DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
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Baltimore, Maryland 21244-1850

State Demonstrations Group

March 16, 2022

Stephanie Stephens
State Medicaid Director
Texas Health and Human Services Commission
4900 Lamar Boulevard MC: H100
P.O. Box 13247 Austin, Texas 78751

Dear Ms. Stephens:

The Centers for Medicare & Medicaid Services (CMS) completed its review of the revised Evaluation Design, Revision 5.2, submitted November 17, 2021 and covering the evaluation period of Demonstration Years 7 through 11 (October 1, 2017 through September 30, 2022). The Evaluation Design is required by the Special Terms and Conditions (STCs) of the Texas section 1115 demonstration, "Texas Healthcare Transformation and Quality Improvement Program (THTQIP)" (Project No: 11-W002786), currently in effect pursuant to court order through September 30, 2030. The Evaluation Design was previously approved on September 8, 2018.

Revision 5.2 of the Evaluation Design included adjustments to certain measures, incorporated considerations of the COVID-19 pandemic in the Special Methodological Considerations section, and adjusted the sampling strategy used to analyze Evaluation Hypothesis 1.2.

CMS appreciates the state's dedication to a rigorous evaluation of its demonstration. Please note that, in accordance with the January 15 2021 STCs, an Interim Evaluation Report covering Demonstration Years 7 through 11, consistent with this approved Evaluation Design, is due to CMS no later than March 31, 2024. In addition to the Interim Evaluation Report due on March 31, 2024, we look forward to our continued collaboration in finalizing the state's Evaluation Design to assess Demonstration Years 11 through 19.

We appreciate our continued partnership with Texas on the THTQIP section 1115 demonstration. If you have any questions, please contact your CMS demonstration team.

Sincerely,

Danielle Daly -S

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Date: 2022.03.17 05:42:01 -04'00'

Danielle Daly
Director
Division of Demonstration Monitoring and Evaluation

cc: Ford Blunt, State Monitoring Lead, CMS Medicaid and CHIP Operations Group

Texas Healthcare Transformation and Quality Improvement Program Demonstration Waiver Evaluation Design Plan

As Required by

Centers for Medicare and Medicaid Services

Texas Health and Human Services Commission Center for Analytics and Decision Support

July 9, 2018

TEXAS
Health and Human Services

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Background and Introduction

Medicaid is an important source of health care coverage in Texas. In 2015, the Texas Health and Human Services Commission (HHSC) provided Medicaid benefits to approximately one in seven Texans, or 4.06 million people (Texas Health and Human Services Commission, 2017). Medicaid is jointly funded by the federal and state governments. The Texas Medicaid program cost the state and federal governments a combined total of approximately $29 billion in 2015, up from $10 billion in 2000, accounting for 28.6 percent and 20.2 percent of the state budget in 2015 and 2000, respectively (Texas Health and Human Services Commission, 2017).

The Texas Medicaid program continues to grow in the number of individuals eligible for services and the types of services provided. The biggest issue facing the Texas Medicaid program is that of coordination of the healthcare system, specifically how to provide coordinated, high quality services to over four million people while containing costs. The lack of coordination of care can lead to less effective use of care, use of more expensive resources, and ultimately increased costs for a program that already represents over one-quarter of the state's annual budget. Additionally, HHSC provides hospitals supplemental payments to make up for the unreimbursed cost of services provided to Medicaid and uninsured patients. Previously these payments were made under the Upper Payment Limit (UPL) system, and without it, many providers would not be able to afford to provide services to Medicaid clients and patients who cannot afford to pay. These payments are an important source of funding for safety net providers.

Given the scope and importance of the Medicaid program to provide safety net care to low-income Texans, it is vital to consider adaptations to improve efficiency and contain costs while maintaining access to, coordination, and quality of care. Texas had success implementing Medicaid managed care (MMC) in urban areas prior to expansion to rural areas in 2012. MMC in urban areas resulted in cost savings as compared to the traditional fee-for-service (FFS) delivery model, while maintaining or increasing access to care and quality of services for Medicaid clients.

Given the history of success with MMC, the 82nd Texas Legislature, 2011, directed HHSC to expand Medicaid managed care (Texas Health and Human Services

Commission, 2017) statewide from predominantly urban areas to include rural areas, additional populations, and services traditionally provided through a FFS or primary care case management (PCCM) service delivery model. Additionally, the Legislature "directed HHSC to preserve federal hospital funding historically received as supplemental payments under the UPL program" (Texas Health and Human Services Commission, 2017). The combination of these two directives, however, was not allowable under federal regulations enforced by the Centers for Medicare and Medicaid Services (CMS).

To address these issues and execute the directives of the Legislature, HHSC applied for an 1115 demonstration waiver. This waiver allows Texas to continue to expand MMC and implement the Delivery System Reform Incentive Payment (DSRIP) and Uncompensated Care (UC) funding pools. With a focus on value-based care, the coordination and cost effectiveness of care and health outcomes are expected to improve. Additionally, healthcare system innovations and improvements realized through DSRIP are expected to result in more coordinated, higher quality, cost-effective care for the Medicaid and low-income uninsured (MLIU) population in Texas. The improvements to the system through DSRIP are, in turn, expected to result in a slower rate of growth in UC costs borne by providers.

This waiver, the Texas Healthcare Transformation and Quality Improvement Program (Demonstration), was initially approved by CMS in December 2011 for five years through September 30, 2016. A 15-month extension was granted from October 1, 2016 through December 31, 2017. The current version of the Demonstration was approved on December 21, 2017, renewing the waiver for five years through September 30, 2022.

The overarching objectives of the Demonstration have remained consistent since the initial approval:

- Expand risk-based managed care to new populations and services.
- Support the development and maintenance of a coordinated care delivery system.
- Improve outcomes while containing cost growth.
- Transition to quality-based payment systems across managed care and providers.

To achieve these objectives, HHSC ended the UPL program "for services under managed care capitation and for residual FFS Medicaid services" (Texas Health and

Human Services Commission, n.d.). The former UPL funds and savings from the expansion of MMC are combined to create two new funding pools for providers. These two funding pools and MMC comprise the three components of the Demonstration:

- Delivery System Reform Incentive Payment (DSRIP) Pool
- Uncompensated Care (UC) Pool
- Medicaid managed care (MMC) expansion

The current evaluation, as outlined in this evaluation design plan, focuses primarily on the Demonstration renewal timeframe, building upon the evaluation conducted during the initial approval timeframe (Texas Health and Human Services Commission, 2017). This evaluation aims to evaluate the DSRIP Pool throughout demonstration years (DY) 7-11, the five years covered through this renewal (appending previous years, if feasible), UC through federal fiscal year (FFY) 2021 (ten years of the Demonstration), and MMC populations and services carved into MMC during and after FFY 2015 through FFY 2022. The various timeframes for each component reflect the anticipated availability of data for each Demonstration component.

The Demonstration components have remained consistent throughout the life of the Demonstration, but operational activities have evolved over time. The DSRIP component has experienced the most change; requirements related to the UC Pool will change in FFY 2020, and MMC has continued to expand to include additional populations and services (Figure 1).

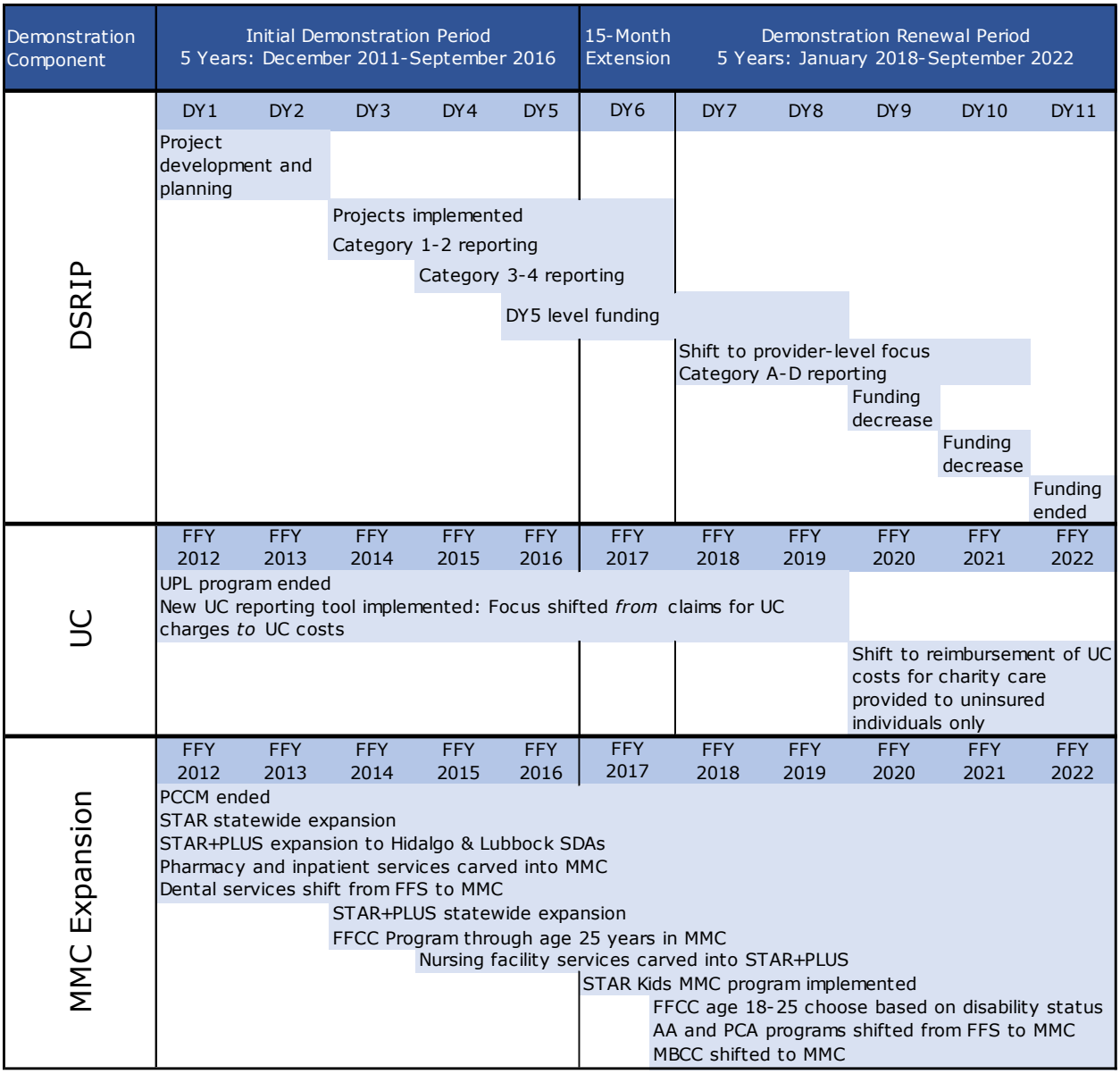


Figure 1. Demonstration Overview

Note. DSRIP=Delivery System Reform Incentive Payment; UC=Uncompensated Care; MMC=Medicaid managed care; DY=Demonstration year, October 1-September 30; FFY=Federal fiscal year, October 1-September 30; UPL=Upper Payment Limit; PCCM=Primary care case management; STAR=MMC program primarily serving children and pregnant women; STAR+PLUS=MMC program serving aged and disabled clients; SDA=Service Delivery Area; FFS=Fee-for-service; FFCC=Former Foster Care Children; STAR Kids=MMC program serving disabled individuals 20 years and younger; AA=Adoption Assistance; PCA=Permanency Care Assistance; MBCC=Medicaid for Breast and Cervical Cancer.

