**Arizona Health Care Cost Containment System**

AHCCCS
Arizona Health Care Cost Containment System

# Arizona Section 1115 Demonstration Waiver Evaluation Design

**July 2024**

TIP QIC Targeted Investments Program Quality Improvement Collaborative

# Contents

## Executive Summary

*Introduction*

The Targeted Investments Program Quality Improvement Collaborative (TIPQIC) team at Arizona State University (ASU) sincerely appreciates the opportunity to conduct the evaluation of the Targeted Investments Program 2.0 (TI 2.0) and presents the evaluation design for the Arizona Section 1115 Demonstration Waiver. This evaluation design aims to establish a structured framework for the comprehensive assessment of TI 2.0 under the oversight of the Arizona Health Care Cost Containment System (AHCCCS) and the Centers for Medicare & Medicaid Services (CMS). This guide will outline the TI 2.0 evaluation plan, including key performance measures, data sources, and statistical analyses, to ensure alignment with AHCCCS and CMS regulations and strategic priorities. Furthermore, the evaluation design will facilitate accountability, transparency, and a commitment to continuous improvement in healthcare program delivery by offering a clear roadmap for evaluation processes, timelines, and resource allocation.

*Team Experience*

The ASU team has extensive research and evaluation experience to complete this important project for AHCCCS successfully. Principal investigators George Runger, Ph.D., and William Riley, Ph.D., bring decades of extensive experience to TIPQIC. They have successfully managed numerous multi-million-dollar projects across local, regional, national, and international programs. These projects have involved complex logic models, sophisticated research designs, and deep expertise in data analytics. The ASU TIPQIC team is also skilled in survey research, including population census surveys, sampling strategies, propensity matching, and statistical inference. As part of one of the largest academic research institutions in the nation, ASU TIPQIC has access to numerous resources to expand efforts for large projects.

Building on the team's continuous engagement with TI since 2019, ASU TIPQIC has had substantial experience with data operations, procurement, cleaning, analysis, and dissemination, all of which are directly related to evaluation tasks. ASU TIPQIC is also aware of the many nuances of the TI program and the interrelationships between the numerous program components. The team has substantial experience in the TI Healthcare Effectiveness Data and Information Set (HEDIS®) measures and associated data, covering a range from focus groups to metrics of provider engagement. This includes proficiency in accommodating unforeseen circumstances, such as the effects of the COVID-19 pandemic. ASU TIPQIC is familiar with the providers and payers through interactions in focus groups, Quality Improvement Collaboratives (QICs), and Quality Improvement Workgroups (QIWs). Throughout the TI program, ASU TIPQIC has provided and continues to provide technical assistance and support with patient attribution and assignment, which are crucial components for ensuring a high-quality evaluation. The analysis will encompass TI-attributed beneficiaries and the entirety of AHCCCS beneficiaries statewide. ASU TIPQIC has developed the content for QIC and QIW in partnership with peer learning stakeholders, and similar preparations are underway for TI 2.0. ASU TIPQIC will utilize this experience to improve the evaluation of TI 2.0. Any additional analyses required for the evaluation can be performed efficiently, as they are linked to the core quality measures of TI 1.0, which ASU TIPQIC has previously engaged with.

*Revisions*

Drawing on ASU TIPQIC's extensive expertise in survey research and program evaluation, the evaluation plan previously initiated by AHCCCS was reviewed. In general agreement with the previous approach developed by the Health Services Advisory Group, Inc (HSAG), ASU TIPQIC has made multiple revisions to content details and operations, including changes related to the availability of data sources. For example, the TI 2.0 evaluation requires CommunityCares closed loop referrals, which may not be available until later years in the program. Adjustments such as that in the evaluation plan have been made. From the operations perspective, a large component of the budget included traditional surveys of AHCCCS beneficiaries. ASU TIPQIC has revised these plans to leverage the availability of AHCCCS data to improve the efficiency of the surveys with the same quality of estimates. Other changes include additions to the logic model to provide a more comprehensive view of TI 2.0 and a new Emergency Department (ED) facility coding methodology to better estimate ED utilization among AHCCCS beneficiaries. Additional statistical methods and evaluation measures have been added, along with enhancements to the survey methodology and development, aimed at gaining a deeper insight into AHCCCS beneficiaries' experiences, access and availability to care, and perceptions of coordination of care. ASU TIPQIC's extensive familiarity and in-depth understanding of the TI program equips the team with invaluable insights to expertly navigate and optimize the execution of the evaluation.

*Overview*

The TI 2.0 demonstration program aims to promote health equity, improve population health outcomes, and lower overall healthcare costs. The main quantitative approaches for the TI 2.0 evaluation measures will include difference-in-differences (DiD) and G-squared tests to measure health equity metrics. Qualitative methods will include focus group interviews among TI providers, managed care organizations (MCOs), accountable care organizations (ACOs), and other subcontracted groups. Beneficiary surveys incorporating a responsive design will be utilized to gain deeper insights into the experiences of AHCCCS beneficiaries. One goal of the evaluation is to leverage ASU TIPQIC's experience and the availability of beneficiary data to improve the efficiency of participant satisfaction. Beneficiary data will be used to effectively characterize subpopulations through appropriate weighting methodologies and responsive survey strategies. A general survey methodology will be refined using the data and, combined with experience, will incorporate lessons learned from health-related surveys and modern analytical methods. When analyzing the survey data, ASU TIPQIC plans to use weighting methods for similar surveys that have been identified by CMS and related organizations.

## Evaluation Plan Summary

During the preceding demonstration period from October 1, 2016, to September 30, 2022, the Targeted Investments Program (TI 1.0) offered incentive payments to healthcare providers who reached milestones focused on enhancing health infrastructure. It also emphasized implementing processes and policies supporting the integration and coordination of Behavioral Health (BH) and Physical Health (PH). The TI 2.0 renewal aims to expand AHCCCS' integrated care and coordination goal beyond clinical interventions, addressing social inequities and disparities that significantly impact health outcomes.

The main quantitative approaches for the TI 2.0 evaluation measures will include difference-in-differences (DiD) and G-squared tests to measure health equity metrics. Qualitative methods will include focus group interviews among TI providers, managed care organizations (MCOs), accountable care organizations (ACOs), and other related subcontracted groups. Beneficiary surveys incorporating a responsive design will be employed to gain a deeper understanding of the experiences of AHCCCS beneficiaries. The ASU TIPQIC team will employ one baseline period, one ramp-up period, and one evaluation period:

- Baseline Period: October 1, 2021, to September 30, 2022 (FFY 2022).
- Ramp-Up Period: October 1, 2022, to September 30, 2024 (FFY 2023–2024). The ramp-up period will primarily involve providers participating in onboarding activities and establishing new systems for the TI 2.0 program.
- Evaluation Period: October 1, 2024, to September 30, 2027 (FFY 2025–2027).

DiD regression models for confounding factors will be used to compare each baseline period to the TI 2.0 evaluation period. Aligning with TI 2.0's emphasis on understanding social inequities and addressing health-related risk factors, a comprehensive health equity analysis will be conducted. This will include an assessment of changes in health disparities over time, comparing outcome measures for various demographic subgroups to a reference group. G-squared tests will supplement this analysis to account for unequal denominators in equity measures and offer a broad perspective on changes in health equity over time. Additionally, the relationships and correlations between care experience survey measures and utilization outcomes will be explored to achieve a comprehensive synthesis of the results.

ASU TIPQIC may consider using a hierarchical generalized linear model (HGLM) in order to address the distinction between outcomes measured at the beneficiary level and the organizational level implementation of the TI 2.0 program. The most suitable analytic methodology will be determined during the evaluation, taking into account the specific data structure and limitations.

## Background

On January 18, 2017, CMS approved AHCCCS' request to amend the 1115 Demonstration Waiver, implementing TI 1.0.[1] This program supported providers in Arizona moving toward integrated and coordinated care. It aimed to reduce fragmentation between acute care and BH care, increase efficiencies in service delivery for Arizona Medicaid beneficiaries with BH needs, and improve health outcomes for affected populations. TI 1.0, which utilized $300 million across the original demonstration period, successfully funded limited-time, outcome-based projects to build infrastructure to create and sustain integrated care delivery systems that improve care coordination and drive better health and financial outcomes for adults with BH needs; children with BH needs, including children with or at risk for autism spectrum disorder (ASD); children in the welfare system; and individuals transitioning from incarceration. Preliminary findings from ASU TIPQIC found that TI 1.0 demonstrated breakthrough improvement (>5% - 35% increase) across seven out of ten National Committee for Quality Assurance (NCQA) - HEDIS® performance metrics.[2] The initiative underscored a patient-centered, physician-driven approach at the point of care, complemented by dedicated resources for physicians and incentives tailored to encourage the desired performance and help enhance population health. Notably, the project served as one of the few population health programs that has exhibited tangible improvements in equity, reflecting its effectiveness in addressing diverse healthcare needs. According to preliminary findings from ASU TIPQIC, 9 of the 10 HEDIS® measures included in TI 1.0 demonstrated improvement relative to Arizona and national comparisons, underscoring the significance of prioritizing population health initiatives to enhance the well-being of the served population. Other significant program accomplishments included integrating clinics for individuals released from incarceration and improving PH and BH integration for TI participating providers.

The Waiver renewal, which was approved on October 14, 2022, authorized the renewal of the TI program through TI 2.0. TI 2.0 will build upon the success of TI 1.0 by further integrating point-

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[1] Centers for Medicare & Medicaid Services. AHCCCS Targeted Investments Program Approval. Available at: https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/az/Health-Care-Cost-Containment-System/az-hccc-trgtd-invstmnts-prgrm-appvl-01182017.pdf. Accessed on: Aug 3, 2023.

[2] The follow up period for HEDIS® measure *Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment (IET)* was extended to 34 days to create TI measure *Alcohol and Other Drug Abuse or Dependence Treatment (AOD): 1+ Visits in 34 Days*.

of-care systems, providing guidance and incentives to providers for initiating new and meaningful system transformations, and enhancing requirements to comprehensively address quality and health equity through the provision of whole-person care.

TI 2.0 supports Arizona’s goal to fully transform the Medicaid delivery system to an integrated whole-person care structure by encouraging providers to thoughtfully develop infrastructure and protocols to optimize the coordination of services designed to meet the member’s acute, behavioral, and health-related social needs and address identified health inequities amongst their patient population. AHCCCS will achieve this goal by supporting providers throughout the state to develop and enhance care coordination processes with healthcare and community-based organizations and provide guidance, tools, and technical assistance for internal population health analyses.

## *Demonstration Goals*

This demonstration program seeks to improve quality and promote health equity for the targeted patient population. The initiative will reduce health disparities, improve member outcomes, and reduce the total cost of care. The main goals of the program are:

- **Reduce Health Disparities**: Enhance the reliability of data and leverage stratified dashboards and multivariate analyses to identify health inequities at the AHCCCS, MCO network, and provider-practice level and implement evidence-based approaches to improve care delivery and health outcomes for pediatric, adult, and justice-involved beneficiaries.
- **Improve Member Outcomes**: Identify and address each member’s acute, behavioral, and Health-Related Social Needs (HRSN) to improve overall health outcomes and reduce health disparities.
- **Reduce Total Cost of Care:** Strengthen partnerships and address inefficiencies in care coordination among managed care organizations (MCOs), accountable care organizations (ACOs), subcontracted networks, and medical, behavioral, and community service provider organizations to develop an efficient, integrated care delivery system with minimal duplication of effort.

As a State-Directed Payment program, TI 2.0 will achieve these goals by directing managed care entities (MCOs) to use funding to make specific incentive payments to providers. Participants must satisfy metrics in the form of process measures and quantitative performance measures to earn payment. Each required performance target will have an incentive amount associated with it and providers will receive an incentive payment for each requirement that is met. Providers will also receive an incentive payment for completing the application process that includes new baseline deliverables and becoming approved for participation in TI 2.0.

Over the demonstration period, providers will earn incentives to implement certain processes and meet outcomes-based metrics. Providers will participate in the following activities to meet these metrics, including but not limited to:

1. Implement national standards for Culturally and Linguistically Appropriate Services (CLAS).
2. Implement procedures to use a closed-loop referral system to standardize referrals and coordination with community-based organizations.
3. Conduct population health analyses related to HRSN, identify populations with the greatest need for such services who are not getting them, and implement a plan to identify and address them.
4. Implement specialty-specific programs and processes, such as postpartum depression screening in pediatric primary care programs and tobacco cessation programs for patients transitioning from the criminal justice system.

### *Hypothesis and Research Questions*

Table 1-1 outlines the hypotheses for the TI 2.0 program. Table 1-1 outlines the hypotheses for the TI 2.0 program. Each hypothesis directly supports one or more of the aforementioned program goals.

Hypothesis 1 will explore how the program has leveraged system-wide collaboration to reduce health disparities and improve member outcomes from the perspective of various stakeholders. Hypotheses 2 to 4 will assess the program's impact on health disparities and member outcomes for each of the three distinct beneficiary populations within TI 2.0. Hypothesis 5 will evaluate the costs associated with the program.

**Table 1-1 —TI 2.0 Hypotheses**

| | TI 2.0 Hypotheses |
|---|---|
| 1 | The TI 2.0 program will increase collaboration and coordination amongst the managed care organizations (MCOs), accountable care organizations (ACOs), subcontracted networks, and provider organizations. |
| 2 | The TI 2.0 program will improve the delivery of care that addresses inequitable health outcomes for children. |
| 3 | The TI 2.0 program will improve the delivery of care that addresses inequitable health outcomes for adults. |
| 4 | The TI 2.0 program will improve the delivery of care for AHCCCS-enrolled adults released from criminal justice facilities and who are referred to a TI Program Justice clinic. |
| 5 | The care costs for the TI 2.0 program participants will be lower than the care costs of the non-TI participants. |

Hypothesis 1 will test whether the TI 2.0 program’s efforts to increase collaboration and coordination among managed care organizations (MCOs), accountable care organizations (ACOs), subcontracted networks, and provider organizations have reduced population health disparities and improved member health outcomes. The research questions and measures associated with Hypothesis 1 are listed in Table 1-2.

**Table 1-2 — Hypothesis 1 Research Questions and Measures**

| **Hypothesis 1: The TI 2.0 program will increase collaboration and coordination amongst the MCOs, ACOs, subcontracted networks, and provider organizations.** | |
|---|---|
| **Research Question 1.1: What was the experience of AHCCCS in implementing and/or maintaining TI 2.0 and its care coordination and health related social needs (HRSN) initiatives?** | |
| 1-1 | AHCCCS’ reported barriers and/or facilitators of success before and shortly following the implementation of TI 2.0 |
| 1-2 | AHCCCS’ reported activities to support care coordination and/or HRSN |
| **Research Question 1.2: What was the experience of MCOs, ACOs, and subcontracted networks implementing and/or maintaining TI 2.0 and its care coordination and HRSN initiatives?** | |
| 1-3 | MCOs’/ACOs’/subcontracted networks’ reported barriers and/or facilitators of success before and shortly following the implementation of TI 2.0 |
| 1-4 | MCOs’/ACOs’/subcontracted networks’ reported activities to support care coordination and/or HSRN |
| **Research Question 1.3: What was the experience of providers implementing and/or maintaining TI 2.0 and its care coordination and HRSN initiatives?** | |
| 1-5 | Providers’ reported barriers and/or facilitators of success before and shortly following the implementation of TI 2.0 |
| 1-6 | Providers’ reported activities to support care coordination and/or HSRN |
| **Research Question 1.4: What is the rate of participating providers in TI 2.0?** | |
| 1-7 | Number/percentage of providers participating in TI 2.0 |
| **Research Question 1.5: What is the percentage of TI 2.0 providers with the National Committee for Quality Assurance (NCQA) Health Equity Accreditation?** | |
| 1-8 | Number/percent of TI 2.0 providers with NCQA Provider Health Equity Accreditation |
| **Research Question 1.6: Has the percentage of providers with executed agreements with Contexture for addressing HRSN and/or admit-discharge-transfer (ADT) alerts increased compared to prior to the demonstration?** | |
| 1-9 | Percentage of TI-participating pediatric primary care and BH care practices that have an executed agreement with Contexture |
| 1-10 | Percentage of TI-participating pediatric primary care and BH care practices that routinely receive ADT alerts |
| 1-11 | Percentage of TI-participating adult primary care and BH care practices that have an executed agreement with Contexture |
| 1-12 | Percentage of TI-participating adult primary care and BH care practices that routinely receive ADT alerts |

**Table 1-2 — Hypothesis 1 Research Questions and Measures**

| | |
|---|---|
| 1-13 | Percentage of TI-participating justice practices that have an executed agreement with Contexture |
| 1-14 | Percentage of TI-participating justice practices that routinely receive ADT alerts |
| **Research Question 1.7: What is the percentage of TI 2.0 beneficiaries who were screened using social determinants of health (SDOH) assessments to identify HRSN that received a referral to a community-based organization (CBO)?** | |
| 1-15 | Number/percent of TI beneficiaries who received an SDOH screening assessment to identify HRSN |
| 1-16 | Number/percent of TI beneficiaries who received an SDOH screening assessment to identify HRSN and were referred to a CBO |
| 1-17 | Number/percent of TI beneficiaries referred to a CBO that experienced a follow-up CBO appointment within 30 days |
| **Research Question 1.8: What is the percentage of TI 2.0 providers that completed the TI 2.0 health equity projects?** | |
| 1-18 | Number/percent of TI providers that completed the TI 2.0 health equity projects |

Hypothesis 2 aims to assess whether the TI 2.0 program's work to enhance care coordination has addressed beneficiaries' acute, behavioral health, and health-related social needs and reduced health inequities within the pediatric patient population. The research questions and measures associated with Hypothesis 2 are listed in Table 1-3.

**Table 1-3 — Hypothesis 2 Research Questions and Measures**

| **Hypothesis 2: The TIP 2.0 program will improve the delivery of care that addresses inequitable health outcomes for children.** | |
|---|---|
| **Research Question 2.1: Have health disparities related to care coordination been reduced among children attributed to TIP 2.0 providers compared to prior to the demonstration?** | |
| 2-1 | Beneficiaries' response to their child's doctor seeming informed about the care their child received from specialists |
| **Research Question 2.2: Have general and mental health outcomes maintained or improved among children attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 2-2 | Percentage of beneficiaries who reported their child's rating of overall health as very good or excellent |
| 2-3 | Percentage of beneficiaries who reported their child's rating of emotional or mental health as very good or excellent |
| **Research Question 2.3: Have health disparities related to access to care been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 2-4 | Percentage of child beneficiaries who had a well-child visit in the first 30 months of life |
| 2-5 | Percentage of child and adolescent beneficiaries who had a well-care visit with a PCP or OB/GYN |
| 2-6 | Percentage of beneficiaries who reported that their child's doctor usually or always spent enough time with them |

**Table 1-3 — Hypothesis 2 Research Questions and Measures**

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|---|---|
| 2-7 | Percentage of beneficiaries who reported their child received needed care right away as soon as they needed |
| 2-8 | Percentage of beneficiaries who reported they got an appointment for routine care as soon as their child needed |
| **Research Question 2.4: Have health disparities related to experience of care been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 2-9 | Percentage of beneficiaries who reported their child's doctor usually or always explained things in a way that was easy to understand |
| 2-10 | Percentage of beneficiaries who reported their child's doctor usually or always listened carefully to them |
| 2-11 | Percentage of beneficiaries who reported their child's doctor usually or always showed respect for what they had to say |
| 2-12 | Percentage of child and adolescent beneficiaries attributed/assigned to a TI provider with the same race/ethnicity and/or language |
| **Research Question 2.5: Have health disparities related to dental care utilization been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 2-13 | Percentage of child and adolescent beneficiaries receiving topical varnish |
| 2-14 | Percentage of child and adolescent beneficiaries who received a comprehensive or periodic evaluation with a dental provider during the measurement year |
| **Research Question 2.6: Have health disparities related to ED utilization been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 2-15 | Number of ED visits among children and adolescents |
| 2-16 | Number of potentially avoidable ED visits among children and adolescents |
| **Research Question 2.7: Have health disparities related to treatment or management of behavioral health concerns been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 2-17 | Percentage of child and adolescent beneficiaries with a follow-up visit seven days after hospitalization for mental illness |
| 2-18 | Percentage of child and adolescent beneficiaries with a follow-up visit thirty days after hospitalization for mental illness |
| 2-19 | Percentage of child and adolescent beneficiaries with a follow-up visit seven days after an emergency department (ED) visit for mental illness |
| 2-20 | Percentage of child and adolescent beneficiaries with a follow-up visit thirty days after an ED visit for mental illness |
| 2-21 | Percentage of ED visits among adolescent beneficiaries with a principal diagnosis of SUD, or any diagnosis of drug overdose, for which there was follow-up within seven days |
| 2-22 | Percentage of ED visits among adolescent beneficiaries with a principal diagnosis of SUD, or any diagnosis of drug overdose, for which there was follow-up within thirty days |
| 2-23 | Percentage of child and adolescent beneficiaries with ongoing antipsychotic medication use who have metabolic testing during the year |

Hypothesis 3 aims to examine whether the TI 2.0 program's efforts to enhance care coordination have addressed beneficiaries' acute, behavioral health, and health-related social needs and reduced health inequities within the adult patient population. The research questions and measures associated with Hypothesis 3 are listed in Table 1-4.

