06***	[1.05,1.07]
SMI/SUD:				
None			1	[1,1]
SMI only			5.20***	[3.16,8.55]
SUD only			2.54***	[1.66,3.89]
SMI + SUD			8.48***	[5.47,13.1]
N	31864		31864	
TAM over time	0.92**		0.94*	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
Members with more than 14 discharges or more than 100 days of stay per MY were excluded.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Overall Discharges:

Mixed Poisson regression models, IPU overall discharges, TAM vs CE

	Crude		Adjusted	
Number of discharges, IPU overall				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
TAM	0.75	[0.55,1.03]	0.98	[0.72,1.34]
MY	0.97	[0.92,1.02]	0.94*	[0.90,0.99]
Current Eligible*MY	1	[1,1]	1	[1,1]
TAM*MY	0.95	[0.87,1.03]	0.98	[0.91,1.07]
Gender:				
Male			1	[1,1]
Female			0.85	[0.73,1.00]
Race:				
White			1	[1,1]
Non-white			1.24*	[1.03,1.48]
Missing or other			1.02	[0.88,1.19]
Region:				
Urban			1	[1,1]
Rural			0.84*	[0.71,0.99]
Frontier			0.90	[0.63,1.28]
Chronic disease			12.1***	[9.93,14.7]
Age			1.06***	[1.05,1.07]
SMI/SUD:				
None			1	[1,1]
SMI only			5.11***	[3.42,7.62]
SUD only			2.23***	[1.58,3.14]
SMI + SUD			6.45***	[4.52,9.21]
N	31864		31864	
TAM over time	0.92**		0.93**	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
Members with more than 14 discharges or more than 100 days of stay per MY were excluded.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Overall Length of Stay:

Mixed Poisson regression models, IPU overall length of stay (days), TAM vs CE

	Crude		Adjusted	
Length of stay (days), IPU overall				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
TAM	1.05	[0.87,1.27]	1.01	[0.83,1.22]
MY	1.05**	[1.01,1.09]	1.04*	[1.01,1.08]
Current Eligible*MY	1	[1,1]	1	[1,1]
TAM*MY	1.00	[0.95,1.06]	1.01	[0.95,1.07]
Gender:				
Male			1	[1,1]
Female			0.98	[0.90,1.06]
Race:				
White			1	[1,1]
Non-white			1.01	[0.92,1.11]
Missing or Other			1.01	[0.93,1.09]
Region:				
Urban			1	[1,1]
Rural			0.93	[0.85,1.03]
Frontier			1.24*	[1.04,1.49]
Chronic disease			1.40***	[1.25,1.56]
Age			1.01***	[1.01,1.01]
SMI/SUD:				
None			1	[1,1]
SMI only			1.00	[0.80,1.24]
SUD only			0.94	[0.77,1.15]
SMI + SUD			1.05	[0.86,1.28]
N	2258		2258	
TAM over time	1.05**		1.05**	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
Models restricted to members with at least one IPU discharge
Members with stays longer than 100 days per MY were excluded.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

REA – 30 Day All-Cause Unplanned Readmission Following Psychiatric Inpatient Hospitalization

Mixed logistic regression models, REA. TAM vs CE

	Crude		Adjusted	
30 day readmission (Yes/No)				
Population:				
Current Eligible	1	[1,1]	1	[1,1]
TAM	4.69***	[2.30,9.59]	3.11**	[1.49,6.50]
DY	1.10	[0.95,1.27]	1.13	[0.97,1.31]
Current Eligible*DY	1	[1,1]	1	[1,1]
TAM*DY	0.71**	[0.55,0.91]	0.71**	[0.55,0.91]
Gender:				
Male			1	[1,1]
Female			0.63*	[0.43,0.91]
Race:				
White			1	[1,1]
Non-white			1.06	[0.67,1.70]
Other or Missing			1.17	[0.83,1.65]
Region:				
Urban			1	[1,1]
Rural			0.59	[0.34,1.04]
Frontier			1.12	[0.33,3.80]
Chronic disease			1.86*	[1.14,3.03]
Age			1.01	[0.99,1.03]
SMI/SUD:				
None			1	[1,1]
SMI only			0.81	[0.46,1.45]
SUD only			0.41**	[0.24,0.70]
SMI + SUD			1	[1,1]
N	2625		2622	
TAM over time	0.78**		0.80**	