Delivery System Reform Incentive Payment Pool

The DSRIP Pool provides incentive payments to providers who engage in reforms that improve access to care, quality of patient care, population health outcomes, and reduce per capita costs. To participate in DSRIP, performing providers must be members of their local Regional Healthcare Partnership (RHP). There are 20 geographically distinct RHPs throughout the state through which the DSRIP and UC components of the Demonstration are implemented (Figure 2).

Performing providers, broadly defined, initially selected improvement projects from a menu aligned with the reform objectives of the state and addressed local needs.

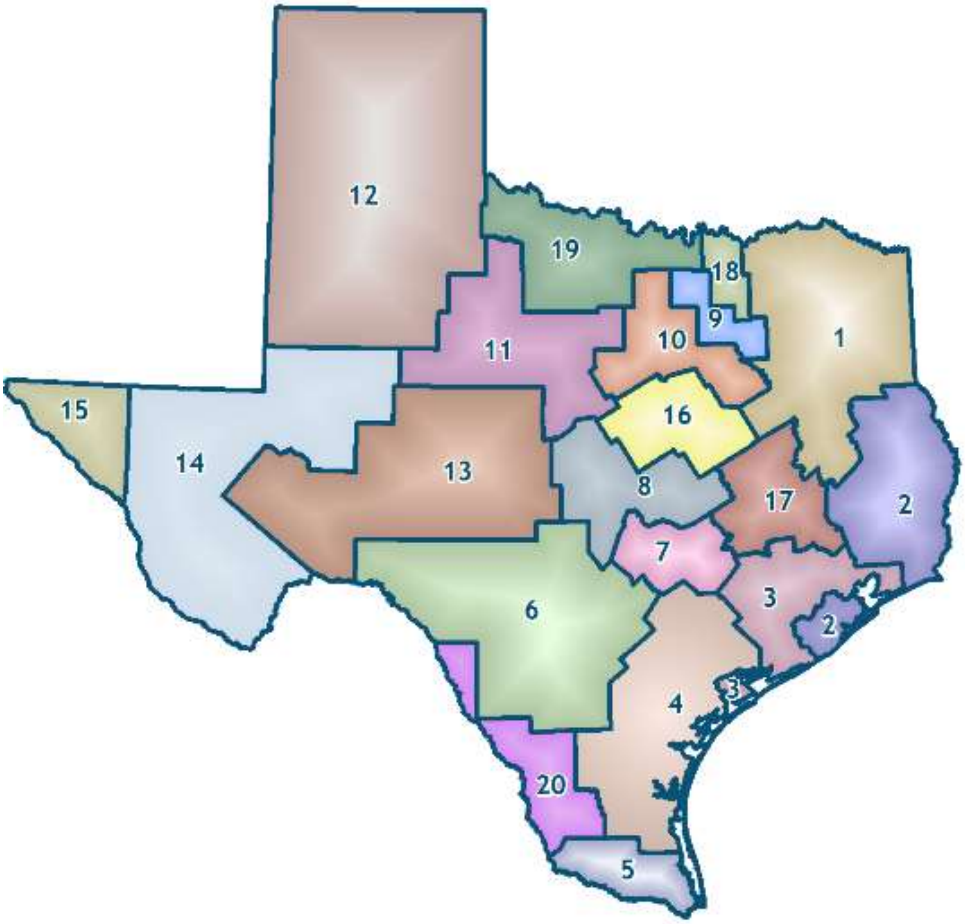


Figure 2. Texas 20 Regional Healthcare Partnerships

These projects were categorized as either Category 1, Infrastructure Development, or Category 2, Program Innovation and Redesign. Performing providers reported on

Category 1 and 2 process measures and Category 3 quality improvement outcomes for each of their projects. Certain performing providers, namely large hospitals, also reported on Category 4 population-based measures.

A major change from the initial and extension Demonstration timeframes (DY1-6) to the renewal timeframe (DY7-11) is the shift from *project-level* reporting to *provider-level* reporting. This change reflects an effort to streamline reporting for performing providers and ease the administrative burden of semi-annual reporting on performing providers and HHSC. To illustrate the scope of the DSRIP program, in DY5 there were over 1,400 projects implemented by approximately 300 performing providers. This shift to provider-level reporting is accompanied by a shift from reporting on isolated metrics and measures to reporting on Measure Bundles - sets of measures clinically related to one another - by hospitals and physician groups. Additionally, unique measures were developed for both community mental health centers (CMHCs) and local health departments (LHDs). In DY7, performing providers will submit a description of their "provider system" as well as descriptions of Core Activities they will implement to achieve outcomes in their pre-selected Measure Bundles and Measures. While these Core Activities may include DSRIP projects continued from the previous time period, outcomes will be measured at the provider level rather than the Core Activity or project level. These changes will reduce the reporting burden and distill the number of outcomes on which performing providers can report as compared to reporting in the initial and extension timeframes.

This shift in reporting requirements is reflected in new reporting categories. The DSRIP reporting will no longer include Category 1 or Category 2 process measures, or Category 3 outcome measures. Population-level outcomes will still be reported, but the Category 4 reporting that was only required of hospitals is expanding to include all performing provider types. Now reporting will be in categories A-D (Texas Health and Human Services Commission, 2018):

- **Category A** includes descriptive reporting on Core Activities, alternative payment model (APM) efforts, collaborative activities, and certain providers will report costs and savings associated with at least one Core Activity.

- **Category B** reporting reflects the MLIU population served by the performing provider.

- **Category C** reporting includes outcomes grouped together in Measure Bundles for hospital and physician group performing providers and Measures for LHD and CMHC performing providers. Performing providers will report baseline levels based on calendar year 2017 for their selected Measure Bundles and Measures.

- **Category D** measures make up statewide Measure Bundles to allow for population-level reporting by all performing provider types. The measures will be calculated by the state's External Quality Review Organization (EQRO), the Institute for Child Health Policy. Potentially preventable events will be calculated for each hospital and RHP as well as other indicators of population health specific to the other performing provider types. Performing providers will be required to respond qualitatively to the results specific to their hospital and/or RHP (Texas Health and Human Services Commission, 2018).

In addition to the shift from project- to provider-level reporting and newly established reporting requirements, the DSRIP program will be phased out by the end of the renewal timeframe. This reflects the "time-limited" nature of DSRIP as stated in the Special Terms and Conditions (STCs), the contractual agreement between HHSC and CMS for the Demonstration (Centers for Medicare and Medicaid Services, 2017). The DSRIP program will operate with DY5 level funding in DY7-8, the first two years of the renewal timeframe, but funding will be reduced in DY9, again in DY10, and the DSRIP Pool will be terminated in DY11. Given this timeline, performing providers are encouraged to explore and establish APMs to sustain DSRIP Core Activities upon the termination of DSRIP funding.

Uncompensated Care Payment Pool

Upon implementation of the Demonstration, the previously utilized UPL was replaced with the UC payment pool. This payment pool reimburses providers for UC costs incurred as reported in the annual Disproportionate Share Hospital/Uncompensated Care (DSH/UC) application (Texas Health and Human Services Commission, 2017). Similar to the prior UPL program, the UC payment pool provides a supplemental payment to providers, but is based on UC costs, rather than claims for UC charges.

To receive payments from the UC Pool, a provider must complete an application listing its uncompensated costs for charity care services provided. A hospital may

claim uncompensated costs for inpatient and outpatient services, as well as related costs for physician, and pharmacy services.

The UC Pool payment methodology has remained steady since DY1, but two challenges remain. The first challenge is the two-year data lag needed to finalize and validate UC costs at the state and federal levels. Providers submit UC requests annually, but these requests are based on data from two years prior. In the initial evaluation, only one year of post-UC data were available for analysis in the Final Evaluation Report (Texas Health and Human Services Commission, 2017). The current evaluation aims to continue the previous analysis (Texas Health and Human Services Commission, 2017), but the UC rules will change in FFY 2020 such that UC Pool payments will serve to reimburse uncompensated costs for charity care provided to uninsured individuals only (as opposed to uninsured and Medicaid eligible individuals). These changes are to be negotiated between HHSC and CMS as a part of the Demonstration renewal to reflect the application of updated federal policies (Centers for Medicare and Medicaid Services, 2017).

Medicaid Managed Care

The MMC program has been vastly expanded throughout the Demonstration timeframe. Upon implementation of the Demonstration in FFY 2012, the PCCM health care delivery model ended; the STAR MMC program, providing coverage primarily to children and pregnant women, expanded statewide; and the STAR+PLUS MMC program, which provides services to the aged and disabled population, expanded to two new service delivery areas (SDAs). Additionally, pharmacy benefits and non-behavioral health inpatient hospital stays were carved into MMC and the dental program shifted from a FFS to a MMC health care delivery model.

Through a series of waiver amendments, several other populations and services have transitioned to MMC from FFS. In FFY 2014 STAR+PLUS expanded statewide to provide coverage in Medicaid Rural Service Areas and to non-dual eligible individuals with intellectual and developmental disabilities receiving services through a 1915(C) waiver or residing in an intermediate care facility. In FFY 2015 nursing facility services were carved into MMC. A new MMC program, STAR Kids, was established for disabled children and adults 20 years old and younger in FFY 2016.

On September 1, 2017, smaller program populations experienced changes in their Medicaid service delivery. These changed to the MMC program include: Children in the Adoption Assistance (AA) and Permanency Care Assistance (PCA) programs became eligible for STAR or STAR Kids; Former Foster Care Children (FFCC) ages 18 to 20 years, who meet STAR Kids criteria may choose between STAR Health and STAR Kids, and FFCC, ages 21 to 26, who meet STAR+PLUS criteria will be enrolled in STAR+PLUS; and Medicaid for Breast and Cervical Cancer (MBCC) program shifted from the FFS health care delivery model to STAR+PLUS.

The CMS and HHSC are not making any substantive changes to the requirements of the MMC programs with the renewal of the Demonstration. Therefore, the evaluation of the continued expansion of MMC through the Demonstration will focus on the most recently incorporated populations (AA, PCA, FFCC, MBCC, STAR Kids[1]) and continued evaluation of dental and nursing facility services. These new and unique MMC clients provide a natural experiment to compare the FFS and MMC health care delivery models for populations with challenging and diverse health needs.

Evaluation Implications

The evaluation design plan for the initial approval period of the Demonstration has been updated to reflect changes to the Demonstration as described above. The Final Evaluation Report for the initial Demonstration approval period included a comparative case study of 10 DSRIP projects representing 10 "research regions" covering the entire state; a social network analysis measuring change in collaboration at the RHP level; a descriptive study of the changes in the composition of UC from 2012 through 2015; a pre/post comparison of access to, coordination, and quality of care for the STAR and STAR+PLUS populations as MMC expanded statewide; and a stakeholder survey (Texas Health and Human Services Commission, 2017).

[1] On November 1, 2016, Medicaid managed care was expanded to children and young adults (20 years and younger) with disabilities. A pre/post implementation evaluation is being conducted by Texas External Quality Review Organization, the University of Florida Institute for Child Health Policy. Results from all deliverables (last deliverable due May 3, 2019) may inform additional Demonstration evaluation questions, hypotheses, and analyses.