**Table 1-4 — Hypothesis 3 Research Questions and Measures**

| **Hypothesis 3: The TI 2.0 program will improve the delivery of care that addresses inequitable health outcomes for adults.** | |
|---|---|
| **Research Question 3.1: Have health disparities related to care coordination been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 3-1 | Adult beneficiaries' response to their doctor seeming informed about the care they received from specialists |
| 3-2 | Percentage of adult beneficiaries with follow-up after an ED visit for adult beneficiaries with multiple high-risk chronic conditions |
| 3-3 | Percentage of adult beneficiaries with patient engagement after discharge |
| **Research Question 3.2: Have general and mental health outcomes maintained or improved among adults attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 3-4 | Percentage of adult beneficiaries who reported a rating of overall health as very good or excellent |
| 3-5 | Percentage of adult beneficiaries who reported a rating of emotional or mental health as very good or excellent |
| **Research Question 3.3: Have health disparities related to access to care been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 3-6 | Percentage of adult beneficiaries who accessed preventive/ambulatory health services |
| 3-7 | Percentage of adult beneficiaries who reported that their doctor usually or always spent enough time with them |
| 3-8 | Percentage of adult beneficiaries who reported they received needed care right away as soon as they needed |
| 3-9 | Percentage of adult beneficiaries who reported they got an appointment for routine care as soon as they needed |
| **Research Question 3.4: Have health disparities related to the experience of care been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 3-10 | Percentage of adult beneficiaries who reported their doctor usually or always explained things in a way that was easy to understand |
| 3-11 | Percentage of adult beneficiaries who reported their doctor usually or always listened carefully to them |
| 3-12 | Percentage of adult beneficiaries who reported their doctor usually or always showed respect for what they had to say. |
| 3-13 | Percentage of adult beneficiaries attributed/assigned to a TI provider with the same race/ethnicity and/or language |

### Table 1-4 — Hypothesis 3 Research Questions and Measures

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|---|---|
| 3-14 | Percentage of adult beneficiaries who received an SDOH screening assessment to identify HRSN |
| **Research Question 3.5: Have health disparities related to maternal health been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 3-15 | Percentage of adult beneficiaries with postpartum depression screening and follow-up |
| 3-16 | Timeliness of prenatal care |
| 3-17 | Timeliness of postpartum care |
| **Research Question 3.6: Have health disparities related to ED and IP utilization been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 3-18 | Number of ED visits among adult beneficiaries |
| 3-19 | Number of potentially avoidable ED visits among adult beneficiaries |
| **Research Question 3.7: Have health disparities related to treatment or management of behavioral health concerns been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration?** | |
| 3-20 | Percentage of adult beneficiaries with a follow-up visit seven days after hospitalization for mental illness |
| 3-21 | Percentage of adult beneficiaries with a follow-up visit thirty days after hospitalization for mental illness |
| 3-22 | Percentage of adult beneficiaries with a follow-up visit seven days after an ED visit for mental illness |
| 3-23 | Percentage of adult beneficiaries with a follow-up visit thirty days after an ED visit for mental illness |
| 3-24 | Percentage of adult beneficiaries who had initiation of SUD treatment |
| 3-25 | Percentage of adult beneficiaries who had engagement of SUD treatment |
| 3-26 | Percentage of ED visits among adult beneficiaries with a principal diagnosis of SUD, or any diagnosis of drug overdose, for which there was follow-up within seven days |
| 3-27 | Percentage of ED visits among adult beneficiaries with a principal diagnosis of SUD, or any diagnosis of drug overdose, for which there was follow-up within thirty days |
| 3-28 | Diabetes Screening for People with Schizophrenia or Bipolar Disorder Who Are Using Antipsychotic Medications |

Hypothesis 4 aims to assess whether the TI 2.0 program's work to enhance care coordination for AHCCCS-enrolled adults who have been discharged from criminal justice facilities and subsequently referred to a TI justice facility has been effective in reducing health disparities in the Justice patient population. The research questions and measures associated with Hypothesis 4 are listed in Table 1-5.

### Table 1-5 — Hypothesis 4 Research Questions and Measures

| **Hypothesis 4: The TI 2.0 program will improve the delivery of care for AHCCCS- enrolled adults released from criminal justice facilities and who are referred to a TI Justice clinic.** |
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### Table 1-5 — Hypothesis 4 Research Questions and Measures

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|---|---|
| **Research Question 4.1: Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have better care coordination than those who were not subject to the demonstration?** | |
| 4-1 | Recently released beneficiaries' response to their doctor seeming informed about the care they received from specialists |
| 4-2 | Percentage of recently released beneficiaries with patient engagement after discharge |
| **Research Question 4.2: Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have better care general and mental health outcomes than those who were not subject to the demonstration?** | |
| 4-3 | Percentage of recently released beneficiaries who reported a rating of overall health as very good or excellent |
| 4-4 | Percentage of recently released beneficiaries who reported a rating of emotional or mental health as very good or excellent |
| **Research Question 4.3: Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have higher rates of access to care than those who were not subject to the demonstration?** | |
| 4-5 | Percentage of recently released beneficiaries who had a preventive/ambulatory health service visit |
| 4-6 | Percentage of recently released beneficiaries who reported that their doctor usually or always spent enough time with them |
| 4-7 | Percentage of recently released beneficiaries who reported they received needed care right away as soon as they needed |
| 4-8 | Percentage of recently released beneficiaries who reported they were able to schedule an appointment for a checkup or routine care at a doctor's office or clinic as soon as they needed |
| **Research Question 4.4: Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have better experiences of care than those who were not subject to the demonstration?** | |
| 4-9 | Percentage of recently released beneficiaries who reported their doctor usually or always explained things in a way that was easy to understand |
| 4-10 | Percentage of recently released beneficiaries who reported their doctor usually or always listened carefully to them |
| 4-11 | Percentage of recently released beneficiaries who reported their doctor usually or always showed respect for what they had to say. |
| 4-12 | Percentage of recently released beneficiaries attributed/assigned to a TI provider with the same race/ethnicity and/or language |
| **Research Question 4.5: Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have higher rates of SUD treatment and adherence than those who were not subject to the demonstration?** | |
| 4-13 | Percentage of recently released beneficiaries who had initiation of SUD treatment |
| 4-14 | Percentage of recently released beneficiaries who had engagement of SUD treatment |

### Table 1-5 — Hypothesis 4 Research Questions and Measures

| | |
|---|---|
| **Research Question 4.6: Do adult beneficiaries recently released from a criminal justice facility and who are referred to a TI Justice clinic have lower rates of ED utilization than those who were not subject to the demonstration?** | |
| 4-15 | Number of ED visits among recently released beneficiaries |
| 4-16 | Number of potentially avoidable ED visits among recently released beneficiaries |
| **Research Question 4.7: Do adult beneficiaries recently released from a criminal justice facility and who are referred to a TI Justice clinic have better management of alcohol and other drugs than those who were not subject to the demonstration?** | |
| 4-17 | Percentage of ED visits among recently released beneficiaries with a principal diagnosis of SUD, or any diagnosis of drug overdose, for which there was follow-up within seven days |
| 4-18 | Percentage of ED visits among recently released beneficiaries with a principal diagnosis of SUD, or any diagnosis of drug overdose, for which there was follow-up within thirty days |
| 4-19 | Percentage of recently released beneficiaries who received prescription opioids from multiple providers |
| **Research Question 4.8: Do adult beneficiaries recently released from a criminal justice facility and who are referred to a TI Justice clinic have better success with tobacco cessation than those who were not subject to the demonstration?** | |
| 4-20 | Percentage of recently released beneficiaries identified as a tobacco user who received tobacco cessation intervention |
| 4-21 | Percentage of recently released beneficiaries who responded that they have tried quitting in the last 12 months |

Evaluating the financial impact of the TI 2.0 program is essential. As TI 2.0 receives partial financing from time-limited Designated State Health Programs (DSHP) funds, AHCCCS aims for the program to become self-sufficient by the program's conclusion. One of the expectations is for the program to generate cost savings that are equal to or exceed the time-limited DSHP funding. Hypothesis 5 will assess the impact of TI 2.0 by analyzing the costs and savings associated with the program. No specific measures are included under this hypothesis, as this analysis will not be solely evaluated based on the outcome of specific financial measurements. ASU TIPQIC will calculate changes in total costs and examine cost drivers within TI 2.0 consistent with CMS' guidance on analyzing costs associated with Section 1115 demonstrations and consider stratifications by health-related social needs relative to comparison groups.[3] The approach for assessing the costs and savings of the TI 2.0 program is described in further detail in the Cost Analysis section. The research question associated with Hypothesis 5 is listed in Table 1-6.

**Table 1-6 — Hypothesis 5 Research Question**

| **Hypothesis 5: The care costs for TI 2.0 participants will be lower than the care costs of non-TI participants.** |
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| **Research Question 5.1: Are the care costs for TI participants lower than the care costs for non-TI participants in TI 2.0?** |

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[3] United States Department of Health and Human Services. Appendix C: Approaches to Analyzing Costs Associated with Section 1115 Demonstrations for Beneficiaries with Serious Mental Illness/Serious Emotional Disturbance or Substance Use Disorders. Available at: https://www.hhs.gov/guidance/document/appendix-c-analyzing-costs-associated-demonstrations-smised-or-sud-0. Accessed on: Aug 2, 2023.

## *Logic Model*

Figure 1 illustrates how providing financial investments to participating TI 2.0 providers will ultimately lead to improved health outcomes, increased coordination of care, and generate cost savings. By providing milestones that must be met at specific time frames to earn financial incentives, AHCCCS expects to encourage increased levels of integration and coordination of care among participating providers. In the short term, AHCCCS expects increased identification of needs and communication between a patient's primary care provider (PCP), BH provider, and community-based organizations. This should lead to increased levels of care management, which will lead to long-term improved health outcomes and a reduction in health disparities among targeted beneficiaries.

**Figure 1**

| | | | Expected Outcomes | | |
|---|---|---|---|---|---|
| **Resources/Input**<br>What are the resources and funding streams necessary to implement the demonstration renewal? | **Activities**<br>What will AHCCCS do to continue the implementation of the demonstration renewal? | **Output**<br>What is the expected direct result of the demonstration renewal? | **Short Term**<br>Expected initial outcomes | **Intermediate**<br>Expected intermediate-term outcomes | **Long term**<br>Expected long-term outcomes of the demonstration |
| Up to approximately $24 million in State and federal DSHP funding across five years<br>Additional state and federal funding totaling up to approximately $250 million across five years<br>TI 2.0 AHCCCS staff to administer TI 2.0<br>AHCCCS staff to conduct TI-related training<br>Input (time and knowledge) from the ASU team, key stakeholders, and SMEs within AHCCCS<br>Program activities informed by the QICs<br>Best practice guides<br>Technical assistance provided by the ASU and TI 2.0 AHCCCS staff | AHCCCS to provide key milestones, including application and onboarding, development of processes and procedures to support TI 2.0 initiatives and meet performance measure targets<br>AHCCCS and ASU will provide relevant TI 2.0 training to participating providers<br>AHCCCS will provide incentive payments to participating providers who meet milestones<br>AHCCCS and ASU will foster peer learning through a quality improvement collaborative<br>AHCCCS will work in conjunction with ASU to provide timely and standardized feedback to participants<br>AHCCCS will collaborate with ASU to offer resources related to population health management and the science of improvement<br>AHCCCS will support ASU in conducting population health equity analyses, identify health inequities, and develop plans to address them<br>Some participants will earn NCQA Health Equity Accreditation | AHCCCS and ASU will assist providers in becoming proficient in population health management and payment to build capacity that will offset the time-limited federal DSHP funds<br>Participating providers will develop and implement social determinants of health screening protocols and practices to identify HRSN<br>Participating providers will screen children and adults for BH disorders and children for developmental disorders<br>Participating providers will develop outreach plans and communication protocols to increase integration between MCOS, PCPs, and BH care providers<br>Participating providers will create support plans to educate members and their families on diagnoses and upon release from the criminal justice facilities<br>Participating providers will identify health inequities and create plans to address them<br>Some participants will earn NCQA Health Equity Accreditation<br>Participating providers will implement CLAS standards and their patients will be informed about the availability of culturally and linguistically appropriate services | Increased screening for social determinants of health, BH, and developmental disorders<br>Increased communication between patients' PCP and their specialty and BH care providers<br>Health-related social risk factors and health disparities are identified and a plan is developed to address the disparities<br>Increased referrals for members to community- based organizations via the closed-loop referral system<br>Increased number of clinics partnering with probation and/or parole | Timely follow-up after hospitalizations for BH disorders<br>Increased levels of care management<br>Enhanced collaboration and communication among healthcare providers to address and mitigate health disparities due to ADT alerts and participation in a CLRS<br>Increased member satisfaction<br>Increase in culturally and linguistically appropriate care and services<br>Reduced fragmentation between acute care and BH care (HS) | Improved health outcomes (H1, H2, H3, H4)<br>Generated cost savings to offset the DSHP (H5)<br>Health disparities are reduced and progress towards health equity is achieved |

**Confounding Factors**
Members not in TI 2.0 who seek care with TI 2.0 participating providers; member churn and/or attrition in TI 2.0; members not in TI 2.0 who seek care with TI 2.0 participating providers; members who seek care from both TI 2.0 and non-TI 2.0 participating providers; previous medical history; other AHCCCS programs could result in the confounding of program

Note: ACC: AHCCCS Complete Care; AHCCCS: Arizona Health Care Cost Containment System; ALTCS: Arizona Long Term Care System; ASU: Arizona State University, BH: behavioral health; CHP: Comprehensive Health Plan; CLAS: Culturally and Linguistically Appropriate Services; DSHP: Designated State Health Program; H:

| | |
|---|---|
| impacts; integration of care from non-TI 2.0 participating providers may vary; differential enrollment across waivers may mitigate the extent of confounding program effects; providers may vary in the degree in which they provide care coordination management | hypothesis; HRSN: health related social needs; MCO: managed care organization; NCQA: National Committee for Quality Assurance; PCP: primary care provider; PQC: Prior Quarter Coverage; QIC: quality improvement collaborative; RBHA: Regional Behavioral Health Authority; SME: subject matter expert; TI: Targeted Investments |

## Methodology

### *Intervention and Comparison*

Populations TI 2.0 participating providers will be identified as those currently participating in the program during demonstration years 4 and 5 (FFY 2026 and 2027, respectively) and were expected to attest to each year's milestones.[4] Data on provider participation will be provided by AHCCCS annually.

Arizona Medicaid beneficiaries will be attributed to TI 2.0 providers by utilizing multiple resources including (1) monthly PCP assignment lists from each health plan, (2) attribution reports that identify beneficiaries and attributed providers for receiving incentives based on meeting performance measure targets, as well as (3) claims and encounter data identifying beneficiaries' utilization of care. Attribution for the justice population will rely on monthly justice referral lists from each justice clinic referral source. The justice population identified for each year will include those referred in the program year as well as the prior year. ASU TIPQIC will collaborate with TI 2.0 AHCCCS staff to leverage existing beneficiary attribution efforts where possible.

For measures at the provider level, the comparison group will be non-TI participating providers. For all other measures, the comparison group will include beneficiaries who are attributed to non-TI participating providers and have not been assigned to a TI participating provider in the performance year, nor have they been attributed to or received any healthcare services from one. It is important to note that assignment to a TI provider is exclusively intended for PCP purposes and will not be employed for the justice or BH projects.

When evaluating the measures outlined in Hypothesis 4, TI justice members may be compared to a synthetic justice control that will be consistent with CMS' guidance on selecting a synthetic

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[4] Arizona Health Care Cost Containment System. Targeted Investments Renewal Request Concept Paper. Available at: https://www.azahcccs.gov/Resources/Downloads/ti2/TI20CONCEPTPAPER_FINAL.pdf. Accessed on: Jul 20, 2023.

control.[5] TI clinics with dual programs for adults with behavioral health needs and justice-involved individuals will form the basis for the synthetic control group due to their similarities in size, geography, and patient population to the justice-involved group. The baseline period will span two years, from October 1, 2021, to September 30, 2023, ensuring a comprehensive capture of pre-intervention trends. Since there were no performance-based incentives in Year 1, ASU TIPQIC can confidently consider this period as a suitable baseline. ASU TIPQIC will calculate synthetic control weights using an algorithm that will assign a single, optimal weight to each potential comparison TI clinic to ensure that the Justice group and the comparison group are as similar as possible, along with the covariates and outcomes entering the model. If the weight of the comparison unit is positive, it will enter the synthetic comparison group. Conversely, if the weight is zero, the unit will not enter the comparison group. The weights for all comparison units in the donor pool sum to one.[6,7]

Additional data sources, such as the Arizona Department of Corrections, Rehabilitation, and Reentry (ADCRR), will be used to identify non-TI justice beneficiaries. AHCCCS continues to explore additional data sources that can identify all justice-involved members to validate monthly justice referral lists and create a pool of members to be assigned to the intervention or comparison group accordingly, such as booking and release reports from Arizona Department of Corrections, Rehabilitation and Reentry ((ADCRR), administrator of state parole programs) and the Administrative Office of the Courts ((AOC), administrator of all county probation programs).

For the difference-in-difference (DiD) analysis to be valid, the comparison group must accurately represent the change in outcomes that would have been experienced by the intervention group in the absence of the program. Statistical methods will be used to identify and select beneficiaries of the comparison group who have similar characteristics to the intervention group. Specifically, a logistic regression model may be used to predict the probability that each

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[5] Centers for Medicare & Medicaid Services (2020). Selection of Out-of-State Comparison Groups and the Synthetic Control Method. Available at: https://www.medicaid.gov/sites/default/files/2021-05/outofstate-comp.pdf. Accessed on: Nov 29, 2023.

[6] Abadie, A., A. Diamond, and J. Haimueller. "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program." Journal of the American Statistical Association, vol. 105, no. 490, June 2010, pp. 493–505. doi: 10.1198/jasa.2009.ap08746

[7] Abadie, Alberto. 2021. "Using Synthetic Controls: Feasibility, Data Requirements, and Methodological Aspects." Journal of Economic Literature, 59 (2): 391-425. DOI: 10.1257/jel.20191450

provider would participate in TI, conditional on the providers' observed baseline characteristics (i.e., the propensity score). These provider-level characteristics could include the number of beneficiaries served; provider type per program (i.e., group payment, integrated clinics for both the PCP and BH projects, BH outpatient clinic for the BH project, and Federally Qualified Health Centers and Rural Health Clinics for the justice project); clinical area of concentration; project type; provider specialty; average patient age; and average number of beneficiary-months.

Within the TI 2.0 intervention population, ASU TIPQIC will examine differences in rates stratified by the following subgroups where data are available. It is important to acknowledge that these subgroups may have small numerator and denominator values, which will depend on the extent of provider involvement in the initiative.