Exponentiated coefficients; 95% confidence intervals in brackets
Current eligible restricted to members with SMI/SUD diagnosis
TAM over time estimate results from the exponentiated addition of the beta estimates (log form) for measurement time + measurement time*population(TAM)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

J.7 SMI/SUD DEMONSTRATIONS: REGRESSION RESULTS BY MEASURE

EDU – Emergency Department Utilization

Behavioral Health Related ED Visits:

Mixed Poisson regression models, EDU BH, members with SMI and/or SUD

	Crude		Adjusted	
EDU BH visits				
MY				
2018	1	[1,1]	1	[1,1]
2019	1.17**	[1.05,1.29]	1.17**	[1.06,1.30]
2020	1.20***	[1.10,1.31]	1.22***	[1.12,1.34]
2021	0.93	[0.85,1.01]	0.95	[0.88,1.04]
2022	0.77***	[0.71,0.84]	0.81***	[0.74,0.88]
Gender:				
Male			1	[1,1]
Female			0.74***	[0.70,0.78]
Race:				
White			1	[1,1]
Non-white			1.00	[0.93,1.07]
Missing or other			1.04	[0.99,1.10]
Urban			1	[1,1]
Region:				
Rural			0.86***	[0.81,0.92]
Frontier			0.75***	[0.65,0.86]
Chronic disease			1.83***	[1.74,1.93]
Age			0.98***	[0.98,0.98]
Observations	84757		84744	

Exponentiated coefficients; 95% confidence intervals in brackets

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

FUH – Follow Up After Hospitalization for Mental Illness

7 Day:

Mixed logistic regression models, FUH 7 days, members with SMI

	Crude		Adjusted	
7 day follow-up (yes/no)				
MY				
2018	1	[1,1]	1	[1,1]
2019	0.85	[0.53,1.36]	0.86	[0.54,1.37]
2020	0.87	[0.59,1.29]	0.92	[0.62,1.36]
2021	0.97	[0.66,1.41]	1.04	[0.71,1.51]
2022	0.88	[0.60,1.28]	0.95	[0.65,1.38]
Gender:				
Male			1	[1,1]
Female			1.24**	[1.05,1.45]
Race:				
White			1	[1,1]
Non-white			0.66**	[0.52,0.85]
Missing or other			0.96	[0.80,1.13]
Urban			1	[1,1]
Region:				
Rural			1.48***	[1.19,1.84]
Frontier			2.16*	[1.12,4.14]
Chronic disease			1.17	[0.98,1.41]
Age			0.99**	[0.98,1.00]
Observations	5107		5107	

Exponentiated coefficients; 95% confidence intervals in brackets

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

30 Day:

Mixed logistic regression models, FUH 30 days, members with SMI				
	Crude		Adjusted	
30 day follow-up (yes/no)				
MY				
2018	1	[1,1]	1	[1,1]
2019	0.65	[0.39,1.08]	0.67	[0.40,1.11]
2020	0.50**	[0.33,0.77]	0.54**	[0.35,0.83]
2021	0.64*	[0.42,0.97]	0.70	[0.46,1.06]
2022	0.54**	[0.36,0.82]	0.60*	[0.40,0.91]
Gender:				
Male			1	[1,1]
Female			1.37***	[1.15,1.63]
Race:				
White			1	[1,1]
Non-white			0.77	[0.59,1.00]
Missing or other			0.99	[0.82,1.20]
Urban			1	[1,1]
Region:				
Rural			1.12	[0.87,1.42]
Frontier			1.93	[0.90,4.12]
Chronic disease			1.27*	[1.04,1.55]
Age			0.99**	[0.98,1.00]
Observations	5107		5107	

Exponentiated coefficients; 95% confidence intervals in brackets
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$