The proposed evaluation design plan expands its evaluation of DSRIP to include an analysis of DSRIP provider reporting of clinical population health measures and a comparison of specific outcomes among Medicaid clients served by DSRIP providers compared to clients of non-DSRIP providers. The social network analysis will continue with the addition of a new type of connection among RHP members through health information exchanges (HIEs). The proposed UC evaluation continues to analyze the percentage of UC costs reimbursed through UC payments and expands to examine the UC growth rate over time. The UC program will undergo changes starting in FFY 2020, but those changes are still under negotiation so the evaluation design plan may be amended, if necessary, to accommodate the revised UC program. The MMC evaluation continues to be a pre/post evaluation of access to, coordination, and quality of care measures, but is limited to populations and services new to MMC (i.e., AA, PCA, MBCC), those not included in the previous evaluation due to timing of the carve-in (i.e., nursing facility services (NF)), and those shifting from one MMC program to another (i.e., FFCC). STAR Kids, a MMC program for disabled children launched in SFY 2016, is currently being evaluated by the EQRO. If additional evaluation issues remain, this evaluation design plan may be revised to include this MMC population as well. Due to challenges with the sampling frame used for the stakeholder survey and a low response rate, the previously conducted stakeholder survey is not proposed for the renewal period. HHSC is currently investigating the feasibility of including the MMC sub-populations included in this evaluation in the biannual Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys conducted for the STAR and STAR+PLUS populations by the EQRO. Finally, the Demonstration will be evaluated overall by analyzing the transition to quality-based payment systems, changes in potentially preventable emergency department (ED) utilization, and overall costs.

Evaluation Questions and Hypotheses

Given the focus of the evaluation is to determine if the Demonstration achieved its intended objectives through the three components, the proposed evaluation questions were developed to align with the Demonstration objectives (Table 1).

Table 1. Demonstration Alignment

Demonstration Objective	Demonstration Component	Proposed Evaluation Question(s)
Expand risk-based managed care to new populations and services	MMC	Did the expansion of the MMC health care delivery model to additional populations and services improve health care (including access to care, care coordination, quality of care, and health outcomes) for MMC clients?
Support the development and maintenance of a coordinated care delivery system	DSRIP MMC	Did the DSRIP program incentivize changes to transform the health care system for the MLIU population in Texas? Did the Demonstration transform the health care system for the MLIU population in Texas?
Improve outcomes while containing cost growth	DSRIP MMC UC	Did the Demonstration impact unreimbursed costs associated with the provision of health care to the MLIU population for UC providers?
Transition to quality-based payment systems across managed care and providers	DSRIP MMC	Did the Demonstration impact the development and implementation of quality-based payment systems in Texas Medicaid?

Note. MMC=Medicaid managed care; DSRIP=Delivery System Reform Incentive Payment; MLIU=Medicaid and low-income uninsured; UC=Uncompensated Care.

Logic Model

The logic model (Figure 3) illustrates the theory of change, or the pathways through which the Demonstration will work to achieve these objectives during the renewal timeframe (DY7-11, FFY 2018-2022).

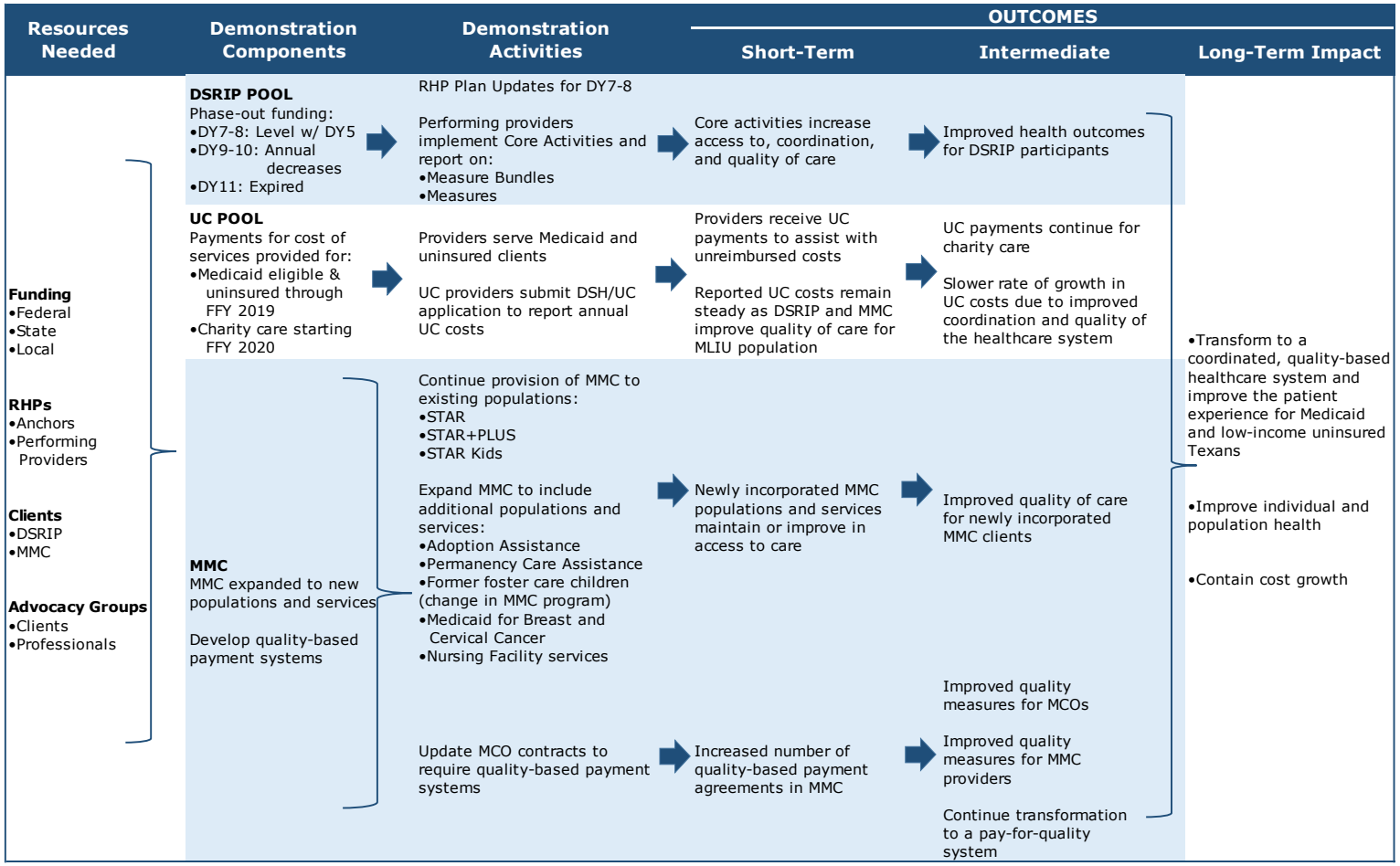


Figure 3. Demonstration Logic Model: Renewal Timeframe

Note. RHP=Regional Health care Partnership; DSRIP=Delivery System Reform Incentive Payment; MMC=Medicaid managed care; DY=Demonstration year, October 1-September 30; UC=Uncompensated Care; FFY=Federal fiscal year, October 1-September 30; DSH=Disproportionate Share Hospital; MLIU=Medicaid and low-income uninsured; STAR=MMC program for children and pregnant women; STAR+PLUS=MMC program for aged and disabled age 21 and older; STAR Kids=MMC program for disabled through 20 years; MCO=Managed care organization.

The Demonstration is carried out through three components described previously, DSRIP, UC, and MMC. As illustrated in the logic model for the renewal timeframe (DY7-11, FFY 2018-2022), DSRIP performing providers implement Core Activities working toward quality-related outcomes as indicated through selected Measure Bundles and Measures (e.g., chronic disease management, reduction of unnecessary ED visits, etc.). Ultimately, implementation of these Core Activities will lead to improved quality of care and health outcomes for individuals served through the DSRIP Provider Systems. UC providers deliver care to the MLIU population, sometimes without being paid for their services. These providers submit the UC application to request reimbursement for the cost of UC provided, allowing them to continue to provide much needed safety net care to the MLIU population who otherwise may not receive services. Due to the improvements in the health care system, the growth rate of UC costs is expected to slow over time.

Finally, operating in parallel with DSRIP and UC efforts, MMC continues to expand to include additional populations and services. Access to care will be maintained or improved in MMC as compared to FFS. Quality of care is expected to improve for clients in MMC due to increased efficiency and coordination of care. Finally, managed care organizations (MCOs) and providers will be required to move toward quality-based payment systems (i.e., alternative payment models) such that payments are (at least partially) contingent upon meeting certain quality outcomes. Overall, through the simultaneous implementation of DSRIP, UC, and the expansion of MMC, it is anticipated that these efforts to improve access, coordination, and quality of care will result in a transformed health care system and improved population health for MLIU individuals, all while containing cost growth.

Based on this proposed theory of change, the Demonstration evaluation aims to examine:

- How DSRIP activities have influenced collaboration among providers, improved quality of care, and individual and population health outcomes.
- The impact of the Demonstration on UC costs over time.
- The impact of the Demonstration on access to care, coordination of care, quality of care, and health outcomes among MMC clients.
- The impact of the Demonstration on the health care system for the MLIU population in terms of payment reform and population health outcomes.

To accomplish these aims and determine if the Demonstration meets its objectives, the proposed evaluation design plan includes five evaluation questions operationalized through corresponding hypotheses and associated measures. The methods used to test the hypotheses and answer the evaluation questions are described in the Methodology section. Data sources and technical specifications for measures are described in Appendix C.

Evaluation Questions

The proposed evaluation questions address the three Demonstration components and promote the objectives of Title XIX. All study populations and related services studied through these questions are Medicaid-eligible populations or services through the State Plan[2] and/or authorities specifically granted through this Demonstration.

The evaluation questions and hypotheses are grouped by Demonstration component, with one question each pertaining to DSRIP, UC, MMC, and two overall questions. Each evaluation question is addressed through a minimum of one corresponding hypothesis and measure.

Evaluation Question 1: Did the DSRIP program incentivize changes to transform the health care system for the MLIU population in Texas?

Hypothesis 1.1 DSRIP incentivized changes to the health care system that maintained or increased collaboration among providers.

Hypothesis 1.2 DSRIP incentivized performing providers to improve continuity, quality, and cost of care for Medicaid clients with diabetes.

Hypothesis 1.3 DSRIP incentivized performing providers to improve quality-related outcomes, specified as Category C population-based clinical outcome measures.

Hypothesis 1.4 DSRIP transformed the health care system, resulting in improvements in population health, specified as DSRIP Category D outcomes.

[2] The Medicaid State Plan describes the "nature and scope" of the Texas Medicaid program. It is available through: https://hhs.texas.gov/services/health/medicaid-chip/about-medicaid-chip/state-plan

Evaluation Question 2: Did the Demonstration impact unreimbursed costs associated with the provision of care to the MLIU population for UC providers?

Hypothesis 2.1 The percentage of UC costs reimbursed through UC payments for each type of UC (overall, Medicaid shortfall, uninsured shortfall) will decrease throughout DY1-DY8.

Hypothesis 2.2 The UC cost growth rate will slow over time for UC providers participating in the Demonstration.

Evaluation Question 3: Did the expansion of the MMC health care delivery model to additional populations and services improve healthcare (including access to care, care coordination, quality of care, and health outcomes) for MMC clients?

Hypothesis 3.1 Access to care will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.

Hypothesis 3.2 Care coordination will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.

Hypothesis 3.3 Quality of care will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.

Hypothesis 3.4 Health and health care outcomes will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.

Hypothesis 3.5 Client satisfaction will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.