1. Beneficiaries attributed to providers with NCQA Health Equity Accreditation vs. beneficiaries attributed to non-accredited providers.
2. Beneficiaries with referrals through CommunityCares Closed-Loop Referral System (CLRS) vs. beneficiaries referred through alternative systems.
3. TI justice beneficiaries participating in early reach-in efforts vs. TI justice beneficiaries not participating in early reach-in efforts.

### *American College of Emergency Physicians*

ASU TIPQIC will utilize the American College of Emergency Physicians' facility coding model to classify the ED visit data for the State's Medicaid population.[8] This model, previously employed by AHCCCS in 2022, provides a unique approach to categorizing ED visits into five different tiers based on the level of care or intervention required.[9] Level I visits typically involve self-limited or minor issues, where a quick resolution with minimal medical intervention is expected.

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[8] American College of Emergency Physicians. ED Facility Level Coding Guidelines. Available at: https://www.acep.org/administration/reimbursement/ed-facility-level-coding-guidelines. Accessed on: Nov 16, 2023.

[9] Arizona Health Care Cost Containment System (2022). 2022 AHCCCS Emergency Department Utilization Report. Available at: https://www.azahcccs.gov/shared/Downloads/Reporting/2022/2022AHCCCSEmergencyDepartmentUtilizationReport.pdf. Accessed on: Nov 29, 2023.

Levels II-III visits are characterized by low to moderate severity, while Levels IV and V visits indicate high severity and are assumed to be related to emergencies.

For the purposes of this analysis, ASU TIPQIC will assume that Levels I-III represent issues that could potentially be addressed by a primary care physician in an office or an urgent care center if timely services are accessible. According to the American College of Emergency Physicians, Level I visits encompass initial assessments that do not involve medication or treatment. Examples include uncomplicated insect bites, prescription refills, the removal of simple sutures, or reading a TB test. Level II visits are generally associated with conditions like sunburns, ear pain, minor viral infections, and simple traumas. Level III visits may involve minor traumas, fevers that respond to fever reducers like aspirin and ibuprofen, and medical conditions requiring prescription drug management. It is important to note that there may be situations where ED utilization is appropriate for services classified as Levels I-III. Additionally, the coding system may not always account for mitigating factors, such as the patient's age or the timing of the health event leading to the visit. Total ED visits will be determined by the procedure codes that correspond with the five levels of severity.

### *Evaluation Period*

Table 2 presents the baseline, ramp-up, and evaluation period for the TI 2.0 program.

**Table 2 - Evaluation Period**

| Baseline | Ramp-Up | Evaluation |
|---|---|---|
| October 1, 2021–September 30, 2022 | October 1, 2022–September 30, 2024 | October 1, 2024–September 30, 2027 |

### *Evaluation Measures*

Table 3 presents the evaluation measures, comparison groups, data sources, and analytic approaches corresponding to each hypothesis of the TI 2.0 evaluation. Measures under Hypotheses 2, 3, and 4 may have low numerators and denominators, and further stratification could exacerbate this issue. However, it should be noted ASU TIPQIC will censor any values with a numerator or denominator less than 10 in evaluation reports to protect data confidentiality and reliability.

**Table 3 – TI 2.0 Evaluation Measures**

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| **Hypothesis 1: The TI 2.0 program will increase collaboration and coordination amongst the MCOs, ACOs, subcontracted networks, and provider organizations.** | | | | |
| **Research Question 1.1:** What was the experience of AHCCCS in implementing and/or maintaining TI 2.0 and its care coordination and HRSN initiatives? | 1-1: AHCCCS' reported barriers and/or facilitators or success before and shortly following the implementation of TI 2.0 | N/A | Key Informant Interviews | Qualitative synthesis |
| | 1-2: AHCCCS' reported activities to support care coordination and/or HRSN | N/A | Key Informant Interviews | Qualitative synthesis |
| **Research Question 1.2:** What was the experience of MCOs, ACOs, and subcontracted networks implementing and/or maintaining TI 2.0 and its care coordination and HRSN initiatives? | 1-3: MCOs'/ACOs'/ subcontracted networks' reported barriers and/or facilitators of success before and shortly following the implementation of TI 2.0 | N/A | Key Informant Interviews | Qualitative synthesis |
| | 1-4: MCOs'/ACOs'/ subcontracted networks' reported activities to support care coordination and/or HSRN | N/A | Key Informant Interviews | Qualitative synthesis |
| **Research Question 1.3:** What was the experience of providers implementing and/or maintaining TI 2.0 and its care coordination and HRSN initiatives? | 1-5: Providers' reported barriers and/or facilitators of success before and shortly following the implementation of TI 2.0 | N/A | - Key Informant Interviews<br>- Provider focus groups | Qualitative synthesis |
| | 1-6: Providers' reported activities to support care | N/A | - Key Informant Interviews | Qualitative synthesis |

Table 3 – TI 2.0 Evaluation Measures

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | coordination and/or HSRN | | - Provider focus groups | |
| **Research Question 1.4:** What is the number of participating providers in TI 2.0? | 1-7: Number of providers participating in TI 2.0 | N/A | Administrative program data | - Descriptive analysis<br>- Stratify by area of concentration; geography |
| **Research Question 1.5**: What is the number of TI 2.0 providers with NCQA Health Equity Accreditation? | 1-8: Number/percent of TI 2.0 providers with NCQA Provider Health Equity Accreditation | N/A | AHCCCS reporting | - Descriptive analysis<br>- Stratify by area of concentration |
| **Research Question 1.6:** Has the percentage of providers with executed agreements with Contexture for addressing HRSN and/or ADT alerts increased compared to prior to the demonstration? | 1-9: Percentage of TI-participating pediatric primary care and BH care practices that have an executed agreement with Contexture | Practitioners not participating in TI 2.0 | Administrative program data | - Descriptive analysis<br>- Separated by type of agreement (HIE and/or CommunityCares CLRS) |
| | 1-10: Percentage of TI-participating pediatric primary care and BH care practices that routinely receive ADT alerts | Practitioners not participating in TI 2.0 | Administrative program data | Descriptive analysis |
| | 1-11: Percentage of TI-participating adult primary care and BH care practices that have an executed agreement with Contexture | Practitioners not participating in TI 2.0 | Administrative program data | - Descriptive analysis<br>- Separated by type of agreement (HIE and/or CommunityCares CLRS) |
| | 1-12: Percentage of TI-participating adult primary care and BH care practices that routinely receive ADT alerts | Practitioners not participating in TI 2.0 | Administrative program data | Descriptive analysis |

**Table 3 – TI 2.0 Evaluation Measures**

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | 1-13: Percentage of TI-participating justice practices that have an executed agreement with Contexture | Practitioners not participating in TI 2.0 | Administrative program data | - Descriptive analysis<br>- Separated by type of agreement (HIE and/or CommunityCares CLRS) |
| | 1-14: Percentage of TI-participating justice practices that routinely receive ADT alerts | Practitioners not participating in TI 2.0 | Administrative program data | Descriptive analysis |
| **Research Question 1.7~~6~~:** What is the percentage of TI 2.0 beneficiaries screened using SDOH assessments to identify HRSN that received a referral to a CBO? | 1-15: Number/percent of TI beneficiaries who received an SDOH screening assessment to identify HRSN | N/A | - CommunityCares CLRS<br>- Administrative program data<br>- State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - Descriptive analysis<br>- Health equity analysis |
| | 1-16: Number/percent of TI beneficiaries who received an SDOH screening assessment to identify HRSN and were referred to a CBO | N/A | - CommunityCares CLRS<br>- Administrative program data<br>- State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - Descriptive analysis<br>- Health equity analysis |
| | 1-17: Number/percent of TI beneficiaries referred to a CBO that experienced a follow-up CBO appointment within 30 days | N/A | - CommunityCares CLRS<br>- Administrative program data<br>- Race and ethnicity data | - Descriptive analysis<br>- Health equity analysis |
| **Research Question 1.8:** What is the percentage of | 1-18: Number/percent of TI providers that | N/A | Administrative program data | Descriptive analysis |

### Table 3 – TI 2.0 Evaluation Measures

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| TI 2.0 providers that completed the TI 2.0 health equity projects? | completed the TI 2.0 health equity projects | | | |
| **Hypothesis 2: The TI 2.0 program will improve the delivery of care that addresses inequitable health outcomes for children.** | | | | |
| **Research Question 2.1:** Have health disparities related to care coordination been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration? | 2-1: Beneficiaries' response to their child's doctor seeming informed about the care their child received from specialists | Beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| **Research Question 2.2:** Have general and mental health outcomes maintained or improved among children attributed to TI 2.0 providers compared to prior to the demonstration? | 2-2: Percentage of beneficiaries who reported their child's rating of overall health as very good or excellent | Beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| | 2-3: Percentage of beneficiaries who reported their child's rating of emotional or mental health as very good or excellent | Beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| **Research Question 2.3:** Have health disparities related to access to care been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration? | 2-4: Percentage of child beneficiaries who had a well-child visit in the first 30 months of life | Child beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 2-5: Percentage of child and adolescent beneficiaries who had a well-care visit with a PCP or OB/GYN | Child and adolescent beneficiaries who were not assigned to or did not receive care from TI 2.0 | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |

**Table 3 – TI 2.0 Evaluation Measures**

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | | participating providers | | |
| | 2-6: Percentage of beneficiaries who reported that their child's doctor usually or always spent enough time with them | Beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| | 2-7: Percentage of beneficiaries who reported their child received needed care right away as soon as they needed | Beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| | 2-8: Percentage of beneficiaries who reported they got an appointment for routine care as soon as their child needed | Beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| **Research Question 2.4**: Have health disparities related to experience of care been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration? | 2-9: Percentage of beneficiaries who reported their child's doctor usually or always explained things in a way that was easy to understand | Beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| | 2-10: Percentage of beneficiaries who reported their child's doctor usually or always listened carefully to them | Beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| | 2-11: Percentage of beneficiaries who reported their child's doctor usually or always showed | Beneficiaries who were not assigned to or did not receive care from TI 2.0 | - State eligibility and enrollment data<br>- Beneficiary survey | - G-squared test<br>- Health equity analysis |

**Table 3 – TI 2.0 Evaluation Measures**

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | respect for what they had to say. | participating providers | - Race and ethnicity data | |
| | 2-12: Percentage of child and adolescent beneficiaries attributed/assigned to a TI provider with the same race/ethnicity and/or language | N/A | - State eligibility and enrollment data<br>- Provider demographic data<br>- Race and ethnicity data | - Descriptive analysis<br>- Health equity analysis |
| **Research Question 2.5:** Have health disparities related to dental care utilization been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration? | 2-13: Percentage of child and adolescent beneficiaries receiving topical varnish | Child and adolescent beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 2-14: Percentage of child and adolescent beneficiaries who received a comprehensive or periodic evaluation with a dental provider during the measurement year | Child and adolescent beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| **Research Question 2.6:** Have health disparities related to ED utilization been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration? | 2-15: Number of ED visits among children and adolescents | Child and adolescent beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 2-16: Number of potentially avoidable ED visits among children and adolescents | Child and adolescent beneficiaries who were not assigned to or did not receive care from TI 2.0 | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |

### Table 3 – TI 2.0 Evaluation Measures

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | | participating providers | | |
| **Research Question 2.7**: Have health disparities related to treatment or management of behavioral health concerns been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration? | 2-17: Percentage of child and adolescent beneficiaries with a follow-up visit within seven days after hospitalization for mental illness | Child and adolescent beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 2-18: Percentage of child and adolescent beneficiaries with a follow-up visit within thirty days after hospitalization for mental illness | Child and adolescent beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 2-19: Percentage of child and adolescent beneficiaries with a follow-up visit seven days after an ED visit for mental illness | Child and adolescent beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 2-20: Percentage of child and adolescent beneficiaries with a follow-up visit thirty days after an ED visit for mental illness | Child and adolescent beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 2-21: Percentage of ED visits among adolescent beneficiaries with a principal diagnosis of SUD, or any diagnosis of drug | Adolescent beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |

**Table 3 – TI 2.0 Evaluation Measures**

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | overdose, for which there was follow-up within seven days | | | |
| | 2-22: Percentage of ED visits among adolescent beneficiaries with a principal diagnosis of SUD, or any diagnosis of drug overdose, for which there was follow-up within thirty days | Adolescent beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 2-23: Percentage of child and adolescent beneficiaries with ongoing antipsychotic medication use who have metabolic testing during the year | Child and adolescent beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| **Hypothesis 3: The TI 2.0 program will improve the delivery of care that addresses inequitable health outcomes for adults.** | | | | |
| **Research Question 3.1:** Have health disparities related to care coordination been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration? | 3-1: Adult beneficiaries' response to their doctor seeming informed about the care they received from specialists | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| | 3-2: Percentage of adult beneficiaries with follow-up after an ED visit for adult beneficiaries with multiple high-risk chronic conditions | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 3-3: Percentage of adult beneficiaries with patient | Adult beneficiaries who were not assigned to or did not receive care | - State eligibility and enrollment data | - DiD<br>- ITS; Pre-Test/Post-Test |

**Table 3 – TI 2.0 Evaluation Measures**

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | engagement after discharge | from TI 2.0 participating providers | - Claims/encounter data<br>- Race and ethnicity data | - HLM<br>- Health equity analysis |
| **Research Question 3.2:** Have general and mental health outcomes maintained or improved among adults attributed to TI 2.0 providers? | 3-4: Percentage of adult beneficiaries who reported a rating of overall health as very good or excellent | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| | 3-5: Percentage of adult beneficiaries who reported a rating of emotional or mental health as very good or excellent | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| **Research Question 3.3:** Have health disparities related to access to care been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration? | 3-6: Percentage of adult beneficiaries who accessed preventive/ambulatory health services | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 3-7: Percentage of adult beneficiaries who reported that their doctor usually or always spent enough time with them | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| | 3-8: Percentage of adult beneficiaries who reported they received needed care right away as soon as they needed | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |

**Table 3 – TI 2.0 Evaluation Measures**

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | 3-9: Percentage of adult beneficiaries who reported they got an appointment for routine care as soon as they needed | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| **Research Question 3.4**: Have health disparities related to the experience of care been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration? | 3-10: Percentage of adult beneficiaries who reported their doctor usually or always explained things in a way that was easy to understand | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| | 3-11: Percentage of adult beneficiaries who reported their doctor usually or always listened carefully to them | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| | 3-12: Percentage of adult beneficiaries who reported their doctor usually or always showed respect for what they had to say. | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - G-squared test<br>- Health equity analysis |
| | 3-13: Percentage of adult beneficiaries attributed/assigned to a TI provider with the same race/ethnicity and/or language | N/A | - State eligibility and enrollment data<br>- Provider demographic data<br>- Race and ethnicity data | - Descriptive analysis<br>- Health equity analysis |
| | 3-14: Percentage of adult beneficiaries who received an SDOH screening assessment to identify HRSN | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 | - State eligibility and enrollment data<br>- Claims/encounter data | - Descriptive analysis<br>- Health equity analysis |

### Table 3 – TI 2.0 Evaluation Measures

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | | participating providers | - Race and ethnicity data | |
| **Research Question 3.5:** Have health disparities related to maternal health been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration? | 3-15: Percentage of adult beneficiaries with postpartum depression screening and follow-up | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - Descriptive analysis<br>- Health equity analysis |
| | 3-16: Timeliness of prenatal care | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 3-17: Timeliness of postpartum care | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| **Research Question 3.6:** Have health disparities related to ED and IP utilization been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration? | 3-18: Number of ED visits among adult beneficiaries | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 3-19: Number of potentially avoidable ED visits among adult beneficiaries | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| **Research Question 3.7:** Have | 3-20: Percentage of adult beneficiaries with a follow-up visit | Adult beneficiaries who were not assigned to or did | - State eligibility and enrollment data | - DiD<br>- ITS |

**Table 3 – TI 2.0 Evaluation Measures**

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| health disparities related to treatment or management of behavioral health concerns been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration? | seven days after hospitalization for mental illness | not receive care from TI 2.0 participating providers | - Claims/encounter data<br>- Race and ethnicity data | - HLM<br>- Health equity analysis |
| | 3-21: Percentage of adult beneficiaries with a follow-up visit thirty days after hospitalization for mental illness | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 3-22: Percentage of adult beneficiaries with a follow-up visit seven days after hospitalization for mental illness | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 3-23: Percentage of adult beneficiaries with a follow-up visit thirty days after hospitalization for mental illness | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 3-24: Percentage of adult beneficiaries who had initiation of SUD treatment | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 3-25: Percentage of adult beneficiaries who had engagement of SUD treatment | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |

**Table 3 – TI 2.0 Evaluation Measures**

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | 3-26: Percentage of ED visits among adult beneficiaries with a principal diagnosis of SUD, or any diagnosis of drug overdose, for which there was follow-up within seven days | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 3-27: Percentage of ED visits among adult beneficiaries with a principal diagnosis of SUD, or any diagnosis of drug overdose, for which there was follow-up within thirty days | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| | 3-28: Diabetes Screening for People with Schizophrenia or Bipolar Disorder Who Are Using Antipsychotic Medications | Adult beneficiaries who were not assigned to or did not receive care from TI 2.0 participating providers | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| **Hypothesis 4: The TI 2.0 program will improve the delivery of care for AHCCCS-enrolled adults released from criminal justice facilities and who are referred to a TI Justice clinic.** | | | | |
| **Research Question 4.1:** Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have better care coordination than those who were not subject to the demonstration? | 4-1: Recently released beneficiaries' response to their doctor seeming informed about the care they received from specialists | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data<br>- TI 2.0 Justice referral lists | - G-squared test<br>- Health equity analysis |
| | 4-2: Percentage of recently released beneficiaries with patient engagement after discharge | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data | - DiD<br>- ITS; Pre-Test/Post-Test<br>- HLM<br>- Health equity analysis |

Table 3 – TI 2.0 Evaluation Measures

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | | | - TI 2.0 Justice referral lists | |
| **Research Question 4.2:** Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have better care general and mental health outcomes than those who were not subject to the demonstration? | 4-3: Percentage of recently released beneficiaries who reported a rating of overall health as very good or excellent | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data<br>- TI 2.0 Justice referral lists | - G-squared test<br>- Health equity analysis |
| | 4-4: Percentage of recently released beneficiaries who reported a rating of emotional or mental health as very good or excellent | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data<br>- TI 2.0 Justice referral lists | - G-squared test<br>- Health equity analysis |
| **Research Question 4.3:** Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have higher rates of access to care than those who were not subject to the demonstration? | 4-5: Percentage of recently released beneficiaries who had a preventive/ambulatory health service visit | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Claims/encounter data<br>- TI 2.0 Justice referral lists<br>- Race and ethnicity data | - DiD<br>- ITS; Pre-Test/Post-Test<br>- HLM<br>- Health equity analysis |
| | 4-6: Percentage of recently released beneficiaries who reported that their doctor usually or always spent enough time with them | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data<br>- TI 2.0 Justice referral lists | - G-squared test<br>- Health equity analysis |
| | 4-7: Percentage of recently released beneficiaries who reported they received needed care | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 | - State eligibility and enrollment data<br>- Beneficiary survey | - G-squared test<br>- Health equity analysis |

Table 3 – TI 2.0 Evaluation Measures

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | right away as soon as they needed | participating provider | - Race and ethnicity data<br>- TI 2.0 Justice referral lists | |
| | 4-8: Percentage of recently released beneficiaries who reported they were able to schedule an appointment for a checkup or routine care at a doctor's office or clinic as soon as they needed | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data<br>- TI 2.0 Justice referral lists | - G-squared test<br>- Health equity analysis |
| **Research Question 4.4**: Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have better experiences of care than those who were not subject to the demonstration? | 4-9: Percentage of recently released beneficiaries who reported their doctor usually or always explained things in a way that was easy to understand | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data<br>- TI 2.0 Justice referral lists | - G-squared test<br>- Health equity analysis |
| | 4-10: Percentage of recently released beneficiaries who reported their doctor usually or always listened carefully to them | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data<br>- TI 2.0 Justice referral lists | - G-squared test<br>- Health equity analysis |
| | 4-11: Percentage of recently released beneficiaries who reported their doctor usually or always showed respect for what they had to say. | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data<br>- TI 2.0 Justice referral lists | - G-squared test<br>- Health equity analysis |
| | 4-12: Percentage of recently released | N/A | - State eligibility and enrollment data | - Descriptive analysis |

**Table 3 – TI 2.0 Evaluation Measures**

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | beneficiaries attributed/assigned to a TI provider with the same race/ethnicity and/or language | | - Provider demographic data<br>- Race and ethnicity data<br>- TI 2.0 Justice referral lists | - Health equity analysis |
| **Research Question 4.5:** Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have higher rates of SUD treatment and adherence than those who were not subject to the demonstration? | 4-13: Percentage of recently released beneficiaries who had initiation of SUD treatment | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Claims/encounter data<br>- TI 2.0 Justice referral lists<br>- Race and ethnicity data | - DiD<br>- ITS; Pre-Test/Post-Test<br>- HLM<br>- Health equity analysis |
| | 4-14: Percentage of recently released beneficiaries who had engagement of SUD treatment | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Claims/encounter data<br>- TI 2.0 Justice referral lists<br>- Race and ethnicity data | - DiD<br>- ITS; Pre-Test/Post-Test<br>- HLM<br>- Health equity analysis |
| **Research Question 4.6:** Do adult beneficiaries recently released from a criminal justice facility and who are referred to a TI Justice clinic have lower rates of ED utilization than those who were not subject to the demonstration? | 4-15: Number of ED visits among recently released beneficiaries | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Claims/encounter data<br>- TI 2.0 Justice referral lists<br>- Race and ethnicity data | - DiD<br>- ITS; Pre-Test/Post-Test<br>- HLM<br>- Health equity analysis |
| | 4-16: Number of potentially avoidable ED visits among recently released beneficiaries | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Claims/encounter data<br>- TI 2.0 Justice referral lists<br>- Race and ethnicity data | - DiD<br>- ITS; Pre-Test/Post-Test<br>- HLM<br>- Health equity analysis |

**Table 3 – TI 2.0 Evaluation Measures**

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| | | | | |
| **Research Question 4.7:** Do adult beneficiaries recently released from a criminal justice facility and who are referred to a TI Justice clinic have better management of alcohol and other drugs than those who were not subject to the demonstration? | 4-17: Percentage of ED visits among recently released beneficiaries with a principal diagnosis of SUD, or any diagnosis of drug overdose, for which there was follow-up within seven days | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Claims/encounter data<br>- TI 2.0 Justice referral lists<br>- Race and ethnicity data | - DiD<br>- ITS; Pre-Test/Post-Test<br>- HLM<br>- Health equity analysis |
| | 4-18: Percentage of ED visits among recently released beneficiaries with a principal diagnosis of SUD, or any diagnosis of drug overdose, for which there was follow-up within thirty days | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Claims/encounter data<br>- TI 2.0 Justice referral lists<br>- Race and ethnicity data | - DiD<br>- ITS; Pre-Test/Post-Test<br>- HLM<br>- Health equity analysis |
| | 4-19: Percentage of recently released beneficiaries who received prescription opioids from multiple providers | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Claims/encounter data<br>- TI 2.0 Justice referral lists<br>- Race and ethnicity data | - DiD<br>- ITS; Pre-Test/Post-Test<br>- HLM<br>- Health equity analysis |
| **Research Question 4.8:** Do adult beneficiaries recently released from a criminal justice facility and who are referred to a TI Justice clinic have better success with tobacco cessation than those who were not | 4-20: Percentage of recently released beneficiaries identified as a tobacco user who received tobacco cessation intervention | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data<br>- TI 2.0 Justice referral lists | - G-squared test<br>- Health equity analysis |
| | 4-21: Percentage of recently released beneficiaries who responded that they | Synthetic Justice control; Justice beneficiaries who were not referred to | - State eligibility and enrollment data<br>- Beneficiary survey | - G-squared test<br>- Health equity analysis |

Table 3 – TI 2.0 Evaluation Measures

| Research Question | Measure(s) | Comparison Group(s) | Data Source(s) | Analytic Approach |
|---|---|---|---|---|
| subject to the demonstration? | have tried quitting in the last 12 months | a TI 2.0 participating provider | - Race and ethnicity data<br>- TI 2.0 Justice referral lists | |
| **Hypothesis 5: The care costs for TI 2.0 participants will be lower than the care costs of non-TI participants.** | | | | |
| **Research Question 5.1:** Are the care costs for TI participants lower than the care costs for non-TI participants in TI 2.0? | There are no specific measures associated with this hypothesis; see Cost Analysis Section for additional detail | Beneficiaries who were not assigned to, referred to, or did not receive care from TI 2.0 participating providers | N/A | Cost Analysis |
| Note: ACO: accountable care organization; ADHS: Arizona Department of Health Services; ADT: admit discharge transfer; AHCCCS: Arizona Health Care Cost Containment System; BH: behavioral health; CBO: community-based organization; CLRS: closed loop referral system; DiD: difference-in-differences; ED: emergency department; EHR: electronic health record; HIE: health information exchange; HLM: hierarchical linear models; HRSN: health related social needs; IP: inpatient; ITS: interrupted time series; MCO: managed care organization; NCQA: National Committee for Quality Assurance; PCP: primary care provider; SDOH: social determinants of health; SUD: substance use disorder; TI: Targeted Investments | | | | |

## *Data Sources*

The TI 2.0 evaluation will utilize a mixed-methods evaluation design. Quantitative methods will include descriptive statistics, showing change over time in both counts and rates for specific metrics, and ITS or trend analyses to evaluate whether the TI 2.0 interventions influenced changes across specific outcome measures. The TI population will be compared to the non-TI-attributed population, which will allow for the use of the DiD approach. Providers, MCOs, ACOs, subcontracted networks, and staff at AHCCCS will be interviewed to share their perceptions of and experience with TI 2.0. Beneficiary surveys will also be utilized to better understand patient experience with TI 2.0.

Multiple data sources will be utilized to evaluate the program-specific hypotheses. In general, these include administrative data, state beneficiary survey data, aggregate data, race and ethnicity data, provider focus groups, and key informant interviews.

### Administrative Data

Administrative data extracted from the AHCCCS Pre-Paid Medical Management Information System (PMMIS) will be used to calculate most measures proposed in this evaluation design. These data include administrative claims/encounter data, beneficiary eligibility, enrollment, and demographic data. Provider data will also be utilized as necessary to identify provider type and beneficiary attribution.

ASU TIPQIC will use all fee-for-service (FFS) claims and managed care encounters for this evaluation, regardless of adjudication status. Interim transactions will be excluded from the evaluation because these types of records introduce a level of uncertainty (from matching adjustments and third-party liabilities to index claims) that can impact reported rates and cost calculations.

## Contexture

Data provided from Arizona’s health information exchange (HIE), Contexture, will be used in the TI 2.0 evaluation. Measures that utilize electronic health records (EHR) will rely on data from Contexture.

## Race and Ethnicity Data

### Arizona Department of Health Services (ADHS)

Race and/or ethnicity data from the Arizona Department of Health Services (ADHS) will be used to supplement demographic data for the TI 2.0 evaluation. This data will form the basis for ASU TIPQIC to assess health equity among Medicaid beneficiaries in the state.

### Contexture

Race and/or ethnicity data from Contexture may be used to supplement demographic data for the TI 2.0 evaluation.

### Provider Surveys

Self-reported race, ethnicity, and language data from TI-participating providers will be collected from TI 2.0 provider surveys. This data will be used in the TI 2.0 evaluation to determine the number/percent of beneficiaries that are attributed to a TI provider with the same race/ethnicity and/or language as themselves.

**State Beneficiary Surveys**

Self-reported beneficiary race and/or ethnicity data will be collected during the state beneficiary surveys that will be administered in 2025 and 2027. This data may be used to supplement demographic data for the TI 2.0 evaluation.

## Focus Groups and Key Informant Interviews

Focus groups and key informant interviews will be conducted through a semi-structured interview protocol, transcribed, and imported into NVivo where the data will be coded to permit qualitative analysis. The transcripts, coding methodologies, and coded data will be used to answer the appropriate research questions.

## State Beneficiary Surveys

State beneficiary surveys will be used to assess beneficiaries' ability to obtain timely appointments, satisfaction and experience with healthcare, and their perception that their personal doctor seemed informed about the care they received from other providers. Consumer Assessment of Healthcare Providers and Systems (CAHPS®) surveys are often used to assess satisfaction with provided healthcare services and are adapted to elicit information addressing the research hypotheses related to beneficiaries’ continuity of healthcare coverage, and overall health status and utilization.[10] Results will be compared against national benchmarks when available. Eligibility and enrollment data will be used to identify the population for the survey, with specific enrollment requirements being finalized upon inspection of the data. Typically, adult beneficiaries who have been continuously enrolled in an AHCCCS Complete Care (ACC) health plan during the last six months of the measurement period, with no more than a one-month gap in enrollment, will be asked to participate in the study. The cross-sectional surveys will be conducted in both Spanish and English, once during 2025 and once during 2027.

The TI 2.0 evaluation surveys will use selected questions from the following instruments:

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[10] CAHPS® is a registered trademark of the Agency for Healthcare Research and Quality (AHRQ).

- Children: CAHPS 5.0 Child Medicaid Health Plan Survey with CAHPS supplemental items.[11]
- Adults and adults transitioning from the criminal justice system: CAHPS 5.0 Adult Medicaid Health Plan Survey with CAHPS and Centers for Disease Control and Prevention (CDC)'s Behavioral Risk Factor Surveillance System (BRFSS) supplemental items.[12],[13]

The TI population survey will be an important data source for the evaluation because ASU TIPQIC will need to capture information from beneficiaries about their healthcare experience in order to answer questions pertinent to TI 2.0, such as patient perception of care coordination. The survey questions will be designed to capture elements of the program's Special Terms and Conditions (STCs) that cannot be addressed through administrative data. The following concepts and hypotheses will be addressed in the beneficiary surveys:

- Access and availability of care—Research Questions 2.3, 3.3, and 4.3 ask whether rates of screening visits, well-care visits, and beneficiaries' access to care are higher for beneficiaries subject to TI 2.0 compared to beneficiaries not subject to TI.
- Patient perception of care coordination—Research Questions 2.4, 3.4, and and 4.4 ask whether beneficiaries subject to TI 2.0 perceive that their doctors have better care coordination than those not subject to TI.
- Beneficiary experience with AHCCCS.

ASU TIPQIC will use a population-based survey approach to provide comprehensive, representative, and statistically valid data from beneficiaries regarding their health care perceptions and experiences. In both 2025 and 2027, the first round of surveys will be sent to all adult beneficiaries who are actively enrolled in an ACC plan during the measurement period and

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[11] Agency for Healthcare Research and Quality. Supplemental Items for the CAHPS Health Plan Child Survey 5.0: Coordination of Care. Available at: https://www.ahrq.gov/cahps/surveys-guidance/item-sets/hp/suppl-coordination-of-care-hp-child.html#P-CR5. Accessed on: November 16, 2023.

[12] Agency for Healthcare Research and Quality. Supplemental Items for the CAHPS Health Plan Adult Survey 5.0: Coordination of Care. Available at: https://www.ahrq.gov/cahps/surveys-guidance/item-sets/hp/suppl-coordination-of-care-hp-adult.html#P-CR5. Accessed on: November 16, 2023.

[13] Centers for Disease Control and Prevention. 2022 BRFSS Questionnaire. Available at: 2022 BRFSS Questionnaire (cdc.gov). Accessed on: November 16, 2023.

have an email address on file in the AHCCCS administrative database. After the initial round, participants will receive email reminders, as research has demonstrated that this practice can effectively boost response rates. AHCCCS and ASU TIPQIC seek to streamline survey administration throughout the evaluation process by implementing a responsive survey design. This approach will minimize the number of separate survey rounds required, thus reducing the burden on beneficiaries and maximizing the response rate. This will be integral to the evaluation because it will allow the ASU TIPQIC team to monitor the non-response rates in subpopulations daily and adapt efforts (e.g., increase reminders or switch to additional modalities such as text or mail) to improve subpopulations' non-response rates. Beneficiary data can be used to effectively characterize subpopulations through appropriate weighting methodologies and responsive survey strategies. A general survey methodology can be refined through the use of the data and, blended with experience, incorporate lessons learned from health-related surveys and modern analysis methods. When analyzing the survey data, ASU TIPQIC will utilize weighting methods for similar surveys recommended by CMS and related organizations. These methods may involve or be a combination of simple matching, propensity weighting, planned propensity weighting with machine learning, raking (IPF), and/or entropy balance weighting.

The standard NCQA HEDIS® Specifications for Survey Measures requires a sample size of 1,350 beneficiaries for the CAHPS 5.0 Adult Medicaid Health Plan Survey and 1,650 for the CAHPS 5.0 Child Medicaid Health Plan Survey.[14] An oversample of at least 10 percent for each plan will be applied to ensure an adequate number of respondents for each CAHPS measure. By employing a population-based survey methodology, it is anticipated that the number of respondents will exceed the required sample size, thereby increasing the insights that can be learned from the population. Historic response rates in Arizona for the Acute Care population are approximately 22 percent for adults and 20 percent for children, which would translate to a completed sample of 327 adult respondents and 363 child respondents. For the adult/justice samples, a minimum sample size of 327 would have 0.8 power to identify a single percentage of 50 percent with a margin of error of 5.42 percent, or to identify a difference between rates of 50 percent and 60.9 percent with an alpha level of 0.05 and two-tailed tests. For the child sample, a minimum sample size of 363 would have 0.8 power to identify a single percentage of 50 percent with a margin of error of 5.14 percent, or to identify a difference between rates of 50 percent and 60.3 percent with an alpha level of 0.05 and two-tailed tests.

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[14] National Committee for Quality Assurance. HEDIS® 2020, Volume 3: Specifications for Survey Measures. Washington, DC: NCQA Publication, 2019.

## Statewide Closed-Loop Referral Systems

### CommunityCares

The statewide closed-loop referral system was designed to improve the HRSNs of AHCCCS members. The system enables providers to easily screen and refer members for HRSN services, which have a direct impact on their physical and mental health. ASU TIPQIC will use the referral data from CommunityCares for this evaluation to assess the rate of participating providers and utilization of the system.

### Equality Health and Phoenix Children's Care Network

ASU TIPQIC will also receive closed-loop referral system data Equality Health and Phoenix Children's Care Network. Equality Health and Phoenix Children's Care Network are ACOs that are contracted by some of AHCCCS' MCOs to further assist providers. Referral data from Equality Health and Phoenix Children's Care Network may be used for additional analysis to better understand HRSN referrals.

## Housing and Health Opportunities (H2O)

ASU TIPQIC will receive H2O program data to help mitigate the potentially confounding effects of the H2O program on the TI 2.0 program outcomes. ASU TIPQIC will receive two regularly updated H2O program files from AHCCCS: (1) a list of AHCCCS members who are eligible for the H2O program with the enrollment date for those who have received an H2O service, and (2) a list of providers enrolled in the H2O program who are delivering services to H2O members.

## Analytic Methods

The analytic methods that will be used to evaluate TI 2.0 will include difference-in-difference (DiD), health equity analysis using G-squared tests, interrupted time series (ITS), pre-test/post-test, descriptive analysis, regression analysis (machine learning extension), and qualitative synthesis. Regression models will be adjusted, and potential demographic covariates; such as provider type, project type, provider area of concentration, beneficiary age, beneficiary sex assigned at birth, beneficiary race, beneficiary ethnicity, provider geography, beneficiary geography, beneficiary disability status, and language spoken by beneficiary; will be considered as candidate covariates for each model. Causal diagrams will be used to guide analyses (colliders, backdoors, etc.).[15] Treatment heterogeneity will also be studied. Sensitivity analyses will be conducted to support the robustness of the main model results. ASU TIPQIC will explore variations in model specifications, control variables, or methodological approaches to assess the stability of the findings and ensure their validity under different assumptions or scenarios.

## DiD

A DiD analysis will be performed on all outcome measures for which the TI-attributed population can be compared to the non-TI-attributed population. When evaluating the measures outlined in Hypothesis 4, TI justice members may be compared to a synthetic justice control that will be consistent with CMS' guidance on selecting a synthetic control.[16] This approach will compare the changes in outcome rates between the baseline period and the evaluation period across the intervention and comparison groups. For the DiD analysis to be valid, the comparison group must accurately represent the change in outcomes that would have been experienced by the intervention group in the absence of the program. The DiD analysis will be conducted with group-level rates using an adjusted logistic regression model.

The general form of the DiD model is:

$$\text{logit}(P(Y_{it} = 1)) = \beta_0 + \beta_1 T + \beta_2\,\text{post} + \beta_3\,(\text{post} \times T) + \varepsilon$$

where Y is the binary outcome for group i in year t, T is a binary indicator of the intervention group, post is a binary indicator for the evaluation period, and ε is an error term. The intercept $\beta_0$ represents the outcome on the log-odds scale for the comparison group at the baseline. The coefficient $\beta_1$ identifies the average difference between the groups during the baseline period prior to the implementation of TI 2.0 on the log-odds scale. The time period dummy coefficient $\beta_2$ captures the log-odds change in the average outcome between the baseline and evaluation time periods for the non-intervention group. The coefficient on the interaction term $\beta_3$ represents

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[15] Greenland S, Pearl J, Robins JM. Causal diagrams for epidemiologic research. Epidemiology. 1999 Jan;10(1):37-48. PMID: 9888278.

[16] Centers for Medicare & Medicaid Services (2020). Selection of Out-of-State Comparison Groups and the Synthetic Control Method. Available at: https://www.medicaid.gov/sites/default/files/2021-05/outofstate-comp.pdf. Accessed on: Nov 29, 2023

the DiD estimate of interest in this evaluation. In other words, it is the log-odds difference in the average outcome between the baseline and evaluation time periods for the intervention group, compared to the difference in average outcome between the baseline and evaluation time period for the non-intervention group. As mentioned previously, the nature of TI 2.0 will yield data that logically adhere to a nested structure, with repeated measurements across time nested within beneficiaries, who are then nested within providers. Therefore, ASU TIPQIC will consider nesting the logistic regression model above with the random effects model discussed previously in the proposal.

The validity of the DiD analysis relies on two critical assumptions, with one assuming parallel trends. It is assumed that, on average, both the TI-attributed population and the non-TI-attributed population would exhibit similar outcomes over time in the absence of TI 2.0. It is also assumed that there are no unobserved factors that systematically affect the TI population and non-TI population differently over time other than the program itself. This guarantees that the two populations are similar in all aspects except for their involvement with the program. To confirm these assumptions, pre-TI 2.0 trends for each measure in both groups will be graphed, alongside an assessment of demographic characteristics balance between the two groups before the intervention. Lack of significant differences in demographics would indicate comparability prior to the intervention. If the parallel trends assumption is violated in a DiD model, the results will be interpreted cautiously and explicitly acknowledged, recognizing that the observed effects of TI 2.0 may not solely be attributed to the program but could also be influenced by pre-existing group differences. Likewise, a violation of the common shocks assumption will prompt a careful acknowledgment of potential unobserved factors affecting the estimated effects of the program.

The DiD approach will be used where possible, as it controls for any factors external to the program that are applied equally to both groups, such as the coronavirus disease 2019 (COVID-19) public health emergency (PHE). However, the method is still susceptible to external factors that may have differentially impacted one group and not the other.

## Health Equity Analysis

In alignment with the TI 2.0 program goals of enhancing comprehensive whole-person care systems that effectively address health-related social risk factors and unmet social needs, the TI 2.0 evaluation will incorporate a multi-pronged analysis of health equity. Measuring health equity is a complex and multi-faceted area of research; as such, ASU TIPQIC recognizes that no single approach to evaluating health equity is without limitations. Consistent with contemporary literature, the proposed methodology places significant emphasis on capturing beneficiaries' identities from multiple sources and their experiences through survey data collection. The health equity analysis methodology below recognizes that any disparities identified through this analysis cannot be causally attributed to TI 2.0 alone, as various external factors may simultaneously influence measure outcomes.