Evaluation Question 4: Did the Demonstration impact the development and implementation of quality-based payment systems in Texas Medicaid?

Hypothesis 4.1 The Demonstration will result in the development and/or implementation of a variety of APMs in Texas Medicaid.

Evaluation Question 5: Did the Demonstration transform the health care system for the MLIU population in Texas?

Hypothesis 5.1 The Demonstration will result in a reduction of potentially preventable ED use for the MLIU population.

Hypothesis 5.2 The Demonstration will result in overall cost savings as compared to the Medicaid program without the Demonstration, as shown in the budget neutrality calculation.

Methodology

The Demonstration evaluation design plan includes 5 evaluation questions and 14 hypotheses that explore and examine the effectiveness and impact of the Demonstration through a set of sentinel outcome measures collected at select times throughout the Demonstration timeframe. Given the multi-pronged approach of health care transformation (i.e., DSRIP, UC, MMC), the evaluation plans to capture outcome measures for each Demonstration component as well as measure the overall impact of all Demonstration components on common population health outcome measures (e.g., potentially preventable ED utilization).

The Methodology section is divided into four major sections to describe the proposed evaluation design for each component of the Demonstration: DSRIP, UC, MMC, and overall. Methods for each component include: Study population, data sources and collection plan, analytic methods, proposed measures, and methodological limitations. Following the evaluation design for each component are sections that apply to the evaluation of the Demonstration overall: Special Methodological Considerations and Communication, Dissemination, and Reporting.

The technical specifications for each evaluation measure are described in Appendix C: Detailed Tables. Specific details include the measure definition, study population, measure steward, technical specifications, exclusion criteria, data source or collection method, comparison group or subgroups, analytic methods, and benchmark, as appropriate for each individual measure. Although methodological plans for addressing each question are provided, these plans may change as key data sources are assessed for completeness, level of required detail, and necessary quality required for the proposed analyses. Changes to the evaluation design plan will be documented in Appendix A: Document History Log.

Data, analytic methods, and reporting will meet traditional standards of scientific and academic rigor, as appropriate and feasible for each aspect of the evaluation: Evaluation design, data collection and analysis, and the interpretation and reporting of findings. The evaluation will use primary data along with the best available secondary data, and will report the respective limitations and their effects on interpreting the results.

DSRIP Evaluation Methods

A mixed-methods approach will be used to evaluate four hypotheses specific to the DSRIP component of the Demonstration. Sections following this overview provide more detail regarding the proposed measures, study populations, data sources/data collection methods, and proposed analytic methods.

DSRIP Proposed Measures

A measure, or a series of measures, has been selected or developed to operationalize each hypothesis. Table 2 provides an overview of all DSRIP-specific evaluation questions and hypotheses aligned with their respective measures. Specific details regarding each of the proposed measures can be found in Appendix C: Detailed Tables.

Table 2. Delivery System Reform Incentive Payment Evaluation Design Overview

Evaluation Hypothesis	Measure(s)	Study Population	Data Source(s) or Data Collection Method(s)	Analytic Methods
Evaluation Question 1: To what extent did the DSRIP program incentivize changes to transform the health care system for the MLIU population in Texas?				
1.1 DSRIP incentivized changes to the health care system that maintained or increased collaboration among providers.	1.1.1 Type of collaboration 1.1.2 Number of ties 1.1.3 Strength of ties (multiplexity) 1.1.4 Density 1.1.5 Centralization 1.1.6 Attitude toward collaboration	• DSRIP performing providers	• Social network analysis survey • Learning collaborative reporting, if necessary	• Social network analysis • Descriptive statistics, including trend analysis with DY2-5 data, if possible • Thematic content analysis of open-ended responses
	1.1.7 HIE membership 1.1.8 Use of HIE data for DSRIP reporting	• DSRIP performing providers	• DSRIP reporting	• Descriptive statistics: frequency of HIE membership
1.2 DSRIP incentivized performing providers to improve continuity, quality, and cost of care for Medicaid clients with diabetes.	1.2.1 Usual provider of care 1.2.2 Interval between provider visits 1.2.3 Testing HbA1c levels 1.2.4 Diabetes medication adherence 1.2.5 ED visits due to diabetes 1.2.6 Cost of care	• Medicaid clients served by DSRIP providers • Medicaid clients served by non-DSRIP providers	• FFS claims and MMC encounter data • Member-level enrollment files • Member-level pharmacy data	• Difference-in-difference

Evaluation Hypothesis	Measure(s)	Study Population	Data Source(s) or Data Collection Method(s)	Analytic Methods
1.3 DSRIP incentivized performing providers to maintain or improve quality-related outcomes, specified as Category C population-based clinical outcome measures.	Category C Measures*: 1.3.1 A1-508: Rate of ED visits for diabetes 1.3.2 A2-509: Rate of ED visits for CHF, angina, and hypertension 1.3.3 H2-510 / L1-387 / M1-387: Rate of ED visits for BH and SA 1.3.4 C1-502: Adult acute composite indicator 1.3.5 D1-503: Child acute composite indicator	• DSRIP performing providers	• DSRIP reporting • RHP plan update • DSRIP administrative data	• Descriptive trend analysis • Hierarchical linear modeling, if feasible
1.4 DSRIP transformed the health care system, resulting in improvements in population health, specified as DSRIP Category D outcomes.	Category 4/D Measures*: 1.4.1 PPAs 1.4.2 PPRs 1.4.3 PPCs 1.4.4 PPVs	• DSRIP performing providers	• DSRIP reporting	• Descriptive trend analysis
	1.4.5 Category D-related activities	• DSRIP performing providers	• DSRIP reporting	• Thematic content analysis • Descriptive statistics, if feasible

Note. DSRIP=Delivery System Reform Incentive Payment; MLIU=Medicaid and low-income uninsured; DY=Demonstration year, October 1-September 30; HIE=Health information exchange; HbA1c = Glycosylated Hemoglobin, Type A1C; ED=Emergency department; CHF=Congestive heart failure; BH=Behavioral health; SA=Substance abuse; RHP=Regional Healthcare Partnership; PPA=Potentially preventable admission; PPR=Potentially preventable readmission; PPC=Potentially preventable complication; PPV=Potentially preventable ED visit.

*Selected Category C and Category D measures from the Measure Bundle Protocol (Texas Health and Human Services Commission, 2018).

DSRIP Study Populations

The primary unit of analysis for DSRIP outcomes is the performing provider, which includes hospitals, CMHCs, LHDs, and physician practices participating in the DSRIP program. While DSRIP participants cannot be directly identified, Medicaid clients seen by DSRIP providers and non-DSRIP providers will be used to approximate client-level outcomes related to DSRIP.

- **DSRIP Performing providers** – Providers who are eligible to receive DSRIP incentive payments must have a current Medicaid provider identification number. Performing providers include hospitals, CMHCs, LHDs, and physician practices. Performing providers are responsible for: 1) implementing Core Activities to achieve the Category C Measure Bundles and Measures; and 2) measuring, reporting, and improving performance on the Category C Measures and Measure Bundles. In DY6 there were a total of 296 providers (Table 3). These numbers may change slightly as RHP Plan Updates are finalized for DY7-8.

Table 3. Delivery System Reform Incentive Payment Providers - Demonstration Year 6

Provider Type	Count
Hospital	218
Physician Practices	18
Community Mental Health Centers	39
Local Health Departments	21

Note. Numbers may vary slightly after regional healthcare partnership (RHP) plans are finalized for demonstration years (DY) 7-8.

- **Medicaid clients served by DSRIP performing providers** – Medicaid clients served by DSRIP performing providers that reported on diabetes-related measures will be identified through Medicaid claims, encounter, and pharmacy data. Medicaid clients included in the DSRIP analyses will have at least one diabetes-related visit or prescription drug from a relevant DSRIP provider during DY7, but no visits with or prescriptions from a relevant DSRIP provider in the previous 12 months. Medicaid clients who receive DSRIP-specific services are not flagged or identified in the FFS claim or MMC encounter databases, so this does not necessarily indicate this individual is a

"DSRIP participant" but does indicate the provider visited participates in DSRIP.

- **Medicaid clients served by non-DSRIP performing providers -** Medicaid clients served by non-DSRIP performing providers with similar provider types and specialties will be identified through Medicaid claims, encounter, and pharmacy data. Medicaid clients included in the DSRIP comparison group will have at least one diabetes-related visit or prescription drug from a non-DSRIP provider during DY7, and no visits with or prescriptions from a DSRIP provider in the 12 months before or after the first diabetes-related visit during DY7.

DSRIP Data Sources and Collection Plan

The evaluation will include multiple sources and forms of qualitative and quantitative data and research methods to comprehensively evaluate the DSRIP Demonstration component. These data include both primary and secondary data sources as described here.

DSRIP Primary Data Source

Primary data collection will be necessary to evaluate the DSRIP component of the Demonstration.

- **Social network analysis survey** - The social network analysis survey used in the previous Demonstration evaluation will be updated to reflect DY7-11 collaborators, new types of ties (learning collaborative participation, HIE membership), and other issues relevant to the renewal. Data will be collected at the organizational level using a computer-assisted telephone survey.

DSRIP Secondary Data Sources

This evaluation leverages administrative data collected by HHSC for reporting and payment purposes to assess the effects of DSRIP on access to and quality of care and Medicaid encounters and enrollment data.

- **RHP Plan update** - Performing providers will include their system description, including the population they serve through DSRIP and will list planned DY7 Core Activities, including which DY2-6 projects may correspond to DY7 Core Activities.

- **DSRIP reporting** - Performing providers are required to report their progress in categories A-C during specific reporting periods. Additionally, performing providers will respond qualitatively to Category D reporting completed by the EQRO. Where feasible, DY2-6 Category 1-4 reporting will be utilized as well. These data will be used by the evaluation team to address various hypotheses.

- **DSRIP administrative data** - HHSC maintains monitoring and payment information for DSRIP performing providers to determine incentive valuations, payment amounts earned, and track performance over time.

- **Learning collaborative reporting** - Performing providers are required to attend and report on their DSRIP participation in at least one learning collaborative, stakeholder forum, or other stakeholder meetings each DY.

- **Medicaid client-level data**
    - FFS Claims and MMC Encounter Data - FFS claims and MMC encounter data have been processed by TMHP since January 1, 2004. The TMHP performs internal edits for data quality and completeness. The member-level claims/encounter data contain the CPT codes, ICD-10-CM codes, place of service codes, and other information necessary to calculate outcome measures. There is an approximate six-month time lag for claims and encounter data adjudication. Prior analyses with Texas data showed that, on average, over 96 percent of the claims and encounters are complete by that timeframe.

    - Member-level enrollment files **-** The enrollment file will be used to obtain information about the person's age, gender, race/ethnicity, county, the MCO in which the member is enrolled, and the number of months the member has been enrolled in the program.

    - Member-level pharmacy data -The member-level pharmacy data contain information about filled prescriptions, including the drug name, dose, date filled, number of days prescribed, and refill information.

DSRIP Proposed Analytic Methods

Qualitative and quantitative methods will be used to evaluate the DSRIP component of the Demonstration. Social network analysis, an inherently mixed method, will

also be used. This section describes the proposed analytic methods to determine outcomes as specified through the DSRIP measures.

DSRIP Qualitative Analysis

Qualitative methods will be used to categorize, analyze, and synthesize data extracted from DSRIP reporting documents, open-ended question responses, and interview notes and/or transcripts. Both content analysis and thematic content analysis are proposed to answer evaluation questions related to DSRIP and the Demonstration overall.

Thematic Content Analysis

Thematic content analysis will be used primarily to evaluate responses to open-ended social network analysis survey items, DSRIP performing provider descriptions of Category D-related activities, and description of APM planning and/or implementation and perceived barriers/benefits to their development and implementation in Texas Medicaid. Thematic content analysis will be used to analyze and interpret documents for emerging themes among respondents. Through this method, documents are coded, and then codes are grouped together using inductive or deductive reasoning as themes among codes consistently emerge (Vaismoradi, Turunen, & Bondas, 2013).

DSRIP Mixed Methods Analysis

Social Network Analysis

Social network analysis is both a qualitative and quantitative analysis method in that a network diagram is used to illustrate relationships among network members. Measures including density, centrality, and multiplexity are calculated to quantitatively describe relationships within the network. Additionally, the social network analysis survey will collect responses to open-ended questions regarding attitudes toward collaboration. The social network analysis method will be used to measure change in collaboration among organizations participating in DSRIP within each RHP over time.

The proposed social network analysis aims to build upon a similar analysis conducted during the initial Demonstration timeframe (Texas Health and Human Services Commission, 2017). Collaboration will be measured by assessing connections between providers in each RHP; ties between providers will be

measured for program and service delivery, sharing tangible resources, formal data sharing, learning collaborative participation, and HIE membership (Table 3).

The network survey will be structured such that each organization will answer a series of questions about their relationships with each of the organizations in their RHP (Provan & Milward, 1995; Provan & Milward, 2001). Measures used are provided in Table 4. In addition, open-ended questions will probe for qualitative information about the relationship, kinds of collaborative services, or nature of data sharing to assist in interpretation of the results.

Table 4. Social Network Analysis Measures

Measure	Sample Question	Source
Any Collaboration*	"Does your organization currently work with [x organization]?"	Provan & Milward, 1995
Joint Service Delivery	"Does your organization currently collaborate with [x organization] to deliver services?"	Foster-Fishman et al., 2001; Provan & Milward, 1995
Resource Sharing	"Does your organization currently share tangible resources with [x organization] for the purpose of increasing access to services?"	Provan, Nakama, Veazie, Teufel-Shone & Huddleston, 2003
Data Sharing	"Does your organization currently have a data sharing agreement with [x organization]?"	Johnsen, Morrissey, & Calloway, 1996
Learning Collaborative Participation	"Do members of your organization attend the same RHP learning collaborative as [x organization]?	Measure established in DY1-5
Health Information Exchange (HIE) Membership	"Does your organization belong to an HIE? If yes, which one(s)?	Measure established in DY1-5
Attitudes Toward Building Ties	"Given the opportunity, would your organization be willing to collaborate	Measure established in DY1-5

Measure	Sample Question	Source
	with [x organization] in the future?"	

Note. DY=Demonstration year, October 1-September 30.

DSRIP Quantitative Analysis

Quantitative methods will also be used to evaluate the DSRIP component of the Demonstration. Below is a description of the analytic strategies that will be used to examine the evaluation hypotheses.

Univariate and Bivariate Statistics

Descriptive statistics will examine results for selected measures for each year in the pre- and post-measurement timeframes. For example, bivariate analyses will be used to explore trends in beneficiaries' access to care, quality of care, etc. Three descriptive quantitative analysis methods will be used to examine health and health care outcomes: McNemar's chi-square, Mann-Whitney U Test, and Wilcoxon Signed Rank Test. These nonparametric tests are appropriate when data are categorical or continuous but do not meet the assumptions (e.g., normality) used by parametric tests. Parametric analyses (e.g., t-tests, etc.) may be used as appropriate.

Descriptive Trend Analysis

Descriptive trend analysis will be used if more robust methods such as interrupted time series (ITS) are not appropriate. Univariate or bivariate statistics will be calculated on the same population at two or more points in time to determine if a trend exists.

Difference-in-Difference (DID)

DSRIP will also be evaluated through a quasi-experimental design using client-level data extracted from a sample of clients interacting with DSRIP providers and a matched sample of clients interacting with similar non-DSRIP providers. This portion of the evaluation will focus on DSRIP providers that selected diabetes-related measure bundles during both the original and renewal Demonstration periods (N=54). These were the most commonly selected measure bundle in all DYs

and offer the largest provider sample for analysis. It is currently unknown how many clients will have visits or filled prescriptions with these 54 DSRIP providers.

Sample Selection for DID

Given the large population served by Texas Medicaid, HHSC must establish inclusion criteria before identifying the initial sample of clients with a diabetes-related visit with, or prescription from, a relevant DSRIP provider (i.e. treatment group) or similar non-DSRIP providers (i.e. comparison group) during DY7. Before identifying the initial sample of clients, HHSC will identify DSRIP providers and similar non-DSRIP providers across provider type, provider specialty, and taxonomy code. The sample of providers for the client comparison group will be equal to or larger than the number of DSRIP providers in the analysis to ensure an adequate sample of clients in the comparison group. If feasible, DSRIP collaborators (e.g., Federally Qualified Health Centers) will be excluded from the comparison sample to prevent contamination of the treatment effect.

After identifying DSRIP providers and similar non-DSRIP providers, HHSC will obtain client-level claims, encounter, and pharmacy data for clients with a diabetes-related visit or prescription from one of the two provider groups during DY7. Client-level data will be drawn from the Texas Medicaid and Healthcare Partnership (TMHP), the claims administrator and data warehouse for claims and encounter data associated with Texas Medicaid. Client-level variables may include provider IDs, dates of service, diagnosis codes, procedure codes, claim numbers, and other relevant fields. To extract client-level data, HHSC Center for Analytics and Decision Support (CADS) will query the TMHP universes filtering on provider identification numbers (e.g., National Provider Identifier (NPI) or Texas Provider Identifiers (TPIs)), diabetes-related diagnosis codes, and dates of service. A similar process will be performed for diabetes-related pharmacy claims. No sampling is performed at this stage; instead, the full population of clients associated with the provider samples who meet the diagnosis, prescription, and date range criteria will be included.

After obtaining Medicaid IDs for the treatment and comparison client samples, a mapping table will be used to query TMHP for all claims, encounters, and prescriptions associated with these clients for DY7 and 24 months before and after DY7 (October 1, 2015 through September 30, 2020). The external evaluator will use this information to identify the following clients:

- Treatment clients who 1) are continuously enrolled and residing in the same RHP 12 months before and after their index date;[3] 2) do not have any visits to a DSRIP provider in the 12 months prior to their index date; and, 3) had at least one visit to a DSRIP provider in the 12 months following their index date.
- Comparison clients who 1) are continuously enrolled and residing in the same RHP 12 months before and after their index date; 2) do not have any visits to a DSRIP provider in the 12 months prior to their index date; and, 3) do not have any visits to a DSRIP provider in the 12 months following their index date.

Clients who do not meet the inclusion criteria above will be excluded from the treatment and comparison group samples. After excluding clients who do not meet the client inclusion criteria, the external evaluator will match clients in the comparison group to clients in the treatment group using propensity score matching based on client characteristics (sex, age, race, Elixhauser comorbidity index, and RHP residency location), using nearest-neighbor matching. The external evaluator will use a 12-month pre/post index date window when applying the client inclusion criteria to obtain sample sizes large enough for matching and analysis; applying client inclusion criteria for longer time frames would severely reduce the available sample sizes. Outcome measures, however, will be calculated using the full 24-month pre/post index date measurement period for matched clients in the treatment and comparison groups using the same methodology; this approach will allow for a more comprehensive estimate of the treatment effect resulting from DSRIP. If feasible, a DID design will be used for this purpose.

DID Model Specifications

DID mimics an experimental study by examining the average change in outcomes over time for the matched treatment and comparison groups. The DSRIP analyses utilize a DID model which relies on client-specific pre- and post-periods corresponding to each client's unique index date in the 24-month measurement period. Each client's pre-period corresponds to the 24 months prior to their index date, while their post-period corresponds to the 24 months after their index date. The regression equation for a simple DID model is:

[3] The client index date is the date of the client's first diabetes-related visit to a DSRIP or non-DSRIP provider in DY7.

$$Y_{ist} = \beta_0 + \beta_1 DSRIP_s + \beta_2 Post_t + \beta_3 (DSRIP_s * Post_t) + \varepsilon_{ist}$$

Where Y is the outcome measure for individual *i* in group *s* and time *t*, $DSRIP$ is a dummy variable for receiving care from a DSRIP provider, $Post$ is a dummy variable for the client-specific post period, $DSRIP * Post$ is an interaction term for receiving care from a DSRIP provider in the client-specific post period, and ε is an error term. β_3 gives the treatment effect of DSRIP. Additional covariates may be added to determine the effect of RHP, provider type, and other provider-level or client-level characteristics.

The DID approach will be applied to six client-level outcome measures within DSRIP: 1) Proportion of visits to usual provider of care, 2) Interval between provider visits, 3) Testing HbA1c levels, 4) Diabetes medication management, 5) Diabetes-related ED visits, and 6) Overall cost of care, as determined by paid claims, encounters, and prescription drugs. Importantly, the traditional DID model is a linear probability model, however client-level outcomes associated with DSRIP may be dichotomous (e.g., testing HbA1c levels), count data with excess zeros (e.g., ED visits), or positively skewed (e.g., cost). These distinctions may require adjustments or corrections to the DID model. For example, because of known challenges involved in the application and interpretation of non-linear DID models--especially with regard to interaction terms (Athey and Imbens, 2006; Ai and Norton, 2003), linear models are often used to preserve interpretability of the treatment effect coefficient. Bootstrapping adjustments can be made to correct for hetereoscedasticity and autocorrelation that arise from linear modeling under these circumstances (Bertrand et. al, 2004). However, other corrections or alternative models may be necessary.

Hierarchical Linear Models

Hierarchical linear models (HLM) or growth curve models may be used to evaluate DSRIP outcomes reported annually (Littell, Milliken, Stroup, Wolfinger, & Schanbenberger, 2006).

The HLM method accounts for the hierarchical nature of a dataset, in this case, provider systems operate within an RHP. The provider system is considered level 1 and the RHP is considered level 2 in the proposed model (Table 5).

Table 5. Hierarchical linear model framework for the Delivery System Reform Incentive Payment (DSRIP) program

Hierarchical Level		Potential Variables
Level 2	RHP	Demographic and poverty characteristics Poverty characteristics Health Professional Shortage Areas Percent population in Medicaid/Medicare Rural-Urban Continuum Code
Level 1	DSRIP performing provider system	Provider type Provider DSRIP minimum point threshold DSRIP valuation Percentage of MLIU in the provider system

Note. RHP=Regional Healthcare Partnership; DSRIP=Delivery System Reform Incentive Payment.

Given that DSRIP projects will operate with level funding through DY8, there may be sufficient years of data to evaluate if outcomes improved over baseline, in which case growth curve modeling may be appropriate. In a growth curve model, the dependent variable would be Category C outcomes at each year; in a cross-sectional hierarchical linear model, the dependent variable might be change in Category C outcomes from baseline. The evaluation aims to examine performing provider and contextual factors associated with changes reported in outcome measures.