The primary approach for this analysis will entail a detailed assessment of changes in health disparities during the baseline and evaluation periods. For each measurement year during the study period, ASU TIPQIC will calculate outcome measures for relevant demographic stratifications in which sufficient data are available; such as beneficiary age, beneficiary sex, beneficiary race, beneficiary ethnicity, beneficiary geography, beneficiary disability status, and language spoken by beneficiary. Additional subgroup analyses will be conducted based on HRSNs and the Social Vulnerability Index (SVI) at the census tract level among beneficiaries to identify existing disparities and assess whether TI 2.0 results in improved health equity. These additional analyses may also reveal insights on whether TI 2.0 benefits some subgroups more than others (treatment heterogeneity), and whether the program has the potential to reduce gaps in service availability and health outcomes. In the initial years of TI 2.0, HRSN data will be derived from the Centers for Disease Control and Prevention (CDC)/Agency for Toxic Substances and Disease Registry (ATSDR)'s SVI and will later be supplemented with the ADHS' Arizona-specific SVI.[17,18] As TI 2.0 progresses, data from CommunityCares may be employed to further refine sub-grouping based on HRSN needs, with a particular focus on housing, food, and non-emergent transportation.

Measure rates from each demographic stratification will be compared to the non-TI attributed population. These comparisons will be examined for both (1) statistically significant differences, using a series of independent sample t-tests (or ANOVA) and G-Squared tests, and (2) clinically meaningful differences in standardized relative percentages and effect sizes. These differences will be plotted over time to illustrate any widening or narrowing of specific health disparities. ASU TIPQIC will collaborate with and seek input from the AHCCCS TI 2.0 staff and other key

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[17] Centers for Disease Control and Prevention, Agency for Toxic Substances and Disease Registry (2022). CDC SVI Documentation 2020. Available at: https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/pdf/SVI2020Documentation_08.05.22.pdf. Accessed on: Nov 29, 2023.

[18] Arizona Department of Health Services (2023). How to design the Arizona Social Vulnerability Index (AzSVI). Available at: https://crh.arizona.edu/sites/default/files/2023-06/How%20to%20Design%20the%20Arizona%20Social%20Vulnerability%20Index%20Data%20Dashboard.pdf. Accessed on: Nov 29, 2023.

stakeholders to determine what magnitude of differences are clinically meaningful and constitute a disparity.

The secondary approach will provide a summary metric of health equity for each measure in each evaluation year through a G-squared test to account for unequal denominators in equity measures.[19] The G-squared test assesses the statistical significance of the difference between observed and expected frequencies in categorical data. This will be calculated for each measure in each year to provide a broad measure of health equity and may be used to supplement the primary approach described above.

Lastly, ASU TIPQIC will synthesize results by exploring relationships and correlations between experience of care survey measures and utilization measures from the claims and encounter data. This 'triangulation' of outcome results from the quantitative data in conjunction with a qualitative synthesis of the patient experience may offer useful insights into possible drivers of health disparities and opportunities for targeted programming.

### G-Squared Test

The G-squared test evaluates whether the observed distribution of counts in a contingency table significantly deviates from the expected distribution under a null model, typically one assuming independence between variables. The calculated test statistic assesses the probability that the observed differences from expected results are due to TI 2.0.

### ITS

For measures in which the non-TI attributed population cannot be used as a comparison group and data can be collected at multiple points in time before and after the implementation of the program, an ITS methodology can be used. This analysis is quasi-experimental in design and will compare a trend in outcomes between the baseline period and the evaluation period for those who were subject to the program.

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[19] McDonald, John H. (2014). "Small numbers in chi-square and G–tests". Handbook of Biological Statistics (3rd ed.). Baltimore, MD: Sparky House Publishing. pp. 86–89. Accessed on: Nov 28, 2023

In ITS, the measurements taken before a demonstration was initiated are used to predict the outcome if the demonstration did not occur. The measurements collected after the demonstration are then compared to the predicted outcome to evaluate the impact the demonstration had on the outcome. The ITS model is:

$$Y_t = \beta_0 + \beta_1 \text{time} + \beta_2 \text{ post} + \beta_3 \text{ (time x post)} + \mu_t$$

where $Y_t$ is the outcome of interest for the time period t, time represents a linear time trend, post is a dummy variable to indicate the time periods post-implementation, and $time \times post$ is the interaction term between time and post. The intercept, $\beta_0$, identifies the starting level of outcome Y, $\beta_1$ is the slope of the outcome between the measurements before the program, $\beta_2$ is the change in the outcome when the program began, $\beta_3$ is the change in the slope for the measurements after the program, and $\mu_t$ is the error term.

The effectiveness of ITS analysis relies on the assumption of time series stability, implying that the trend and level of the outcome variable will remain relatively constant without TI 2.0. The analysis also assumes temporal independence, stipulating that observations at different time points are independent of each other, ensuring the absence of systematic dependencies between data points in the time series. The stability of the time series will be examined by visualizing the trend and level of the outcome variable before TI 2.0 to ensure their relative constancy. Temporal independence will be evaluated by verifying that observations at different time points exhibit no systematic dependencies to ensure that each data point is not influenced by specific patterns or trends at other time points. If these assumptions are violated, the results will be interpreted with caution and explicitly acknowledged, as the observed changes in the outcome variable may be confounded by external factors or dependencies among observations over time, which may impact the reliability of the estimated effects of TI 2.0.

A limitation of ITS is the need for sufficient data points both before and after program implementation.[20,21,22] To facilitate this methodology, ASU TIPQIC may consider additional baseline data points using prior year calculations, and/or calculating quarterly rates where feasible, if multiple years both pre-and post-implementation are available to control for seasonality.

## Pre-Test/Post-Test

For measures with consistent specifications over time for which national or regional benchmarks are not available, and which have too few observations to support an ITS analysis, rates will be calculated and compared both before and after program integration.[23] Statistical testing will be conducted through a G-squared test.

## Non-Inferiority Testing

To support testing of hypotheses that suggest program impacts will "improve," ASU TIPQIC may consider employing non-inferiority statistical testing. For measures that use a DiD framework and are hypothesized to perform as well as or better than a comparison group, a prespecified fraction ($\delta$) of the change in the comparison group (coefficient on time, $\beta_2$) is used to define an "equivalence range" which would conclude that the treatment group performed as well as the comparison group. The equivalence range is bounded by the change in rates for the comparison group, plus or minus 10 percent of the change in the comparison group. The change in the treatment group will be compared against this equivalence range using a 95

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[20] Baicker, K., and Svoronos, T., (2019) "Testing the Validity of the Single ITS Design," NBER Working Paper 26080. Available at: https://www.nber.org/papers/w26080.pdf. Accessed on: Aug 21, 2023 3-16

[21] Bernal, J.L., Cummins, S., Gasparrini, A. (2017) "Interrupted time series regression for the evaluation of public health interventions: a tutorial," *International Journal of Epidemiology*, 46(1): 348-355. Available at: https://doi.org/10.1093/ije/dyw098. Accessed on: Aug 21, 2023 3-17

[22] Penfold, R. B., Zhang, F. (2013) "Use of Interrupted Time Series Analysis in Evaluating Health Care Quality Improvements," *Academic Pediatrics*, 13(6): S38 – S44. Available at: https://doi.org/10.1016/j.acap.2013.08.002. Accessed on: Aug 21, 2023.

[23] Because measures are calculated on an annual reporting period, the post-implementation period during the current demonstration approval period of three years is insufficient to support an ITS analysis.

percent confidence interval. Figure 2 illustrates how the equivalence window will be calculated and how statistical significance will be determined.

**Figure 2—Illustration of Non-Equivalence Testing Procedure**

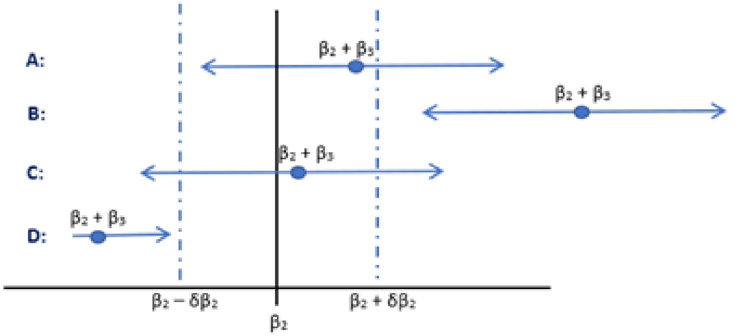

Table 4 defines the equivalence intervals used for each scenario in Figure 2.

**Table 4—Noninferiority Equivalence Intervals**

| Desired Direction | Equivalence Interval | Noninferiority Threshold |
|---|---|---|
| Higher is better and $\beta_2 > 0$ OR Lower is better and $\beta_2 < 0$ | $(\beta_2 - \delta\beta 2)$ to $\beta_2$ | $(\beta_2 - \delta\beta_2)$ |
| Lower is better and $\beta_2 > 0$ OR Higher is better and $\beta_2 < 0$ | $\beta_2$ to $(\beta_2 + \delta\beta_2)$ | $(\beta_2 + \delta\beta_2)$ |

In Figure 2, considering a measure where higher values are preferable, the confidence interval in Scenario A, marked by the arrows, encompasses $\beta_2$ but does not include the non-inferiority threshold ($\beta_2$ - $\delta\beta_2$). Therefore, evidence supports the finding that the treatment group is not inferior to the comparison group. The confidence interval in Scenario B is above $\beta_2$, which suggests that the treatment group is superior to the comparison group. The confidence interval in scenario C spans both $\beta_2$ and ($\beta_2 - \delta\beta_2$). Therefore, there is insufficient evidence to establish noninferiority and the results are inconclusive. The confidence interval in Scenario D falls below the noninferiority threshold ($\beta_2 - \delta\beta_2$) and supports the finding that the treatment group is inferior to the comparison group. Noninferiority testing may also be applied within the context of an ITS analysis by quantifying the overall effect size and comparing to the noninferiority threshold. Travis-Lumer, Goldberg, and Levine describe how the effect size may be quantified by comparing the model-based fitted values for the intervention period to the model-based counterfactual values.[24] If the outcome is based on continuous data, Cohen's d will be used as the effect size. If the outcome is count data, the relative risk will be calculated.

## Descriptive Analysis

TI 2.0 measures will rely on program data critical to determining the success of the program in changing practice behavior, such as participation in the closed-loop referral system. The evaluation of these measures will center on a descriptive analysis of providers' participation in key features of TI 2.0 over time.

The TI 2.0 evaluation will use SDoH G and Z codes to track SDoH screenings and referrals at the claim level. Healthcare Common Procedure Coding System (HCPCS) G codes will be used to indicate that a complete screening occurred, and that either a referral was made to a community service provider (G9919), no needs were identified (G9920), or a positive need was identified but no referral was given (G9921). International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) will be used to indicate all needs identified through the screening, regardless of referral status. Specific ICD-10-CM, Current Procedural Terminology (CPT), and HCPCs codes on claims that are recommended by AHCCCS will be used to indicate postpartum depression screening and follow up.

## Qualitative Synthesis

To evaluate the care coordination strategies implemented by participants because of TI 2.0, and to identify and understand barriers encountered by health plans and AHCCCS during and following the program, a series of semi-structured focus groups and key informant interviews with representatives from the MCO health plans, ACOs or subcontracted networks, AHCCCS, and providers will be conducted to obtain results for all plan-specific measures.

AHCCCS will be asked to provide the names of up to three individuals each from pertinent organizations, including AHCCCS, MCOs, ACOs, and other subcontracted groups that would be most familiar with the implementation activities performed by the State and TI 2.0. It is

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[24] Travis-Lumer Y, Goldberg Y, Levine, S (2022). "Effect size quantification for interrupted time series analysis: implementation in R and analysis for Covid-19 research," Emerging Themes in Epidemiology 19(9); Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9652048/. Accessed on: Aug 21, 2023.

understood that not all named individuals may participate, but each person who agrees to participate will take part in a 60 to 90-minute interview session to provide insights into the implementation of TI 2.0. A limited number of key informant interviews will be sufficient in this scenario because there will be a limited number of staff at the agency with a working knowledge of the activities associated with TI 2.0, and the challenges and successes that accompanied the implementation.

ASU TIPQIC will undergo stratified random sampling by dividing the TI 2.0 provider population by area of concentration (Adult BH, Adult PCP, Pediatric BH, Pediatric PCP, and Justice), geographic region (AHCCCS-defined North, Central, and South geographical service areas (GSAs)), and location within each region (e.g., urban versus rural providers). Within each stratum, ASU TIPQIC will then randomly select providers to participate in the focus groups. This method will maximize the variations in provider types and locations, allowing the data obtained to represent a wide variety of perspectives. The recruitment goal is to have three to five providers participate in each focus group, with a plan to conduct at least three to six focus groups. Focus group meetings will last approximately 90 minutes to allow sufficient time for all participants to voice their perspectives and explore each topic in detail. To facilitate provider participation—particularly for rural providers—focus groups will be held via Zoom. Due to the wide degree of variability across provider types, the focus group participants are not likely to constitute a statistically representative sample of providers within the State. The purpose of the focus group data, however, is not to obtain a statistically representative sample of respondents. Rather, the purpose of the focus group data collection is to obtain a rich set of contextualized descriptions that cannot easily be obtained through administrative data or survey data collection efforts.

A flexible, semi-structured interview protocol will be developed for the focus groups, aimed at exploring participants' experiences with TI 2.0. The interview questions will be designed to gather information on reported barriers or successes experienced both before and after TI 2.0 implementation, as well as any activities undertaken to support care coordination and/or address HRSNs. Open-ended questions will be used to maximize the diversity and richness of responses and ensure a more holistic understanding of the subject's experience. Probing follow-up questions will be used as appropriate to elicit additional detail and understanding of critical points, terminology, and perspectives. The sessions will be recorded and transcribed with participant consent. No identifying information, such as names, organizations, or member-level data, will be analyzed or presented in any reports.

The information obtained from these focus groups and interviews will be synthesized with the findings from other quantitative data analyses, facilitating a comprehensive discussion of each domain/objective under consideration. As the focus groups and key informant interviews are being conducted, ASU TIPQIC will perform an ongoing and iterative review of the interview responses and notes to identify overall themes and common response patterns. Unique responses that are substantively interesting and informative will also be noted and may be used to develop probing questions for future interviews. The results of these preliminary analyses will be used to document the emergent and overarching themes related to each research question. The documentation of emergent themes will be reviewed iteratively to determine if responses to interview questions are continuing to provide new perspectives and answers, or if the responses are converging on a common set of response patterns indicating saturation on a particular interview question. As additional interview data are collected, the categories, themes, and relationships will be adjusted to reflect the broader set of concepts and different types of relationships identified. The documentation of emergent themes will also be used as an initial starting point for organizing the analysis of the interview data once all interviews are completed.

Following the completion of the focus groups and key informant interviews, the interview notes and transcripts will be reviewed using standard qualitative analysis techniques. The data will first be examined through open coding to identify key concepts and themes that may not have been captured as emergent themes during previous analyses. After identifying key concepts, axial coding techniques will be used to develop a more complete understanding of the relationships among categories identified by respondents in the data. The open and axial coding will be performed with a focus on identifying the dimensionality and breadth of responses to the research questions posed for the overall project. Interviewee responses will be identified through the analysis to illustrate and contextualize the conclusions drawn from the research and will be used to support the development of the final report.

### Hierarchical Linear/Generalized Linear Model

This analytic approach may be used in the TI 2.0 evaluation because outcomes are measured at the beneficiary level while the program is implemented at the provider or practice level. Consequently, each provider or practice serves many beneficiaries. The statistical methods for the TI 2.0 evaluation must account for systematic variation at the provider or practice level. This can be accomplished by directly modeling the variation through hierarchical linear modeling techniques. Additional methods may include risk adjustment at the provider level and adjusting standard errors for clustering.

A hierarchical linear model (HLM or HGLM) may be used to directly model the variation across providers. The HGLM is an extension of the HLM by which the outcome may be represented by data other than a continuous, numeric scale; such as binary or count data. ASU TIPQIC will determine the most appropriate methodology given the data. To allow for causal inference, the

HLM or HGLM should be structured in either a DiD or ITS framework for this evaluation. The below description details the HLM model specification in a DiD framework.[25]

The nature of TI 2.0 will yield data that logically adhere to a nested structure, with repeated measurements across time nested within beneficiaries, who are then nested within providers. Through the nested structure of the dataset, the generic HLM will have three levels, of which will be combined in a final, fully nested equation.

The generic HLM will include these three levels: (1) Time, (2) Beneficiary, and (3) Provider. The time-level model (1) is given by:

$$Y_{tij} = \pi_{0ij} + \pi_{1ij}\, T_{tij} + \varepsilon_{tij}$$

where is the outcome $Y_{tij}$ at time *t* for beneficiary *i* for provider *j;* the coefficient is the value of outcome *Y* for beneficiary *i* for provider *j* at *T*=0 (i.e., baseline); the coefficient is the average change in outcome *Y* for beneficiary *i* for provider *j* for a one unit change in *T*; $T_{tij}$ is a whole number time trend coded as 0 for the first data point (i.e., baseline); and $\varepsilon_{tij}$ is a normally distributed error term representing the random deviation in the observed outcome $Y_{tij}$.

The beneficiary-level model (2) is given by:

$$\pi_{0ij} = \beta_{00j} + \beta_{01j}\, X_{ij} + r_{0ij}$$
$$\pi_{1ij} = \beta_{10j} + \beta_{11j}\, X_{ij} + r_{1ij}$$

where $\beta_{00j}$ is the average outcome *Y* for provider *j* at *T*=0; the coefficient $\beta_{01j}$ is the average change in *Y* for provider *j* at *T*=0 for a unit change in $X_{ij}$ which represents person-level covariates for beneficiary *i* for provider *j* such as demographics or health conditions; $r_{0ij}$ is a normally distributed person-level error term and represents the deviation in outcome *Y* for person *i* for provider *j*; $\beta_{10j}$ is the average change in *Y* for provider *j* for a one unit change in *T*; $\beta_{11j}$ is the average increment or decrement to the change over time in the outcome for provider *j* for a one

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[25] This model specification can be modified to follow an ITS framework or comparative ITS framework depending on the availability of a comparison group and number of data points both before and after program implementation.

unit change in $X$; and $r_{1ij}$ is a normally distributed person-level error term and represents the deviation of beneficiary $i$ from the average change in $Y$ for provider $j$ for a one unit change in $T$.

The provider-level model (3) is given by:

$$\beta_{00j} = \gamma_{000} + \gamma_{001} W_j + u_{00j}$$

$$\beta_{10j} = \gamma_{100} + \gamma_{101} W_j + u_{10j}$$

where $\gamma_{000}$ is the grand mean average outcome $Y$ (i.e. average outcome across all beneficiaries and providers in the comparison group) at $T$=0; $\gamma_{001}$ is the average change in the grand mean at $T$=0 for a unit change in $W$ (e.g., the average difference in rates between intervention and comparison group at baseline); $W_j$ represents an indicator for TI participation and, optionally, other provider-level covariates, such as panel size; $u_{00j}$ is a normally distributed provider-level error term representing the deviation in outcome $Y$ from the grand mean for provider $j$ at $T$=0; $\gamma_{100}$ is the grand mean change in $Y$ for a one unit change in $T$ across providers in the comparison group (e.g. average change in rates between baseline and remeasurement period for non-TI providers); $\gamma_{101}$ is the increment or decrement to the change over time in the outcome for a one unit change in $W$; and $u_{10j}$ is a normally distributed provider-level error term and represents the deviation from $\gamma_{100}$ for provider $j$ for a unit change in $T$.

Substituting equations (2) and (3) into equation (1) and rearranging terms yields the following complete equation (4), which is what ASU TIPQIC will estimate:

$$Y_{tij} = \gamma_{000} + \beta_{01j} X_{ij} + \gamma_{001} W_j + (\gamma_{100} + \beta_{11j} X_{ij} + \gamma_{101} W_j)T_{tij} + (u_{1j} + r_{1ij})T_{tij} + r_{0ij} + u_{00j} + \varepsilon_{tij}$$

In this equation, the fixed effects represent the average effect of beneficiary and provider characteristics (e.g., the average difference in rates between males and females). Random effects represent differences between beneficiaries and providers on the outcome that are not captured in the fixed effects. The cross-level interaction term, $\gamma_{101} W_j \times T_{tij}$, represents the HLM equivalent of a DiD regression coefficient where the treatment is defined via participation in TI 2.0 ($W_j$) and impacts the outcome through an interaction with beneficiary-level changes over time. As briefly mentioned above, the coefficient $\gamma_{101}$ represents the difference between TI and non-TI providers in the change in outcome between the baseline and remeasurement period(s), controlling for differences across practices. In other words, this coefficient represents the average incremental impact of TI 2.0 across practices and patients.

The model specification above provides a general framework which ASU TIPQIC may build on or modify to suit the specific data and evaluation needs, which may include determining the appropriate model specification regarding the inclusion or exclusion of specific elements of random or fixed effects. The HLM framework can account for providers and beneficiaries who drop out of the study and allow for the estimation of resulting attrition effects. The flexibility of the approach offers several benefits. These include simplifying the model to a two-level hierarchical one by removing the error term and incorporating a non-linear link function for evaluating various outcome types. Considerations such as dropout flags and testing for random intercepts can also enhance the assessment process for extended analyses. Further details can be found in the footnotes.[26]

Additionally, the linear equations in the previous models can be substituted with more expressive non-linear models, such as machine learning boosted trees or neural networks. Generalized computation (or the G-computation approach) provides treatment estimates for flexible models with a large number of variables.[27,28]The approach involves using the treatment assignment as a predictor and estimating a counterfactual based on its assigned value in the trained model. The effect estimate of interest is the average difference in predicted outcomes. The previous component models in equations (1)-(3) can be extended through machine learning models and G-computation, or an alternative generalized machine learning model with G-computation can be applied. Adjustments to significance testing are necessary for a generalized machine learning model to accommodate the discussed nesting. A procedure involving bootstrap resampling may be necessary to address this nesting.

## Treatment Heterogeneity

The TI 2.0 program has the potential to influence various metrics, potentially affecting specific beneficiary subgroups, particularly the HRSN subgroups, differently. To assess treatment

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[26] There are many advantages that this flexibility can provide. These advantages include but are not limited to the following: Given only two time periods (e.g., baseline and remeasurement), equation (1) may be modified to remove the error term and the time component substituted into equation (2), effectively reducing the model to a two-level hierarchical model. Second, a non-linear link function may be added to equation (4) to create an HGLM that can evaluate multiple types of outcomes (e.g., binary or count data). Third, for multi-year post-implementation analyses, ASU TIPQIC may consider including flagsindicating practices that dropped out of the TI program as a measure of attrition effects. Fourth, if the intervention and comparison groups have similar rates at baseline after propensity score matching, ASU TIPQIC can test the need for random intercepts in the model. Fifth, ASU TIPQIC may begin analysis by running an unconditional model (i.e., no practice- or beneficiary-level) covariates to determine the extent to which the outcome varies across beneficiaries and across practices. Finally, the HLM or HGLM framework is robust to missing data in the level (1) equation and can therefore accommodate a changing population over time; however, higher levels (e.g., beneficiary and practice) cannot have missing data.

[27] Le Borgne, F., Chatton, A., Léger, M. et al. G-computation and machine learning for estimating the causal effects of binary exposure statuses on binary outcomes. Sci Rep 11, 1435 (2021).

[28] Snowden, J. M., Rose, S. & Mortimer, K. M. Implementation of G-computation on a simulated data set: demonstration of a causal inference technique. Am. J. Epidemiol. 173, 731–738 (2011).

heterogeneity, HLM, HGLM, and G-computation models will be used. In the HLM and HGLM approaches, subgroup indicators will be incorporated into the models and evaluated for significance using standard methods. A rejection of certain hypotheses will highlight subgroup sensitivities to TI, prompting further exploration via graphical representations and clinical significance evaluations. G-computation simplifies the process by calculating counterfactuals for each beneficiary, which will allow direct subgroup comparisons based on average differences. These differences will be analyzed further using graphical representations and clinical significance assessments.

## Cost Analysis

The cost analysis aims to determine whether the TI 2.0 program leads to lower care costs for TI-attributed patients than non-attributed patients by evaluating the difference in care costs over the evaluation period. It is important to note that the cost analyses do not refer to or attempt to replicate the formal Budget Neutrality test required for Section 1115 Demonstration Waivers, which sets a fixed target under which waiver expenditures must fall that was set at the time TI 2.0 was approved. The methodology for analyzing TI 2.0's costs is adapted from CMS' guidance for assessing the costs of substance use disorder (SUD) or SMI evaluations.[29]

The cost of care for TI 2.0 beneficiaries will be determined using managed care plan payment amounts. This will be calculated for each beneficiary monthly. Total costs among the TI and non-TI population will be stratified by the categories of service presented in Table 5. This stratification will aid in identifying the sources of treatment cost drivers for beneficiaries. Data will be aggregated across all beneficiaries to calculate per-member per-month (PMPM) costs for each month of TI 2.0 and 24 months prior.[30] Seasonality indicators and variables indicating time

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[29] United States Department of Health and Human Services. Appendix C: Approaches to Analyzing Costs Associated with Section 1115 Demonstrations for Beneficiaries with Serious Mental Illness/Serious Emotional Disturbance or Substance Use Disorders. Available at: https://www.hhs.gov/guidance/document/appendix-c-analyzing-costs-associated-demonstrations-smised-or-sud-0. Accessed on: Aug 2, 2023.

[30] CMS guidance describes constructing an ITS with beneficiary-level controls. However, due to a low prevalence of costs for most beneficiaries—especially when stratified by category of service—robust statistical analysis at the beneficiary-level was not feasible. CMS guidance references literature on evaluating healthcare expenditures using a two-part model as one mechanism to account for this issue;

periods affected by the COVD-19 PHE and Medicaid expansion will be included in the model to control for these factors. An adjusted DiD analysis will then be conducted between TI and non-TI beneficiaries.

**Table 5 - Categories of Service**

| Categories of Service |
|---|
| IP |
| OP (ED and Non-ED) |
| Professional |
| Pharmacy |

Note: ED: emergency department; IP: Inpatient; OP: outpatient

## Disentangling Confounding Events

During the baseline demonstration period, AHCCCS implemented several programs that could confound the estimated impact of TI on measured outcomes. TI 2.0 continues the progress made during TI 1.0 by providing practices with incentive funds specifically to encourage better care coordination and integrated care for their beneficiaries. As such, beneficiaries impacted by TI may receive higher levels of integrated care, thereby potentially confounding program effects from the care coordination efforts of other AHCCCS programs. However, because other AHCCCS programs were implemented at various times in comparison to TI, the evaluation may leverage the differential implementation of these programs to mitigate the confounding program effects. ASU TIPQIC may consider identifying those impacted by TI and utilize statistical controls to disentangle effects of TI beneficiaries on different AHCCCS programs. One of these programs includes the AHCCCS Housing and Health Opportunities (H2O) Demonstration, an 1115 Waiver program that seeks to enhance and expand housing services and interventions for

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however, the method described in the literature is not applied in an ITS framework, which relies on assessing trends in costs. Given the frequency of months in which beneficiaries did not incur any costs and the unbalanced nature of the panel dataset, beneficiary-level trends could not be reliably estimated.

AHCCCS members who are homeless or at risk of becoming homeless.[31] The demonstration program, in particular, targets individuals with a Serious Mental Illness (SMI) designation, who also have a diagnosed and/or co-morbid health condition, and those experiencing homelessness upon release from an institutional setting. To mitigate the potentially confounding effects of the H2O program on the TI 2.0 program outcomes, ASU TIPQIC will obtain a list of AHCCCS members and providers involved in or eligible for the H2O program and include an indicator for their participation as a covariate in the regression models. Sensitivity analyses will include subgroup analyses and exclusion of H2O participants to test the robustness of the findings. These methods will help isolate the effect of the TI 2.0 program and ensure accurate assessment independent of the H2O program's influence.

The COVID-19 PHE had a significant and widespread impact on the healthcare system and broader socioeconomic conditions, beginning around March 2020 and ending in May 2023.[32] The COVID-19 PHE has had a considerable impact on the state of Arizona, its healthcare system, and its Medicaid population. Increases in Medicaid enrollment during the COVID-19 PHE are tied to substantial shifts in the disease conditions and comorbidities of the Medicaid population and may impact aggregate spending by AHCCCS. Social distancing efforts and stay-at-home orders interrupted routine care visits and effectively reduced the demand for many healthcare services to near zero. In an ideal evaluation, ASU TIPQIC would be able to control for many of these issues during the analysis. The ability to do so in the current context of the TI 2.0 evaluation will depend on the availability of data and control variables. ASU TIPQIC will explore strategies to allow for the separation of AHCCCS program impacts from results influenced by COVID-19 or policy responses in Arizona and other states. This may involve methods, such as estimating yearly treatment effects, thereby providing a distinct observation of the demonstration's impact during years affected by the PHE and those unaffected by it, emphasizing AHCCCS's contributions to the Medicaid population.

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[31] Arizona Health Care Cost Containment System. AHCCCS Housing and Health Opportunities (H2O) Demonstration. https://www.azahcccs.gov/Resources/Federal/HousingWaiverRequest.html. Accessed on: Jun 7, 2024.

[32] Centers for Disease Control and Prevention. End of the Federal COVID-19 Public Health Emergency (PHE) Declaration. Available at: https://www.cdc.gov/coronavirus/2019-ncov/your-health/end-of-phe.html. Accessed on: Jul 17, 2023.

## Methodological Limitations

There are several key limitations to the TI 2.0 program evaluation. The primary limitation relates to the health equity analysis. ASU TIPQIC recognizes that health equity is a complex subject and that there have been many significant discussions around the topic of measuring health equity among the broader scientific community. There is no single approach to evaluating health equity that is without limitations and thus, this evaluation utilizes multiple methods to address health equity related research questions. The proposed health equity analysis is designed to provide an overview of how health disparities have changed during the TI 2.0 study period but acknowledges the primary limitation that any changes in disparities identified cannot be causally attributed to the program, as co-occurring external factors may impact the measured outcomes.

Another limitation to consider pertains to the potential biases that may have arisen from the data captured during the COVID-19 PHE. Understanding and acknowledging these biases is essential for maintaining the credibility and reliability of any analyses or conclusions drawn from the data. The circumstances surrounding the PHE, such as resource constraints experienced by providers and differential access to healthcare services, can contribute to skewed health-related data. To address potential biases in the analysis, ASU TIPQIC will adopt a comprehensive approach, as detailed earlier, to ensure a more precise and nuanced interpretation of the data gathered during the PHE.

The final limitation applies to the DiD analytic approach and stems from the mismatch in the level of program implementation and the level of analysis of outcomes. The TI 2.0 program provides incentive payments to support care coordination that advances health equity and whole person care. However, outcome metrics for this program are evaluated at the individual beneficiary level. As such, the design of the program leads to challenges with isolating program effects. Given the proposed methodology for attributing beneficiaries to providers based on PCP assignment lists, performance metric attribution reports, and beneficiaries' utilization of care from claims and encounter data, the potential for spillover effects and contamination of the TI effect is possible. Providers may drop in and out of TI 2.0 participation by year, leading to groups of providers who participated in all years, and others who participated for only some of the years. It is also possible that beneficiaries' attribution to a TI participating provider may vary throughout the study period, as beneficiaries may seek care from both TI participating providers and non-TI participating providers. ASU TIPQIC may consider a hierarchical model to account for the fluidity of providers and beneficiaries moving between "treated" and "untreated" states, although there are still complex considerations with a hierarchical model. G-computation is an alternative with promise for the estimation of effect, especially for large sample sizes and multiple variables, but nesting adds complexity to significance tests based on these models.

# Appendix A: Proposed Measure Specifications

## Hypothesis 1: The TI 2.0 program will increase collaboration and coordination amongst the MCOs, subcontracted networks, and provider organizations.

### Research Question 1.1: What was the experience of AHCCCS in implementing and/or maintaining TI 2.0 and its care coordination and health-related social needs (HRSN) initiatives?

| AHCCCS’ reported barriers and/or facilitators or success before and shortly following the implementation of TI 2.0 (Measure 1-1) | |
|---|---|
| Numerator/Denominator | Numerator: N/A<br>Denominator: N/A |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Key informant interviews |
| Desired Direction | N/A |
| Analytic Approach | Qualitative synthesis |
| Frequency | N/A |

| AHCCCS’ reported activities to support care coordination and/or HRSN (Measure 1-2) | |
|---|---|
| Numerator/Denominator | Numerator: N/A<br>Denominator: N/A |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Key informant interviews |
| Desired Direction | N/A |
| Analytic Approach | Qualitative synthesis |
| Frequency | N/A |

### Research Question 1.2: What was the experience of MCOs, ACOs, and subcontracted networks implementing and/or maintaining TI 2.0 and its care coordination and HRSN initiatives?

| **MCOs'/ACOs'/subcontracted networks' reported barriers and/or facilitators of success before and shortly following the implementation of TI 2.0 (Measure 1-3)** | |
|---|---|
| Numerator/Denominator | Numerator: N/A<br>Denominator: N/A |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Key informant interviews |
| Desired Direction | N/A |
| Analytic Approach | Qualitative synthesis |
| Frequency | N/A |

| **MCOs'/ACOs'/subcontracted networks' reported activities to support care coordination and/or HSRN (Measure 1-4)** | |
|---|---|
| Numerator/Denominator | Numerator: N/A<br>Denominator: N/A |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Key informant interviews |
| Desired Direction | N/A |
| Analytic Approach | Qualitative synthesis |
| Frequency | N/A |

## Research Question 1.3: What was the experience of providers implementing and/or maintaining TI 2.0 and its care coordination and HRSN initiatives?

| **Providers' reported barriers and/or facilitators of success before and shortly following the implementation of TI 2.0 (Measure 1-5)** | |
|---|---|
| Numerator/Denominator | Numerator: N/A<br>Denominator: N/A |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Key informant interviews; Provider focus groups |

| | |
|---|---|
| Desired Direction | N/A |
| Analytic Approach | Qualitative synthesis |
| Frequency | N/A |

| **Providers' reported activities to support care coordination and/or HSRN (Measure 1-6)** | |
|---|---|
| Numerator/Denominator | Numerator: N/A<br>Denominator: N/A |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Key informant interviews; Provider focus groups |
| Desired Direction | N/A |
| Analytic Approach | Qualitative synthesis |
| Frequency | N/A |

## Research Question 1.4: What is the rate of participating providers in TI 2.0?

| **Number/percentage of providers participating in TI 2.0 (Measure 1-7)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of providers participating in TI 2.0.<br>Denominator: N/A |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Administrative program data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • Descriptive analysis<br>• Stratify by area of concentration, geography |
| Frequency | Annually/Monthly |

## Research Question 1.5: What is the percentage of TI 2.0 providers with NCQA Health Equity Accreditation?

| **Number/Percent of TI 2.0 providers with NCQA Provider Health Equity Accreditation (Measure 1-8)** |
|---|

| | |
|---|---|
| Numerator/Denominator | Numerator: Number/percent of TI 2.0 providers with NCQA Provider Health Equity Accreditation.<br>Denominator: N/A |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | AHCCCS reporting |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • Descriptive analysis<br>• Stratify by area of concentration |
| Frequency | N/A |

### Research Question 1.6: Has the percentage of providers with executed agreements with Contexture for addressing HRSN and/or ADT alerts increased compared to prior to the demonstration?

| **Percentage of TI-participating pediatric primary care and BH care practices that have an executed agreement with Contexture (Measure 1-9)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of pediatric practices participating with an executed agreement with Contexture.<br>Denominator: Number of pediatric practices participating in TI 2.0. |
| Comparison Population | Practitioners not participating in TI 2.0 |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Administrative program data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • Descriptive analysis<br>• Separated by type of agreement (health information exchange [HIE] and/or CommunityCares closed loop referral system [CLRS]) |
| Frequency | N/A |

| **Percentage of TI-participating pediatric primary care and BH care practices that routinely receive ADT alerts (Measure 1-10)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of participating pediatric primary care and BH care practices that routinely receive ADT alerts.<br>Denominator: Number of pediatric practices participating in TI 2.0. |

| | |
|---|---|
| Comparison Population | Practitioners not participating in TI 2.0 |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Administrative program data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | Descriptive analysis |
| Frequency | N/A |

| **Percentage of TI-participating adult primary care and BH care practices that have an executed agreement with Contexture (Measure 1-11)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult practices participating with an executed agreement with Contexture.<br>Denominator: Number of adult practices participating in TI 2.0. |
| Comparison Population | Practitioners not participating in TI 2.0 |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Administrative program data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • Descriptive analysis<br>• Separated by type of agreement (HIE and/or CommunityCares CLRS) |
| Frequency | N/A |

| **Percentage of TI-participating adult primary care and BH care practices that routinely receive ADT alerts (Measure 1-12)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult primary care and BH practices that routinely receive ADT alerts.<br>Denominator: Number of adult practices participating in TI 2.0. |
| Comparison Population | Practitioners not participating in TI 2.0 |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Administrative program data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | Descriptive analysis |
| Frequency | N/A |

| **Percentage of TI-participating justice practices that have an executed agreement with Contexture (Measure 1-13)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of practices participating in the justice transition project with an executed agreement with Contexture.<br>Denominator: Number of TI practices participating in the justice transition project. |
| Comparison Population | Practitioners not participating in TI 2.0 |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Administrative program data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • Descriptive analysis<br>• Separated by type of agreement (HIE and/or CommunityCares CLRS) |
| Frequency | N/A |

| **Percentage of TI-participating justice practices that routinely receive ADT alerts (Measure 1-14)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of practices participating in the justice transition project that routinely receive ADT alerts.<br>Denominator: Number of TI practices participating in the justice transition project. |
| Comparison Population | Practitioners not participating in TI 2.0 |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Administrative program data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | Descriptive analysis |
| Frequency | N/A |

### Research Question 1.7: What is the percentage of TI 2.0 beneficiaries who were screened using social determinants of health (SDOH) assessments to identify HRSN that received a referral to a community-based organization (CBO)?

| **Number/percent of TI beneficiaries who received an SDOH screening assessment to identify HRSN (Measure 1-15)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of TI beneficiaries who received a SDOH screening to identify HRSN.<br>Denominator: Number of TI beneficiaries. |
| Comparison Population | N/A |

| | |
|---|---|
| Measure Steward | N/A |
| Measure Name | N/A |
| Methodology | If referral data from the CommunityCares CLRS are not available, G codes G9919-G9921 will be used to indicate that an SDOH screening took place. |
| Data Source | • CommunityCares CLRS<br>• Administrative program data<br>• State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • Descriptive analysis<br>• Health equity analysis |
| Frequency | N/A |

| **Number/percent of TI beneficiaries who received an SDOH screening assessment to identify HRSN and were referred to a CBO (Measure 1-16)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of TI beneficiaries who received an SDOH screening to identify HRSN and were referred to a CBO.<br>Denominator: Number of TI beneficiaries who received an SDOH screening to identify HRSN. |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Methodology | If referral data from the CommunityCares CLRS are not available, G codes G9919-G9921 will be used to indicate that an SDOH screening took place. |
| Data Source | • CommunityCares CLRS<br>• Administrative program data<br>• State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • Descriptive analysis<br>• Health equity analysis |
| Frequency | N/A |

| **Number/percent of TI beneficiaries referred to a CBO that experienced a follow-up CBO appointment within 30 days (Measure 1-17)** |
|---|

| | |
|---|---|
| Numerator/Denominator | Numerator: Number of TI beneficiaries who received a referral to a CBO using the closed loop referral system, with a follow-up CBO appointment within 30 days.<br>Denominator: Number of TI beneficiaries who received a referral to a CBO using the closed loop referral system. |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | • CommunityCares CLRS<br>• Administrative program data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • Descriptive analysis<br>• Health equity analysis |
| Frequency | N/A |

### Research Question 1.8: What is the percentage of TI 2.0 providers that completed the TI 2.0 health equity projects?

| Number/percent of TI providers that completed the TI 2.0 health equity projects (Measure 1-18) | |
|---|---|
| Numerator/Denominator | Numerator: Number of participating providers that completed the TI 2.0 health equity projects.<br>Denominator: Number of practices participating in TI 2.0. |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | Administrative program data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | Descriptive analysis |
| Frequency | N/A |

## Hypothesis 2: The TI 2.0 program will improve the delivery of care that addresses inequitable health outcomes for children.