For selected Category C outcome measures, the basic HLM Level 1 model is specified as (a):

$$(a)\ Y_{ij} = \beta_{0j} + \beta_{1j} * X_{ij} + \varepsilon_{ij}$$

From the basic statistical model, Y_{ij} is the dependent variable, change in Category C outcome for the i^{th} provider at the j^{th} RHP, β_{0j} reflects the intercept of the dependent variable in group j (Level 2-RHP); β_{1j} estimates the slope for the relationship in group j (Level 2-RHP) between the Level 1 (Performing provider) predictor and the dependent variable; X_{ij} is a vector of Level 1 performing provider characteristics (e.g., core activities, years of DSRIP participation); and ε_{ij} refers to random errors of prediction for the Level 1 equation.

$$(b)\ \beta_{0j} = \gamma_{00} + \gamma_{01} * W_j + \upsilon_{0j} \text{ and } (c)\ \beta_{1j} = \gamma_{10} + \upsilon_{1j}$$

HLM models (b) and (c) specify how Level 2-RHP-level predictors influence model (a). γ_{00} reflects the overall intercept. This is the grand mean of the dependent variable (i.e., average change in outcome measure from baseline) across all

provider outcomes when all predictors are equal to zero. W_j is the Level 2 predictor (Level 2-RHP), γ_{01} refers to the overall regression coefficient, or slope, between the dependent variable and the Level 2 predictor. u_{0j} refers to the random error component for the deviation of the intercept of a group from the overall intercept, γ_{10} estimates the overall regression coefficient between the dependent variable and the Level 1 predictor, and u_{1j} refers to the error component for the slope (meaning the deviation of the group slopes from the overall slope).

DSRIP Methodological Limitations

While DSRIP performing providers report the number of unique individuals served through their projects (DY2-6) and within their provider systems (DY7-10), these counts are unique only at the performing provider level and cannot be aggregated across providers to enumerate the entire DSRIP population. It is unknown how many clients may participate in DSRIP core activities implemented by multiple DSRIP performing providers. Additionally, DSRIP activities are intended to serve MLIU individuals, but 1) services are not limited to this population, and 2) it is not possible to link Medicaid clients with utilization of specific DSRIP services. Additionally, the change in reporting from project-level Category 1-4 reporting to provider-level Category A-D reporting means there is a lack of continuity in outcomes reporting, resulting in instrumentation threats to internal validity.

The proposed HLM analysis allows the evaluation to account for the effects of the RHP on selected outcomes; however, there may be insufficient Category C outcome data for these analyses. Category C data are new as of DY7 and have yet to be reported. While there is compliance monitoring in place to ensure validity of the data, it is unknown how consistently the outcomes will be reported across providers.

A DID analysis is proposed using Medicaid claims and encounter data. While this is a robust method allowing for the comparison of client-level outcomes over time, it is unknown the degree to which the Medicaid clients served by DSRIP performing providers are actually exposed to DSRIP core activities. It is possible these clients may visit their provider for Medicaid services without being exposed to DSRIP core activities. The DID analysis also involves other challenges to sample identification. The originally proposed DID analysis identified clients in the treatment and comparison groups based on DSRIP providers and a randomly selected group of non-DSRIP providers. Numerous attempts to identify a similar comparison group at the provider-level were unsuccessful; substantial differences between DSRIP and

non-DSRIP providers remained regardless of the sampling strategy (i.e., stratified random sampling, purposive sampling, and propensity score matching). As a result, identification of treatment and comparison groups was revised to utilize propensity score matching at the client-level. This version of the evaluation design plan reflects updated client-level matching techniques necessary for the DID analysis.

Other limitations include lack of data on the uninsured population and possible contamination of the treatment effect. For example, it is possible that non-DSRIP performing providers may implement similar, non-DSRIP-funded activities to improve care for their patients, thus diluting the treatment effect of DSRIP. It is also possible that some clients may receive care from both DSRIP and non-DSRIP providers, raising the possibility of individuals who are in both the treatment and comparison groups simultaneously. Finally, the reliance on administrative claims and encounters can be a limitation. These data have been designed and collected for billing purposes, but are used to determine changes in continuity and quality of care. However, most of the selected measures are validated and widely used for this purpose.

UC Evaluation Methods

A quantitative approach will be used to evaluate two hypotheses specific to the UC component of the Demonstration. Sections following this overview provide more detail regarding the proposed measures, study population, data source, and proposed analytic methods.

The proposed evaluation question and hypotheses relate to UC as implemented from DY1-DY8. The UC program will undergo changes in DY9 and UC reimbursement will be for UC costs for charity care provided to uninsured individuals only. At the time of this draft negotiations are still ongoing. Should these changes to the UC program warrant specific evaluation questions or hypotheses, the evaluation design plan can be revised accordingly.

UC Proposed Measures

A measure has been selected or developed to operationalize each hypothesis. Table 6 provides an overview of all UC-specific evaluation questions and hypotheses aligned with its respective measure. Specific details regarding each of the proposed measures can be found in Appendix C: Detailed Tables.

Table 6. Uncompensated Care Evaluation Design Overview

Evaluation Hypothesis	Measure(s)	Study Population	Data Source(s) or Data Collection Method(s)	Analytic Methods
Evaluation Question 2: Did the Demonstration impact unreimbursed costs associated with the provision of care to the MLIU population for UC providers?				
2.1 The percentage of UC costs reimbursed through UC payments for each type of UC (overall, Medicaid shortfall, uninsured shortfall) will decrease throughout DY1-DY8.	2.1.1 UC costs reimbursed (percentage)	• Providers reporting UC costs	• DSH/UC application	• Trend analysis
2.2 The UC cost growth rate will slow over time for UC providers participating in the Demonstration.	2.1.2 UC cost growth rate	• Providers reporting UC costs	• DSH/UC application	• Multiple linear regression or growth curve modeling

Note. MLIU=Medicaid and low-income uninsured; UC=Uncompensated Care; DY=Demonstration year, October 1-September 30; DSH=Disproportionate Share Hospital.

UC Study Population

The UC population consists of UC providers, including hospitals, clinics, and other providers who provide "medical assistance," as defined in section 1905(a) of the Social Security Act, to individuals who cannot pay for the services received. Analyses may be limited to hospitals who submit an annual DSH/UC Application that collects costs and payment data on services eligible for reimbursement through the UC Pool.

Providers included in the UC analyses must have a current Medicaid provider identification number and participate in regional learning collaborative activities. In DY7 there were 486 UC providers (Table 7). This number may vary slightly from year to year.

Table 7.Uncompensated Care Providers by Type in Demonstration Year 7

Provider Type	Estimated Count*
Hospital	360
Physician Group Practice	17
Ambulance Providers	107
Dental Providers	2

Note. *These are estimated numbers as of June 2018 to be finalized by September 2018. Ambulance and dental providers are estimates for DY6.

UC Data Sources and Collection Plan

The evaluation will include quantitative data and research methods to comprehensively evaluate the UC Demonstration component. The secondary data source is described below.

UC Secondary Data Source

- **DSH/UC Application** – UC providers complete this application to apply for reimbursement for costs incurred providing services to Medicaid and uninsured individuals that are not otherwise reimbursed. These applications are submitted to HHSC annually, but are paid based on a two-year data lag. The UC cost reimbursements are adjusted for inflation as an estimate of the UC costs for the year of payment.

UC Proposed Analytic Methods

Quantitative methods will be used to evaluate the UC component of the Demonstration. This section describes the proposed analytic methods to determine outcomes as specified through UC measures.

UC Quantitative Analysis

Quantitative methods will be used to evaluate the UC component of the Demonstration. Below is a description of the analytic strategies that will be used to examine the evaluation hypotheses.

Univariate and Bivariate Statistics

Descriptive statistics will examine results for selected measures for each year in the pre- and post-measurement timeframes. For example, bivariate analyses will be used to explore trends in beneficiaries' access to care, quality of care, etc. Three descriptive quantitative analysis methods will be used to examine health and health care outcomes: McNemar's chi-square, Mann-Whitney U Test, and Wilcoxon Signed Rank Test. These nonparametric tests are appropriate when data are categorical or continuous but do not meet the assumptions (e.g., normality) used by parametric tests. Parametric analyses (e.g., t-tests, etc.) may be used as appropriate.

Descriptive Trend Analysis

Descriptive trend analysis will be used if the recommended minimum measurement time points for ITS are not available (i.e., eight pre- and eight post-Demonstration measurement time points). Univariate or bivariate statistics will be calculated on the same population at two or more points in time to determine if a trend exists.

Regression Analysis

Regression analysis will be used to evaluate the UC component of the Demonstration. Multiple linear regression (MLR) will be used to test for trend over time in the annual UC growth rate, while controlling for UC provider type, and regional/county-level characteristics. The proposed MLR model is specified as:

$$UC\ growth\ rate_{ij} = \beta_0 + \beta_1(time) + \beta_2(hosptype_{ii}) + \beta_3(regionalchar_{ij}) + \mathcal{E}_{ij}$$

Where UC growth rate is defined as ((UC costs$_j$ – UC costs$_{j-1}$) / UC costs$_{j-1}$) for hospital *i* in year *j*. Time is a time trend variable, hosptype is the hospital type for

hospital *i* in year *j*, regionalchar is a vector of county-level or RHP-level characteristics such as rural-urban continuum code, RHP tier, or Rider 38 Status for hospital *i* in year *j*, and ε is an error term. Alternately, evaluators may also choose to model changes in UC costs through growth curve modeling, using time (level 1), hospital-level characteristics (level 2), and regional-level characteristics (level 3).

Where appropriate, research methods will incorporate results from sensitivity analyses—such as a comparison of nominal to constant dollar amounts, and all UC providers to UC hospitals only—to simplify statistical models and test for robustness/model fit.

UC Methodological Limitations

Major limitations affecting the UC evaluation include lack of a comparison group, lack of a pre-period, and a two-year data lag. Analysis of UC was limited in the evaluation of the initial approval period due to the two-year lag between reporting of UC costs and receiving UC payments. Given these challenges, the UC evaluation will include a trend analysis of the percentage of UC costs reimbursed rather than more robust methods such as DID or ITS, but will also include a regression analyses to examine the change in the UC growth rate over time.

MMC Evaluation Methods

A quantitative approach will be used to evaluate five hypotheses specific to the MMC component of the Demonstration. Sections following this overview provide more detail regarding the proposed measures, study populations, data sources/data collection methods, and proposed analytic methods.

MMC Proposed Measures

A measure, or series of measures, has been selected or developed to operationalize each hypothesis. Table 8 provides an overview of MMC-specific evaluation questions and hypotheses aligned with their respective measures. Specific details regarding each of the proposed measures can be found in Appendix C: Detailed Tables.