### Research Question 2.1: Have health disparities related to care coordination been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration?

| Beneficiaries' response to their child's doctor seeming informed about the care their child received from specialists (Measure 2-1) | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries indicating that their child's doctor seemed informed about the care their child received from specialists.<br>Denominator: Number of respondents to survey questions regarding whether their child's doctor seemed informed about the care their child received from specialists. |
| Comparison Population | Beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 12 months, how often did your child's personal doctor seem informed and up-to-date about the care your child got from specialists? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

## Research Question 2.2: Have general and mental health outcomes maintained or improved compared to prior to the demonstration among children attributed to TI 2.0 providers?

| Percentage of beneficiaries who reported their child's rating of overall health as very good or excellent (Measure 2-2) | |
|---|---|
| Numerator/Denominator | Numerator: Number of child or adolescent beneficiaries who reported a rating of overall health as very good or excellent.<br>Denominator: Number of child or adolescent respondents to survey questions regarding overall health. |
| Comparison Population | Beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In general, how would you rate your child's overall health? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey |

| | |
|---|---|
| | - Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | - G-squared test<br>- Health equity analysis |
| Frequency | N/A |

| **Percentage of beneficiaries who reported their child's rating of emotional or mental health as very good or excellent (Measure 2-3)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of child or adolescent beneficiaries who reported a rating of overall mental or emotional health as very good or excellent.<br>Denominator: Number of child or adolescent respondents to survey questions regarding overall mental or emotional health. |
| Comparison Population | Beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In general, how would you rate your child's overall mental or emotional health? |
| Data Source | - State eligibility and enrollment data<br>- Beneficiary survey<br>- Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | - G-squared test<br>- Health equity analysis |
| Frequency | N/A |

## Research Question 2.3: Have health disparities related to access to care been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration?

| **Percentage of child beneficiaries who had a well-child visit in the first 30 months of life (Measure 2-4)** |
|---|

| | |
|---|---|
| Numerator/Denominator | Numerator: Number of child beneficiaries with well-child visits on different dates. Two rates are reported:<br>• Six or more well child visits on different dates of service on or before the 15-month birthday<br>• Two or more well child visits on different dates of service between the child's 15-month birthday plus one day and the 30-month birthday.<br>Denominator: Two rates are reported:<br>• Number of child beneficiaries who turn 15 months old during the measurement year and are continuously enrolled between 31 days and 15 months of age with no more than one gap in enrollment of up to 45 days.<br>• Number of child beneficiaries who turn 30 months old during the measurement year and are continuously enrolled between 15 months plus 1 day and 30 months of age with no more than one gap in enrollment of up to 45 days. |
| Comparison Population | Child beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Well-Child Visits in the First 30 Months of Life (W30) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • ITS<br>• DiD<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of child and adolescent beneficiaries who had a well-care visit with a PCP or OB/GYN (Measure 2-5)** | |
|---|---|
| Numerator/Denominator | Numerator: Child and adolescent beneficiaries with one or more well-care visits during the measurement year.<br>Denominator: Number of beneficiaries aged 3-21 years who are continuously enrolled during the measurement year with no more than one gap in enrollment of up to 45 days. |
| Comparison Population | Child and adolescent beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Children and Adolescents' Well-Care Visits (WCV) |

| | |
|---|---|
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • ITS<br>• DiD<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of beneficiaries who reported that their child's doctor usually or always spent enough time with them (Measure 2-6)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries who reported their doctor spent enough time with them.<br>Denominator: Number of respondents to survey questions regarding if their doctor spent enough time with them. |
| Comparison Population | Beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your child's personal doctor spend enough time with your child? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of beneficiaries who reported their child received needed care right away as soon as they needed (Measure 2-7)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries indicating when their child needed care right away, they received that care as soon as he/she/they needed it.<br>Denominator: Number of respondents to survey questions regarding whether when their child needed care right away, they received that care as soon as he/she/they needed it. |

| | |
|---|---|
| Comparison Population | Beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, when your child needed care right away, how often did your child get care as soon as he or she needed? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of beneficiaries who reported they got an appointment for routine care as soon as their child needed (Measure 2-8)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries indicating they got an appointment for a check-up or routine care for their child as soon as their child needed it.<br>Denominator: Number of respondents to survey questions regarding whether they got an appointment for a check-up or routine care for their child as soon as their child needed it. |
| Comparison Population | Beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did you get an appointment for a check-up or routine care for your child at a doctor’s office or clinic as soon as your child needed? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity dat |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

### Research Question 2.4: Have health disparities related to experience of care been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration?

| **Percentage of beneficiaries who reported their child's doctor usually or always explained things in a way that was easy to understand (Measure 2-9)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries who reported their child's doctor usually or always explained things in a way that was easy to understand.<br>Denominator: Number of respondents to survey questions regarding if their child's doctor usually or always explained things in a way that was easy to understand. |
| Comparison Population | Beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your child's personal doctor explain things about your child's health in a way that was easy to understand? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of beneficiaries who reported their child's doctor usually or always listened carefully to them (Measure 2-10)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries who reported their child's personal doctor listened carefully to them.<br>Denominator: Number of respondents to survey questions regarding if their child's personal doctor listened carefully to them. |
| Comparison Population | Beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your child's personal doctor listen carefully to you? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |

| | |
|---|---|
| Frequency | N/A |

| **Percentage of beneficiaries who reported their child's doctor usually or always showed respect for what they had to say (Measure 2-11)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries who reported their child's doctor usually or always showed respect for what they had to say.<br>Denominator: Number of respondents to survey questions regarding if their child's doctor usually or always showed respect for what they had to say. |
| Comparison Population | Beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your child's personal doctor show respect for what you had to say? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of child and adolescent beneficiaries attributed/assigned to a TI provider with the same race/ethnicity and/or language (Measure 2-12)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of child and adolescent beneficiaries attributed/assigned to a TI provider with the same race/ethnicity and/or language.<br>Denominator: Number of child and adolescent beneficiaries assigned to a TI provider. |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | • State eligibility and enrollment data<br>• Provider demographic data<br>• Race and ethnicity data |
| Desired Direction | Higher is better |
| Analytic Approach | • Descriptive analysis<br>• Health equity analysis |
| Frequency | N/A |

## Research Question 2.5: Have health disparities related to dental care utilization been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration?

| **Percentage of child and adolescent beneficiaries receiving topical varnish (Measure 2-13)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries 20 4 years and younger who received at least two fluoride varnish applications during the measurement year.<br>Denominator: Number of beneficiaries 20 4 years and younger who are continuously enrolled during the measurement year with no more than one gap in enrollment of up to 45 days. |
| Comparison Population | Child and adolescent beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | CMS Core Set of Children's Health Core Quality MeasuresNCQA |
| Measure Name | Topical Fluoride for Children (TFC) |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of child and adolescent beneficiaries who received a comprehensive or periodic evaluation with a dental provider during the measurement year (Measure 2-14)** | |
|---|---|
| Numerator/Denominator | Numerator: Percentage of beneficiaries under 21 years old who received a comprehensive or period evaluation with a dental provider during the measurement year.<br>Denominator: Beneficiaries under 21 years old who continuously enrolled during the measurement year with no gaps in enrollment. |
| Comparison Population | Child and adolescent beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | CMS Core Set of Children's Health Core Quality MeasuresNCQA |
| Measure Name | Oral Evaluation, Dental Services (OED) |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |

| | |
|---|---|
| Analytic Approach | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| Frequency | Annually/Monthly |

## Research Question 2.6: Have health disparities related to ED utilization been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration?

| **Number of ED visits among children and adolescents (Measure 2-15)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of ED visits among children and adolescents during the measurement year.<br>Denominator: Total number of children and adolescent beneficiaries during the measurement year. |
| Comparison Population | Child and adolescent beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | N/A |
| Measure Name | N/A |
| Methodology | American College of Emergency Physicians (ACEP)'s ED Facility Level Coding Guidelines |
| Data Source | - State eligibility and enrollment data<br>- Claims/encounter data<br>- Race and ethnicity data |
| Desired Direction | No change or a decrease in the rate supports the hypothesis |
| Analytic Approach | - DiD<br>- ITS<br>- HLM<br>- Health equity analysis |
| Frequency | Annually |

| **Number of potentially avoidable ED visits among children and adolescents (Measure 2-16)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of Level I-II ED visits among children and adolescents.<br>Denominator: Number of Level I-V ED visits among children and adolescents. |
| Comparison Population | Child and adolescent beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | N/A |
| Measure Name | N/A |

| | |
|---|---|
| Methodology | American College of Emergency Physicians (ACEP)'s ED Facility Level Coding Guidelines |
| Data Source | State eligibility and enrollment data<br>Claims/encounter data<br>Race and ethnicity data |
| Desired Direction | No change or a decrease in the rate supports the hypothesis |
| Analytic Approach | DiD<br>ITS<br>HLM<br>Health equity analysis |
| Frequency | Annually |

### Research Question 2.7: Have health disparities related to treatment or management of behavioral health concerns been reduced among children attributed to TI 2.0 providers compared to prior to the demonstration?

| **Percentage of child and adolescent beneficiaries with a follow-up visit within seven days after hospitalization for mental illness (Measure 2-17)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries in the denominator who had a follow-up visit with a mental health provider within 7 days of discharge.<br>Denominator: Number of beneficiaries aged 6 to 17 during the measurement year who had continuous enrollment for 30 days after a discharge for mental illness. |
| Comparison Population | Child and adolescent beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-up after hospitalization for mental illness (FUH) |
| Data Source | State eligibility and enrollment data<br>Claims/encounter data<br>Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | DiD<br>ITS<br>HLM<br>Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of child and adolescent beneficiaries with a follow-up visit within thirty days after hospitalization for mental illness (Measure 2-18)** |
|---|

| | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries in the denominator who had a follow-up visit with a mental health provider within 30 days of discharge.<br>Denominator: Number of beneficiaries aged 6 to 17 during the measurement year who had continuous enrollment for 30 days after a discharge for mental illness. |
| Comparison Population | Child and adolescent beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-up after hospitalization for mental illness (FUH) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of child and adolescent beneficiaries with a follow-up visit within seven days after an ED visit for mental illness (Measure 2-19)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of ED visits in the denominator with a follow-up visit for mental illness within 7 days of the ED visit.<br>Denominator: Number of ED visits for beneficiaries 6 years of age and older with a principal diagnosis of mental illness or intentional self-harm with continuous enrollment from the date of the ED visit through 30 days after the ED visit. |
| Comparison Population | Child and adolescent beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-Up After Emergency Department Visit for Mental Illness (FUM) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of child and adolescent beneficiaries with a follow-up visit within thirty days after an ED visit for mental illness (Measure 2-20)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of ED visits in the denominator with a follow-up visit for mental illness within 30 days of the ED visit.<br>Denominator: Number of ED visits for beneficiaries 6 years of age and older with a principal diagnosis of mental illness or intentional self-harm with continuous enrollment from the date of the ED visit through 30 days after the ED visit. |
| Comparison Population | Child and adolescent beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-Up After Emergency Department Visit for Mental Illness (FUM) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of adolescent beneficiaries with a follow-up visit within seven days after an ED visit for SUD (Measure 2-21)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of ED visits in the denominator with a follow-up visit for SUD within 7 days of the ED visit.<br>Denominator: Number of ED visits for beneficiaries 13 years of age and older with a principal diagnosis of SUD and was continuously enrolled from the date of the ED visit through 30 days after the ED visit |
| Comparison Population | Adolescent beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-Up After Emergency Department Visit for Substance Use (FUA) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |

| | |
|---|---|
| Frequency | Annually/Monthly |

| **Percentage of adolescent beneficiaries with a follow-up visit within thirty days after an ED visit for SUD (Measure 2-22)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of ED visits in the denominator with a follow-up visit for SUD within 30 days of the ED visit.<br>Denominator: Number of ED visits for beneficiaries 13 years of age and older with a principal diagnosis of SUD and was continuously enrolled from the date of the ED visit through 30 days after the ED visit. |
| Comparison Population | Adolescent beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-Up After Emergency Department Visit for Substance Use (FUA) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of child and adolescent beneficiaries with ongoing antipsychotic medication use who have metabolic testing during the measurement year (Measure 2-23)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of children and adolescents 1 – 17 years of age who had two or more antipsychotic prescriptions and had metabolic testing.<br>Denominator: Number of beneficiaries aged 1 to 17 with at least two antipsychotic medication dispensing events of the same or different meditations, on different dates of service during the measurement year, and continuous enrollment during the measurement year with no more than one gap in enrollment of up to 45 days. |
| Comparison Population | Child and adolescent beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Metabolic Monitoring for Children and Adolescents on Antipsychotics (APM) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |

| | |
|---|---|
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

## Hypothesis 3: The TI 2.0 program will improve the delivery of care that addresses inequitable health outcomes for adults.

### Research Question 3.1: Have health disparities related to care coordination been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration?

| Adult beneficiaries' response to their doctor seeming informed about the care they received from specialists (Measure 3-1) | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult beneficiaries indicating that their doctor seemed informed about the care they received from specialists.<br>Denominator: Number of adult respondents to survey questions regarding whether their doctor seemed informed about the care they received from specialists. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your personal doctor seem informed and up to date about the care you got from specialists? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| Percentage of adult beneficiaries with follow-up after an ED visit for adult beneficiaries with multiple high-risk chronic conditions (Measure 3-2) | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries with a follow-up service within 7 days after the ED visit.<br>Denominator: Number of beneficiaries 18 years of age and older who have multiple high-risk chronic conditions with an ED visit who are continuously enrolled for 365 days prior to the ED visit and 7 days after with no more than one gap in enrollment of 45 days. |

| | |
|---|---|
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-Up After Emergency Department Visit for People With Multiple High-Risk Chronic Conditions (FMC) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of adult beneficiaries with patient engagement after discharge (Measure 3-3)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries with patient engagement provided within 30 days after discharge.<br>Denominator: Number of beneficiaries 18 years and older who were discharged and enrolled on the date of discharge through 30 days after. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Transitions of Care (TRC) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS; Pre-Test/Post-Test<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

### Research Question 3.2: Have general and mental health outcomes maintained or improved compared to prior to the demonstration among adults attributed to TI 2.0 providers?

| **Percentage of adult beneficiaries who reported a rating of overall health as very good or excellent (Measure 3-4)** | |
|---|---|

| | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult beneficiaries who reported a rating of overall health as very good or excellent.<br>Denominator: Number of adult respondents to survey questions regarding overall health. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In general, how would you rate your overall health? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of adult beneficiaries who reported a rating of emotional or mental health as very good or excellent (Measure 3-5)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult beneficiaries who reported a rating of overall mental or emotional health as very good or excellent.<br>Denominator: Number of adult respondents to survey questions regarding overall mental or emotional health. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In general, how would you rate your overall mental or emotional health? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

### Research Question 3.3: Have health disparities related to access to care been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration?

| **Percentage of adult beneficiaries who accessed preventive/ambulatory health services (Measure 3-6)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult beneficiaries in the denominator who had one or more ambulatory or preventive care visits during the measurement year.<br>Denominator: Number of adult beneficiaries aged 20 years old and older during the measurement period. These beneficiaries must be continuously enrolled during the measurement year with a gap in an enrollment of up to 45 days. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Adults' access to preventive/ambulatory health services (AAP) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of adult beneficiaries who reported that their doctor usually or always spent enough time with them (Measure 3-7)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult beneficiaries who reported their doctor spent enough time with them.<br>Denominator: Number of adult respondents to survey questions regarding if their doctor spent enough time with them. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your personal doctor spend enough time with you? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of adult beneficiaries who reported they received needed care right away as soon as they needed (Measure 3-8)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult beneficiaries indicating the ability to get needed care right away.<br>Denominator: Number of adult respondents to getting needed care survey question. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, when you needed care right away, how often did you get care as soon as you needed it? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of adult beneficiaries who reported they got an appointment for a checkup or routine care as soon as they needed (Measure 3-9)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult beneficiaries indicating the ability to get an appointment for routine care as soon as they needed it.<br>Denominator: Number of adult respondents to getting an appointment for a routine care survey question. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | Adult: In the last 6 months, how often did you get an appointment for a check-up or routine care at a doctor's office or clinic as soon as you needed? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

## Research Question 3.4 Have health disparities related to the experience of care been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration?