Table 8. Medicaid Managed Care Design Overview

Evaluation Hypothesis	Measure(s)	Study Population	Data Source(s) or Data Collection Method(s)	Analytic Methods
Evaluation Question 3: Did the expansion of the MMC health care delivery model to additional populations and services improve health care (including access to care, care coordination, quality of care, and health outcomes) for MMC clients?				
3.1 Access to care will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.	3.1.1 CMS percentage of eligibles who received preventative dental services	• CMDS	• FFS claims and MMC encounter data • Member-level enrollment files • Member-level pharmacy data	• Descriptive trend analysis • Interrupted time series analysis
	3.1.2 Adult access to preventive/ ambulatory health services	• NF • FFCC • MBCC		
	3.1.3 Children and adolescent access to primary care services	• AA • PCA		
	3.1.4 CMS screening for depression and follow-up plan	• NF • FFCC • AA • PCA • MBCC		
	3.1.5 Utilization of pharmacy benefits	• NF • FFCC • AA • PCA • MBCC		

Evaluation Hypothesis	Measure(s)	Study Population	Data Source(s) or Data Collection Method(s)	Analytic Methods
3.2 Care coordination will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.	3.2.1 Rate of service coordination utilization	• NF • FFCC • MBCC	• FFS claims and MMC encounter data • Member-level enrollment files	• Interrupted time series analysis
	3.2.2 Rate of clients with SMI/SED receiving Targeted Case Management	• MBCC • AA • PCA		
3.3 Quality of care will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.	3.3.1 Antidepressant medication management	• NF • FFCC	• FFS claims and MMC encounter data • Member-level enrollment files • Member-level pharmacy data	• Descriptive trend analysis • Interrupted time series analysis
	3.3.2 Use of first-line psychosocial care for children and adolescents on antipsychotics	• NF		
	3.3.3 Percent of Medicaid for Breast and Cervical Cancer clients receiving recommended treatment	• MBCC		
	3.3.4 Behavior modification	• NF	• NFQR Survey	• Descriptive trend analysis
3.4 Health and health care outcomes will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.	3.4.1 CMS Children who have dental decay or cavities	• CMDS	• FFS claims and MMC encounter data • Member-level enrollment files	• Interrupted time series
	3.4.2 Pressure Ulcers	• NF		
	3.4.3 Symptoms of depression	• NF	• NFQR Survey	• Descriptive trend analysis

Evaluation Hypothesis	Measure(s)	Study Population	Data Source(s) or Data Collection Method(s)	Analytic Methods
	3.4.4 Prevention/Pediatric Quality Overall Composite 3.4.5 Rate of potentially preventable emergency department use 3.4.6 H2-510: Rate of ED visits for BH and SA	• NF • FFCC • AA • PCA • MBCC	• FFS claims and MMC encounter data • Member-level enrollment files	• Descriptive trend analysis • Interrupted time series analysis
3.5 Client satisfaction will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.	3.5.1 Client satisfaction - NF	• NF	• NFQR Survey	• Descriptive trend analysis
	3.5.2 Client satisfaction - CAHPS	• AA • PCA • MBCC	• CAHPS Health Plan Survey	

Note. MMC=Medicaid managed care; FFS=Fee-for-service; CMS=Centers for Medicare and Medicaid Services; CMDS=Children's Medicaid Dental Services; NF=Nursing Facility; FFCC=Former Foster Care Children; MBCC=Medicaid for Breast and Cervical Cancer; AA=Adoption Assistance; PCA=Permanency Care Assistance; SMI=Serious mental illness; SED=Severe emotional disturbance, NFQR=Nursing Facility Quality Review; ED=Emergency department; BH=Behavioral health; SA=Substance abuse; CAHPS=Consumer Assessment of Healthcare Providers and Systems.

MMC Study Populations

The study population collectively refers to the MMC clients enrolled in their respective MMC program in the post-implementation period (post-MMC population) and clients who would have been eligible for the MMC program had it been available to them in the pre-MMC period (pre-MMC population). Pre- and post-MMC populations will be identified by applying the Medicaid Population Eligibility Criteria to the pre- and post-MMC populations (Maximus, 2017). The specific pre-MMC and post-MMC periods will align to implementation date by MMC program or population in the analysis.

The MMC clients are the primary unit of analysis to examine the expansion of managed care as a health care delivery model. Medicaid populations were selected for this evaluation because: 1) they were carved in by DY4/FFY 2015 and additional years of data were needed to complete trend analyses conducted in the initial evaluation (i.e., nursing facility), 2) they are new MMC beneficiaries and provide a natural experiment to compare FFS to MMC health care delivery models (i.e., STAR Kids, MBCC, AA, PCA), 3) they demonstrate changes to MMC beneficiary programs (i.e., FFCC), or 4) they require continued evaluation based on CMS feedback on populations of interest (i.e., Children's Medicaid Dental Services).

The MMC study populations include:

- **Children's Medicaid Dental Services** - In March 2012, dental managed care replaced the FFS delivery model for primary and preventive dental care. The Children's Medicaid Dental Services (CMDS) are provided through MMC for most children and young adults through age 20.

- **Nursing Facility (NF)** - On March 1, 2015, HHSC began delivering nursing facility benefits to qualifying adults age 21 and older through STAR+PLUS.

- **STAR Kids** – On November 1, 2016, MMC was expanded to children and young adults (20 years and younger) with disabilities. Previously, MMC was voluntary for this population, but enrollment is now mandatory with STAR Kids implementation. A pre-post implementation evaluation is currently

being conducted by Texas' EQRO[4]. Given this ongoing study, STAR Kids is not currently included in the evaluation of the Demonstration extension, but if results of the EQRO's study suggest further evaluation of STAR Kids is necessary, this evaluation design plan may be revised.

- **Former Foster Care Children (FFCC)** - On September 1, 2017, FFCC clients ages 18-20, based on their disability status, may choose between STAR, STAR Kids, or STAR Health. FFCC clients ages 21 - 25, based on disability status, are mandated to enroll in STAR or STAR+PLUS, as STAR Health and STAR Kids are not options for this age group.

- **Adoption Assistance (AA) and Permanency Care Assistance (PCA)** - On September 1, 2017, Medicaid AA and PCA recipients transitioned from FFS to either STAR or STAR Kids MMC.

- **Medicaid Breast and Cervical Cancer (MBCC)** - On September 1, 2017, women in the FFS Breast and Cervical Cancer program transitioned to MMC. These clients are a specific sub-set of the STAR+PLUS population.

MMC study populations will be identified using data from member-level enrollment files, specifically Medicaid category and type program. Using these data fields, clients can be identified in both FFS (pre-period) and MMC (post-period) (Table 9).

[4]External Quality Review Organization timeline includes five deliverables: 1) STAR Kids Managed Care Organization Site Visits, 2) Measures Feasibility - Survey, Screening and Assessment Instrument, Individual Service Plan, 3) Pre-/Post- Implementation survey measures, 4) Pre-/Post-Implementation Administration measures, and 5) Summary Report. Based on results from all deliverables (last deliverable due May 3, 2019), Texas Health and Human Services Center for Analytics and Decision Support may alter evaluation questions to include additional hypotheses/analyses.

Table 9. Overview of Medicaid Managed Care Populations

Population or Service	Medicaid Category	Medicaid Program Type	Medicaid Managed Care Program(s)	Average Monthly Enrollment, SFY 2017
Populations and services carved into MMC from FFS				
Children's Medicaid Dental Services	01, 02, 03, 04	01, 03, 07, 12, 13, 14, 15, 18, 19, 20, 21, 37, 40, 43, 44, 45, 47, 48, 51, 66, 67, 78, 79, 80, 81, 82, 87, 88	STAR STAR Kids STAR+PLUS	3,146,229
Nursing facility	01, 03, 04	12, 13, 14	STAR Kids STAR+PLUS	53,779
Adoption Assistance	02	15, 21	STAR STAR Kids	48,589
Permanency Care Assistance	02	78, 79, 80, 81	STAR STAR Kids	3,224
Medicaid for Breast and Cervical Cancer	N/A	67	STAR+PLUS	4,861
Population shifting from one MMC program to another				
Former Foster Care Children	02	09, 77, 82	STAR Health STAR STAR Kids STAR+PLUS	4,187

Note. Eligibility based on Appendix O: Medicaid Population Eligibility Criteria, EB 726 - EB Joint Interface Plan (JIP) - Update (Version 6.7). Average monthly enrollment provided by Health and Human Services Commission (HHSC) Forecasting. SFY=State fiscal year, September 1-August 31; MMC=Medicaid managed care; FFS=Fee-for-service.

The intention is to use the entire eligible population for the proposed MMC analyses. Therefore any changes pre- and post-expansion represent the population parameter. Parametric tests of hypotheses rely on sampling theory to produce estimates of likely error. If a researcher assumes a sample of a given size is selected from a population, knowledge of the systematic nature of sampling makes statistical testing, coefficient estimators, and standard errors meaningful. With a population, sampling theory is not relevant and statistical tests (e.g., t-tests) are not meaningful in the traditional sense because there is nothing to infer from a sample about the population. However, if there is a change and samples are necessary, the appropriate actions will be taken, including power calculations, to ensure traditional standards of scientific and academic rigor are met to ensure the validity of the findings.

MMC Data Sources and Collection Plan

The evaluation will include multiple sources and forms of qualitative and quantitative data and research methods to comprehensively evaluate the MMC Demonstration component. These data include both primary and secondary data sources, as outlined below.

MMC Secondary Data Sources

- **FFS Claims and MMC Encounter Data** - FFS claims and MMC encounter data have been processed by TMHP since January 1, 2004. The TMHP performs internal edits for data quality and completeness. The member-level claims/encounter data contain the CPT codes, ICD-10-CM codes, place of service codes, and other information necessary to calculate outcome measures. There is an approximate six-month time lag for claims and encounter data adjudication. Prior analyses with Texas data showed that, on average, over 96 percent of the claims and encounters are complete by that timeframe.
- **Member-Level Enrollment Files** - The enrollment file will be used to determine the pre-MMC and post-MMC populations, determine health care service delivery model (i.e., FFS or MMC), and enrollment gaps. The enrollment files contain information about the person's age, gender, race/ethnicity, county, the MCO in which the member is enrolled, and the number of months the member has been enrolled in the program.
- **Member-Level Pharmacy Data -**The member-level pharmacy data contain information about filled prescriptions, including the drug name, dose, date filled, number of days prescribed, and refill information.

MMC Proposed Analytic Methods

Quantitative methods will be used to evaluate the MMC component of the Demonstration. This section describes the proposed analytic methods to determine outcomes as specified through the proposed MMC measures. Where appropriate, research methods will incorporate results from sensitivity analysis to compare alternate subgroups (e.g., Medicaid clients continuously enrolled versus all Medicaid clients in a particular population), and other comparisons as necessary.

MMC Quantitative Analysis

Descriptive trend analysis and ITS will be the analytic strategies used to examine most of the evaluation questions. Although DID (or regression discontinuity design) is considered to be a more robust quasi-experimental design than trend analysis or interrupted time series, that method is not feasible for this evaluation because the MMC expansion to additional populations and services was statewide and adequate comparison groups do not exist. Below is a description of the analytic strategies that will be used to examine the evaluation hypotheses.

Univariate and Bivariate Statistics

Descriptive statistics will examine results for selected measures for each year in the pre- and post-measurement timeframes. For example, bivariate analyses will be used to explore trends in beneficiaries' access to care, quality of care, etc. Three descriptive quantitative analysis methods will be used to examine health and health care outcomes: McNemar's chi-square, Mann-Whitney U Test, and Wilcoxon Signed Rank Test. These nonparametric tests are appropriate when data are categorical or continuous but do not meet the assumptions (e.g., normality) used by parametric tests. Parametric analyses (e.g., t-tests, etc.) may be used as appropriate.

Descriptive Trend Analysis

Descriptive trend analysis will be used if the recommended minimum measurement time points for ITS are not available (i.e., eight pre- and eight post-Demonstration measurement time points). Univariate or bivariate statistics will be calculated on the same population at two or more points in time to determine if a trend exists.