**Percentage of adult beneficiaries who reported their doctor usually or always explained things in a way that was easy to understand (Measure 3-10)**

| | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult beneficiaries who reported their doctor usually or always explained things in a way that was easy to understand.<br>Denominator: Number of adult respondents to survey questions regarding if their doctor usually or always explained things in a way that was easy to understand. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your personal doctor explain things about your health in a way that was easy to understand? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

**Percentage of adult beneficiaries who reported their doctor usually or always listened carefully to them (Measure 3-11)**

| | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult beneficiaries who reported their personal doctor listened carefully to them.<br>Denominator: Number of adult respondents to survey questions regarding if their personal doctor listened carefully to them. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your personal doctor listen carefully to you? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |

| | |
|---|---|
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of adult beneficiaries who reported their doctor usually or always showed respect for what they had to say (Measure 3-12)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult beneficiaries who reported their doctor usually or always showed respect for what they had to say.<br>Denominator: Number of adult respondents to survey questions regarding if their doctor usually or always showed respect for what they had to say. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your personal doctor show respect for what you had to say? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of adult beneficiaries attributed/assigned to a TI provider with the same race/ethnicity and/or language (Measure 3-13)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult beneficiaries attributed/assigned to a TI provider with the same race/ethnicity and/or language.<br>Denominator: Number of adult beneficiaries assigned to a TI provider. |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | • State eligibility and enrollment data<br>• Provider demographic data<br>• Race and ethnicity data |
| Desired Direction | Higher is better |
| Analytic Approach | • Descriptive analysis<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of adult beneficiaries who received an SDOH screening assessment to identify HRSN (Measure 3-14)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of adult beneficiaries who were screened using prespecified instruments at least once during the measurement period.<br>Denominator: Number of adult beneficiaries enrolled in the program at the start of the measurement period. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | N/A |
| Measure Name | N/A |
| Methodology | If referral data from the CommunityCares CLRS are not available, G codes G9919-G9921 will be used to indicate that an SDOH screening took place. |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • Descriptive analysis<br>• Health equity analysis |
| Frequency | Annually/Monthly |

## Research Question 3.5: Have health disparities related to maternal health been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration?

| **Percentage of adult beneficiaries with postpartum depression screening and follow-up (Measure 3-15)** | |
|---|---|
| Numerator/Denominator | Numerator: Adult beneficiaries who were screened for postpartum depression and had a follow up. Two rates are reported:<br>• Number of deliveries in which members were screened for depression using a standardized tool<br>• If the screening is positive, follow-up care on or up to 30 days after the date of positive screen<br>Denominator: Number of live deliveries among adult beneficiaries in the measurement year |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | N/A |
| Measure Name | N/A |
| Methodology | ICD-10-CM, HCPC, and CPT codes on claims that are recommended by AHCCCS will be used to determine if a postpartum depression screening and follow up took place. |

| | |
|---|---|
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • Descriptive analysis<br>• DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Timeliness of prenatal care (Measure 3-16)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of live deliveries among adult beneficiaries that received a prenatal care visit in the first trimester, on or before the enrollment start date or within 42 days of enrollment in the organization.<br>Denominator: Number of live deliveries among adult beneficiaries in the measurement year. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Prenatal and Postpartum Care (PPC); Prenatal Care |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Timeliness of postpartum care (Measure 3-17)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of live deliveries among adult beneficiaries that had a postpartum visit on or between 7 and 84 days after delivery.<br>Denominator: Number of live deliveries among adult beneficiaries in the measurement year. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Prenatal and Postpartum Care (PPC); Postpartum Care |

| | |
|---|---|
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

## Research Question 3.6: Have health disparities related to ED and IP utilization been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration?

| **Number of ED visits among adult beneficiaries (Measure 3-18)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of ED visits among adult beneficiaries during the measurement period.<br>Denominator: Total number of adult beneficiaries during the measurement period. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | N/A |
| Measure Name | N/A |
| Methodology | American College of Emergency Physicians (ACEP)'s ED Facility Level Coding Guidelines |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or a decrease in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually |

| **Number of potentially avoidable ED visits among adult beneficiaries (Measure 3-19)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of Level I-II ED visits among adult beneficiaries.<br>Denominator: Number of Level I-V ED visits among adult beneficiaries. |

| | |
|---|---|
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | N/A |
| Measure Name | N/A |
| Methodology | American College of Emergency Physicians (ACEP)'s ED Facility Level Coding Guidelines |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or a decrease in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually |

### Research Question 3.7: Have health disparities related to treatment or management of behavioral health concerns been reduced among adults attributed to TI 2.0 providers compared to prior to the demonstration?

| **Percentage of adult beneficiaries with a follow-up visit within seven days after hospitalization for mental illness (Measure 3-20)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries in the denominator who had a follow-up visit with a mental health provider within seven days of discharge.<br>Denominator: Number of beneficiaries aged 18 and over during the measurement year who had continuous enrollment for 30 days after a discharge for mental illness. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-up after Hospitalization for Mental Illness (FUH) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of adult beneficiaries with a follow-up visit within thirty days after hospitalization for mental illness (Measure 3-21)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries in the denominator who had a follow-up visit with a mental health provider within 30 days of discharge.<br>Denominator: Number of beneficiaries aged 18 and over during the measurement year who had continuous enrollment for 30 days after a discharge for mental illness. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-up after Hospitalization for Mental Illness (FUH) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of adult beneficiaries with a follow-up visit within seven days after an ED visit for mental illness (Measure 3-22)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries in the denominator who had a follow-up visit with any provider within seven days of discharge.<br>Denominator: Number of beneficiaries aged 18 and older who had continuous enrollment for 30 days after an ED visit for mental illness. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-up after Emergency Department Visit for Mental Illness (FUM) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of adult beneficiaries with a follow-up visit within thirty days after an ED visit for mental illness (Measure 3-23)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries in the denominator who had a follow-up visit with any provider within 30 days of discharge.<br>Denominator: Number of beneficiaries aged 18 and older who had continuous enrollment for 30 days after an ED visit for mental illness. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-up after Emergency Department Visit for Mental Illness (FUM) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

‘

| **Percentage of adult beneficiaries who had initiation of SUD treatment (Measure 3-24)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries in the denominator who had initiation of SUD treatment within 14 days of the index episode.<br>Denominator: Number of beneficiaries aged 18 and over during the measurement year with a substance use diagnosis and 194 days continuous enrollment prior to the SUD episode and 47 days after the index episode. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Initiation and Engagement of Substance Use Disorder Treatment (IET) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of adult beneficiaries who had engagement of SUD treatment (Measure 3-25)** |
|---|

| | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries in the denominator who had initiation of SUD treatment within 14 days of the index episode and two or more engagement episodes within 34 days of the initiation episode.<br>Denominator: Number of beneficiaries aged 18 and over during the measurement year with a substance use diagnosis and 194 days continuous enrollment prior to the SUD episode and 47 days after the index episode. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Initiation and Engagement of Substance Use Disorder Treatment (IET) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of adult beneficiaries with a follow-up visit within seven days after an ED visit for SUD (Measure 3-26)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of ED visits in the denominator with a follow-up visit for SUD within 7 days of the ED visit.<br>Denominator: Number of ED visits for beneficiaries 18 years of age and older with a principal diagnosis of SUD and was continuously enrolled from the date of the ED visit through 30 days after the ED visit. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-Up After Emergency Department Visit for Substance Use (FUA) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of adult beneficiaries with a follow-up visit within thirty days after an ED visit for SUD (Measure 3-27)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of ED visits in the denominator with a follow-up visit for SUD within 30 days of the ED visit.<br>Denominator: Number of ED visits for beneficiaries 18 years of age and older with a principal diagnosis of SUD and was continuously enrolled from the date of the ED visit through 30 days after the ED visit. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Follow-Up After Emergency Department Visit for Substance Use (FUA) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Diabetes screening for people with schizophrenia or bipolar disorder who are using antipsychotic medications (Measure 3-28)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries in the denominator with a diabetes screening test.<br>Denominator: Number of beneficiaries aged 18-64 with schizophrenia, schizoaffective disorder or bipolar disorder, who were dispensed an antipsychotic medication and who were continuously enrolled for the measurement year with no more than one gap in enrollment of up to 45 days. |
| Comparison Population | Adult beneficiaries not assigned to, nor received care from TI 2.0 participating providers |
| Measure Steward | NCQA |
| Measure Name | Diabetes Screening for People with Schizophrenia or Bipolar Disorder Who Are Using Antipsychotic Medications (SSD) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

## Hypothesis 4: The TI 2.0 program will improve the delivery of care for AHCCCS-enrolled adults released from criminal justice facilities and who are referred to a TI Justice clinic.

### Research Question 4.1: Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have better care coordination than those who were not subject to the demonstration?

| **Recently released beneficiaries' response to their doctor seeming informed about the care they received from specialists (Measure 4-1)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries indicating their doctor seemed informed about the care they received from specialists.<br>Denominator: Number of recently released respondents to the survey question of whether their doctor seemed informed about the care they received from specialists. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| CAHPS Question | In the last 6 months, how often did your personal doctor seem informed and up to date about the care you got from specialists? |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • Descriptive analysis<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of recently released beneficiaries with patient engagement after discharge (Measure 4-2)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of beneficiaries with patient engagement provided within 30 days after discharge.<br>Denominator: Number of beneficiaries 18 years and older who were discharged and enrolled on the date of discharge through 30 days after. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | NCQA |
| Measure Name | Transitions of Care (TRC) |

| | |
|---|---|
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS; Pre-Test/Post-Test<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

### Research Question 4.2: Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have better care general and mental health outcomes than those who were not subject to the demonstration?

| **Percentage of recently released beneficiaries who reported a rating of overall health as very good or excellent (Measure 4-3)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries who reported a rating of overall health as very good or excellent.<br>Denominator: Number of recently released respondents to survey questions regarding overall health. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In general, how would you rate your overall health? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of recently released beneficiaries who reported a rating of emotional or mental health as very good or excellent (Measure 4-4)** |
|---|

| | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries who reported a rating of overall mental or emotional health as very good or excellent.<br>Denominator: Number of recently released respondents to survey questions regarding overall mental or emotional health. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In general, how would you rate your overall mental or emotional health? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

### Research Question 4.3: Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have higher rates of access to care than those who were not subject to the demonstration?

| **Percentage of recently released beneficiaries who had a preventive/ambulatory health service visit (Measure 4-5)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries in the denominator who had one or more ambulatory or preventive care visits during the measurement year.<br>Denominator: Number of recently released beneficiaries aged 20-44 years during the measurement period recently released from a criminal justice facility and assigned to a probation or parole office. These beneficiaries must be continuously enrolled during the measurement year with a gap in an enrollment of up to 45 days. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | NCQA |
| Measure Name | Adults' Access to Preventive/Ambulatory Health Services (AAP) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |

| | |
|---|---|
| Analytic Approach | • DiD<br>• ITS; Pre-Test/Post-Test<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of recently released beneficiaries who reported that their doctor usually or always spent enough time with them (Measure 4-6)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries who reported their doctor spent enough time with them.<br>Denominator: Number of recently released respondents to survey questions regarding if their doctor spent enough time with them. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your personal doctor spend enough time with you? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of recently released beneficiaries who reported they received needed care right away as soon as they needed (Measure 4-7)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries indicating the ability to get needed care right away.<br>Denominator: Number of recently released respondents to getting needed care survey question. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, when you needed care right away, how often did you get care as soon as you needed it? |

| | |
|---|---|
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of recently released beneficiaries who reported they were able to schedule an appointment for a checkup or routine care as soon as they needed (Measure 4-8)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries indicating the ability to get an appointment for routine care as soon as they needed it.<br>Denominator: Number of recently released respondents to getting an appointment for a routine care survey question. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did you get an appointment for a check-up or routine care at a doctor's office or clinic as soon as you needed? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

## Research Question 4.4: Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have better experiences of care than those who were not subject to the demonstration?

| **Percentage of recently released beneficiaries who reported their doctor usually or always explained things in a way that was easy to understand (Measure 4-9)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries who reported their doctor usually or always explained things in a way that was easy to understand.<br>Denominator: Number of recently released respondents to survey questions regarding if their doctor usually or always explained things in a way that was easy to understand. |

| | |
|---|---|
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your personal doctor explain things about your health in a way that was easy to understand? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of recently released beneficiaries who reported their doctor usually or always listened carefully to them (Measure 4-10)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries who reported their personal doctor listened carefully to them.<br>Denominator: Number of recently released respondents to survey questions regarding if their personal doctor listened carefully to them. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your personal doctor listen carefully to you? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of recently released beneficiaries who reported their doctor usually or always showed respect for what they had to say (Measure 4-11)** |
|---|

| | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries who reported their doctor usually or always showed respect for what they had to say.<br>Denominator: Number of recently released respondents to survey questions regarding if their doctor usually or always showed respect for what they had to say. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHPS Question | In the last 6 months, how often did your personal doctor show respect for what you had to say? |
| Data Source | • State eligibility and enrollment data<br>• Beneficiary survey<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • G-squared test<br>• Health equity analysis |
| Frequency | N/A |

| **Percentage of recently released beneficiaries attributed/assigned to a TI provider with the same race/ethnicity and/or language (Measure 4-12)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries attributed/assigned to a TI provider with the same race/ethnicity and/or language.<br>Denominator: Number of recently released beneficiaries assigned to a TI provider. |
| Comparison Population | N/A |
| Measure Steward | N/A |
| Measure Name | N/A |
| Data Source | • State eligibility and enrollment data<br>• Provider demographic data<br>• Race and ethnicity data<br>• TI 2.0 justice referral lists |
| Desired Direction | Higher is better |
| Analytic Approach | • Descriptive analysis<br>• Health equity analysis |
| Frequency | N/A |

### Research Question 4.5: Do adult beneficiaries who are recently released from a criminal justice facility and who are referred to a TI Justice clinic have higher rates of SUD treatment and adherence than those who were not subject to the demonstration?

| **Percentage of recently released beneficiaries who had initiation of SUD treatment (Measure 4-13)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries in the denominator who had initiation of SUD treatment within 14 days of the index episode.<br>Denominator: Number of recently released beneficiaries aged 18 and over during the measurement year with substance use diagnosis and 194 days continuous enrollment prior to the SUD episode and 47 days after the index episode. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | NCQA |
| Measure Name | Initiation and Engagement of Substance Use Disorder Treatment (IET) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS; Pre-Test/Post-Test<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of recently released beneficiaries who had engagement of SUD treatment (Measure 4-14)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries in the denominator who had initiation of SUD treatment within 14 days of the index episode and two or more engagement episodes within 34 days of the initiation episode.<br>Denominator: Number of recently released beneficiaries aged 18 and over during the measurement year with a substance use diagnosis and 194 days continuous enrollment prior to the SUD episode and 47 days after the index episode. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | NCQA |
| Measure Name | Initiation and Engagement of Substance Use Disorder Treatment (IET) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• TI 2.0 justice referral lists |

| | |
|---|---|
| | • Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS; Pre-Test/Post-Test<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

### Research Question 4.6: Do adult beneficiaries recently released from a criminal justice facility and who are referred to a TI Justice clinic have lower rates of ED utilization than those who were not subject to the demonstration?

| **Number of ED visits among recently released beneficiaries (Measure 4-15)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of ED visits for recently released beneficiaries.<br>Denominator: Total number of recently released beneficiaries during the measurement year. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | N/A |
| Measure Name | N/A |
| Methodology | American College of Emergency Physicians (ACEP)'s ED Facility Level Coding Guidelines |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or a decrease in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS; Pre-Test/Post-Test<br>• HLM<br>• Health equity analysis |
| Frequency | Annually |

| **Number of potentially avoidable ED visits among recently released beneficiaries (Measure 4-16)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of Level I-II ED visits among recently released beneficiaries.<br>Denominator: Number of Level I-V ED visits among recently released beneficiaries. |

| | |
|---|---|
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | N/A |
| Measure Name | N/A |
| Methodology | American College of Emergency Physicians (ACEP)'s ED Facility Level Coding Guidelines |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or a decrease in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS; Pre-Test/Post-Test<br>• HLM<br>• Health equity analysis |
| Frequency | Annually |

### Research Question 4.7: Do adult beneficiaries recently released from a criminal justice facility and who are referred to a TI Justice clinic have better management of alcohol and other drugs than those who were not subject to the demonstration?

| **Percentage of recently released beneficiaries with a follow-up visit within seven days after an ED visit for SUD (Measure 4-17)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of ED visits in the denominator with a follow-up visit for SUD within 7 days of the ED visit.<br>Denominator: Number of ED visits for beneficiaries 18 years of age and older with a principal diagnosis of SUD and was continuously enrolled from the date of the ED visit through 30 days after the ED visit. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | NCQA |
| Measure Name | Follow-Up After Emergency Department Visit for Substance Use (FUA) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |

| | |
|---|---|
| Analytic Approach | • DiD<br>• ITS; Pre-Test/Post-Test<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of recently released beneficiaries with a follow-up visit within thirty days after an ED visit for SUD (Measure 4-18)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of ED visits in the denominator with a follow-up visit for SUD within 7 days of the ED visit.<br>Denominator: Number of ED visits for beneficiaries 18 years of age and older with a principal diagnosis of SUD and was continuously enrolled from the date of the ED visit through 30 days after the ED visit. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | NCQA |
| Measure Name | Follow-Up After Emergency Department Visit for Substance Use (FUA) |
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS; Pre-Test/Post-Test<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

| **Percentage of recently released beneficiaries who received prescription opioids from multiple providers (Measure 4-19)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries in the denominator aged 18 years of age and older who received prescriptions for opioids from four or more different prescribers during the measurement year.<br>Denominator: Number of recently released beneficiaries in the denominator aged 18 years of age and older who received opioids from multiple providers during the measurement year. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | NCQA |
| Measure Name | Use of Opioids From Multiple Providers (UOP) |

| | |
|---|---|
| Data Source | • State eligibility and enrollment data<br>• Claims/encounter data<br>• TI 2.0 justice referral lists<br>• Race and ethnicity data |
| Desired Direction | No change or a decrease in the rate supports the hypothesis |
| Analytic Approach | • DiD<br>• ITS; Pre-Test/Post-Test<br>• HLM<br>• Health equity analysis |
| Frequency | Annually/Monthly |

### Research Question 4.8: Do adult beneficiaries recently released from a criminal justice facility and who are referred to a TI Justice clinic have better success with tobacco cessation than those who were not subject to the demonstration?

| **Percentage of recently released beneficiaries identified as a tobacco user who received tobacco cessation intervention (Measure 4-20)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries aged 18 years of age and older who received medical assistance with smoking and tobacco use cessation. Three rates are reported:<br>• Number of recently released beneficiaries who indicated that they received advice to quit from a doctor or other health provider.<br>• Number of recently released beneficiaries who indicated that their doctor or health provider recommended or discussed cessation medications.<br>• Number of recently released beneficiaries who indicated that their doctor or health provider discussed or provided cessations methods or strategies.<br>Denominator: Number of recently released beneficiaries aged 18 years of age and older who indicated that they were current smokers or tobacco users. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | AHRQ - CAHPS Survey |
| Measure Name | N/A |
| CAHP Questions | • In the last 12 months, how often were you advised to quit smoking or using tobacco by a doctor or other health provider?<br>• In the last 12 months, how often was medication recommended or discussed by a doctor or health provider to assist you with quitting smoking or using tobacco?<br>• In the last 12 months, how often did your doctor or health provider discuss or provide methods and strategies other than medication to assist you with quitting smoking or using tobacco? |

| | |
|---|---|
| Data Source | State eligibility and enrollment data<br>Beneficiary survey<br>TI 2.0 justice referral lists<br>Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | G-squared test<br>Health equity analysis |
| Frequency | N/A |

| **Percentage of recently released beneficiaries who responded that they have tried quitting in the past 12 months (Measure 4-21)** | |
|---|---|
| Numerator/Denominator | Numerator: Number of recently released beneficiaries who reported they have tried quitting smoking in the past 12 months.<br>Denominator: Number of recently released respondents to survey questions regarding if they have tried quitting smoking in the past 12 months. |
| Comparison Population | Synthetic Justice control; Justice beneficiaries who were not referred to a TI 2.0 participating provider |
| Measure Steward | CDC - BRFSS |
| Measure Name | N/A |
| BRFSS Question | During the past 12 months, have you stopped smoking for one day or longer because you were trying to quit smoking? |
| Data Source | State eligibility and enrollment data<br>Beneficiary survey<br>TI 2.0 justice referral lists<br>Race and ethnicity data |
| Desired Direction | No change or an increase in the rate supports the hypothesis |
| Analytic Approach | G-squared test<br>Healthy equity analysis |
| Frequency | N/A |

## Appendix B. Deliverable Timeline and Evaluation Budget

Table B presents the TI 2.0 evaluation's deliverables alongside their associated cost estimates.

**Table B**

| Evaluation Waiver Design | | |
|---|---|---|
| **Deliverable** | **Budget** | **Due Date** |
| **Deliverable 1:** Develop, revise, and finalize the waiver design plan. | $10,000 | July 20, 2024 |
| **Deliverable 2:** Conduct the first survey round (Fiscal Year 2025) of state beneficiary surveys in English and Spanish for adults, children, and adults transitioning from the criminal justice system in the TI and non-TI attributed populations. | $137,500 | September 2025 |
| **Deliverable 3:** Complete interim report. | $15,000 | September 2025 |
| **Deliverable 3:** Conduct the second survey round (Fiscal Year 2028) of state beneficiary surveys in English and Spanish for adults, children, and adults transitioning from the criminal justice system in the TI and non-TI attributed populations. | $137,500 | September 2028 |
| **Deliverable 4:** Interview providers, MCOs, ACOs/subcontracted networks, and staff at AHCCCS to understand perceptions of and experience with the Waiver. | $100,000 | September 2028 |
| **Deliverable 5:** Compare the TI-attributed population to the non-TI population.<br>• Analyze state eligibility, enrollment data, claims encounter data<br>• Race and/or ethnicity data<br>• CommunityCares | $162,500 | September 2028 |

### Table B

| | | |
|---|---|---|
| **Deliverable 6:** Analyze TI 2.0 focus groups, interviews, and outcome measures.<br>• Difference-in-difference (DiD)<br>• Health equity analysis<br>• G-squared tests<br>• Interrupted time series<br>• Pre-test/post-test<br>• Descriptive analysis<br>• Qualitative synthesis | $172,500 | September 2028 |
| **Deliverable 7:** TI Consulting for Subject Matter Expert | $125,000 | Annually, September 2024-2028 |
| **Deliverable 8:** Complete final summary report | $15,000 | September 2028 |
| **GRAND TOTAL** | $875,000 | |