Interrupted Time Series

The ITS analysis uses aggregate data collected over equally spaced intervals before and after a policy change. A key assumption of ITS is that data trends before the policy change can be extrapolated to predict trends had the policy change not occurred. If MMC has an impact on an outcome of interest, the post-expansion trend will have a statistically significant slope that is different from the pre-expansion trend. When properly executed, ITS is a valuable method to evaluate the success, failure, or unintended consequences of health care policy on outcomes (Lagarde, 2012). However, given the serial nature of ITS data, autocorrelation, nonstationarity, and seasonality need to be considered. Failing to assess and correct for these factors can lead to biased results (Wagner, Soumerai, Zhang, &

Ross-Degnan, 2002). A key strength of ITS methodology is that a control site is not required, providing an alternate method of measuring the effect of an intervention "when randomization or identification of a comparison group are impractical" (Grimshaw, et al., 2003). Identifying comparison groups is not feasible due to the unique nature and statewide inclusion of the new MMC populations. The ITS method allows the target population to serve as its own comparison group in the pre/post analysis.

For outcome measures using ITS, the basic segmented regression model with one change point or intervention examines the relationship between the outcome of interest (Y_t) over time, before and after the policy change (e.g., population shifted from FFS to MMC or changed MMC programs):

$$Yt = \beta_0 + \beta_1 time + \beta_2 MMC\ expansion + \beta_3 postslope + \varepsilon_t$$

From the basic statistical model, β_0 reflects the baseline level of the outcome at the beginning of the pre-Demonstration timeframe; β_1 estimates the trend before MMC expansion; β_2 estimates the immediate impact of MMC expansion; and β_3 reflects the change in trend after MMC expansion. To ease interpretation, ITS results are presented as: baseline level, trend before MMC expansion, level change after MMC expansion, and trend after MMC expansion.

Pre and Post Time Periods for Interrupted Time Series

The pre and post time periods for the ITS analysis vary by program. A two-year baseline, or pre period, will be used to establish a monthly trend for the outcome of interest during the two years prior to the population's carve-in to MMC or change in MMC program. The post period will continue for five years, ending on September 30 of the fifth year to align with DY/FFY, subject to data availability. Specific pre and post periods for each MMC population are listed in Table 10.

Table 10. Pre and Post Periods for Medicaid Managed Care Interrupted Time Series Analysis

MMC Population	Pre Period	Post Period
Children's Medicaid Dental Services	March 1, 2010-February 29, 2012	March 1, 2012 – September 30, 2020
Nursing Facility	March 1, 2013 – February 28, 2015	March 1, 2015 – September 30, 2020
Former Foster Care Children Adoption Assistance Permanency Care Assistance Medicaid for Breast and Cervical Cancer	September 1, 2015-August 31, 2017	September 1, 2017 – September 30, 2022

Note. MMC=Medicaid managed care. Pre period establishes baseline two years prior to MMC carve-in or shift in MMC program, post period starts with MMC carve-in or shift in MMC program.

MMC Methodological Limitations

Due to the statewide implementation of Texas' Demonstration, the MMC evaluation is limited by the lack of true comparison groups. All Medicaid clients in the state are subject to participation in the Demonstration. As a result, comparisons can only be made among beneficiaries; therefore while a pre/post evaluation design or comparison to baseline may suggest improvements in outcomes due to the Demonstration, associations do not imply causality.

While population-level data for the MMC evaluation is a strength of this evaluation, the reliance on administrative claims and encounters can be a limitation. These data have been designed and collected for billing purposes, but are used in the evaluation to determine changes in access to and quality of care. However, most of the selected measures are validated and widely used for this purpose. While administrative data might be able to identify key cases and statistical trends, they are usually limited in providing finer detailed health or health behavior information. Additionally, the use of population-level data precludes the use of significance testing since probability sampling and sampling error do not apply to measurements of difference at the population level. The effect size of measured differences represent true differences, though they may or may not correspond to meaningful changes at the program level.

Finally, data lags pose a challenge in measuring and reporting any change in a timely manner (Schoenberg, Heider, Rosenthal, Schwartz, & Kaye, 2015). Data lags specifically impact the MMC (6-9 months lag) component of the Demonstration.

Overall Demonstration Evaluation Methods

A mixed methods approach will be used to evaluate three hypotheses specific to the Overall Demonstration. Sections following this overview provide more detail regarding the proposed measures, study populations, data sources/data collection methods, and proposed analytic methods.

Overall Demonstration Proposed Measures

A measure, or a series of measures, has been selected or developed to operationalize each hypothesis. Table 11 provides an overview of Overall Demonstration-specific hypotheses aligned with their respective measures. Specific details regarding each of the proposed measures can be found in Appendix C: Detailed Tables.

Table 11.Overall Demonstration Evaluation Design Overview

Evaluation Hypothesis	Measure(s)	Study Population	Data Source(s) or Data Collection Method(s)	Analytic Methods
Evaluation Question 4: Did the Demonstration impact the development and implementation of quality-based payment systems in Texas Medicaid?				
4.1 The Demonstration will result in the development and/or implementation of a variety of APMs in Texas Medicaid.	4.1.1 APMs (planned and/or implemented) 4.1.2 Perceived barriers to developing and/or implementing APMs 4.1.3 Perceived benefits to developing/ implementing APMs	• MCOs • DSRIP performing providers	• MCO APM reporting tool • APM survey	• Content analysis • Descriptive statistics, as applicable • Thematic content analysis

Evaluation Hypothesis	Measure(s)	Study Population	Data Source(s) or Data Collection Method(s)	Analytic Methods
Evaluation Question 5: Did the Demonstration transform the health care system for the MLIU population in Texas?				
5.1 The Demonstration will result in a reduction of potentially preventable ED use for the MLIU population.	5.1.1 Rate of potentially preventable emergency department use	• MLIU individuals	• Texas Emergency Department Data from THCIC	• Interrupted time series
5. 2 The Demonstration will result in overall cost savings as compared to the Medicaid program without the Demonstration, as shown in the budget neutrality calculation.	5.2.1 Demonstration cost growth rate	• MLIU individuals	• Demonstration Budget Neutrality Worksheet	• Descriptive trend analysis

Note. APM=Alternative payment model; MCO=Managed care organization; DSRIP=Delivery System Reform Incentive Payment; MLIU=Medicaid and low-income uninsured; ED=Emergency department; THCIC= Texas Health Care Information Collection.

Overall Demonstration Study Populations

Each hypothesis in this section has a unique study population described here.

- **DSRIP Performing Providers** – Providers who are eligible to receive DSRIP incentive payments must have a current Medicaid provider identification number. Performing providers include hospitals, CMHCs, LHDs, and physician practices. Performing providers are responsible for: 1) implementing Core Activities to achieve the Category C Measure Bundles and Measures; and 2) measuring, reporting, and improving performance on the Category C Measures and Measure Bundles.

- **Managed Care Organizations (MCOs) –** The health plans contracted with HHSC to administer Medicaid services through a network of contracted providers for the Medicaid clients enrolled in their plan.

- **Medicaid and Low-Income Uninsured (MLIU) Individuals**– The number of MLIU individuals served by the performing provider during the DY. The MLIU are a subset of the total patient population by provider, which are the total number of individuals served in a provider

Overall Demonstration Data Sources and Collection Plan

The evaluation will include multiple sources and forms of qualitative and quantitative data and research methods to comprehensively evaluate the Overall Demonstration. These data include both primary and secondary data sources as described here.

Overall Demonstration Primary Data Sources

- **Alternative Payment Model (APM) Survey** - The DSRIP performing providers and MCOs will be surveyed regarding their experience planning and implementing APMs. This survey will be developed by the external evaluator but should include questions to address Evaluation Question 4 and related hypotheses in Table 11. In lieu of a stand-alone survey, external evaluators and HHSC may agree to include questions related to these hypotheses on existing reporting tools, such as the MCO APM Reporting Tool, DSRIP Annual Reporting, and/or RHP plan updates.

Overall Demonstration Secondary Data Sources

- **Budget Neutrality Worksheet –** HHSC and CMS work together to determine the total cost of the Demonstration. "Without waiver" costs are projections based on what the services provided would cost without the Demonstration. The "with waiver" calculations are made for all years of the Demonstration, basing past years are on actual costs and projecting future years.

- **Managed Care Organization (MCO) Alternative Payment Model (APM) Reporting Tool** - Starting September 1, 2018, MCOs will be required to report on their APM activity, both implemented and planned. Information from this tool will be used to learn about the types of APMs implemented throughout the Medicaid program in Texas.

- **Texas Emergency Department Data** - The Texas Department of State Health Services (DSHS) Health Care Information Collection (THCIC) began collecting ED data from hospitals on January 1, 2015, and is available starting with ED visits in 2016. The Texas Emergency Department data set includes individual-level data for inpatient and outpatient visits involving the ED.

Overall Demonstration Proposed Analytic Methods

The qualitative and quantitative analytic methods proposed for the overall Demonstration evaluation are described below.

Overall Demonstration Qualitative Analysis

Content Analysis

Through content analysis, documents (i.e., MCO APM reporting tool) will be systematically examined to extract descriptive data that can be quantified (Vaismoradi, Turunen, & Bondas, 2013) in a structured dataset. This method will be used to identify the types of APMs MCOs have with MMC providers Once the documents have been reviewed and extracted data categorized, descriptive statistics specific to the type of APM, provider type participating in the APM, etc. will be calculated.

Thematic Content Analysis

Thematic content analysis will be used to evaluate responses to any open-ended questions related to APM planning and/or implementation and perceived barriers/benefits to their development and implementation in Texas Medicaid. These questions may be included on the APM survey or other reporting documents as described in the Overall Demonstration data sources sections. Thematic content analysis will be used to analyze and interpret responses for emerging themes among DSRIP performing providers and MCOs. Through this method, documents are coded, and then codes are grouped together using inductive or deductive reasoning as themes among codes consistently emerge (Vaismoradi, Turunen, & Bondas, 2013).

Overall Demonstration Quantitative Analysis

Quantitative methods will also be used to evaluate the overall Demonstration. Below is a description of the analytic strategies that will be used to examine the evaluation hypotheses.

Univariate and Bivariate Statistics

Descriptive statistics will examine results for selected measures for each year in the pre- and post-measurement timeframes. For example, bivariate analyses will be used to explore trends in beneficiaries' access to care, quality of care, etc. Three descriptive quantitative analysis methods will be used to examine health and health care outcomes: McNemar's chi-square, Mann-Whitney U Test, and Wilcoxon Signed Rank Test. These nonparametric tests are appropriate when data are categorical or continuous but do not meet the assumptions (e.g., normality) used by parametric tests. Parametric analyses (e.g., t-tests, etc.) may be used as appropriate.

Descriptive Trend Analysis

Descriptive trend analysis will be used if the recommended minimum measurement time points for ITS are not available (i.e., eight pre- and eight post-Demonstration measurement time points) or this method is inappropriate for the data available. Univariate or bivariate statistics will be calculated on the same population at two or more points in time to determine if a trend exists.

Interrupted Time Series

The ITS analysis uses aggregate data collected over equally spaced intervals before and after a policy change. A key assumption of ITS is that data trends before the policy change can be extrapolated to predict trends had the policy change not occurred. If the Demonstration has an impact on an outcome of interest, the post-expansion trend will have a statistically significant slope that is different from the pre-expansion trend. When properly executed, ITS is a valuable method to evaluate the success, failure, or unintended consequences of health care policy on outcomes (Lagarde, 2012). However, given the serial nature of ITS data, autocorrelation, nonstationarity, and seasonality need to be considered. Failing to assess and correct for these factors can lead to biased results (Wagner, Soumerai, Zhang, & Ross-Degnan, 2002). A key strength of ITS methodology is that a control site is not required, providing an alternate method of measuring the effect of an intervention "when randomization or identification of a comparison group are impractical" (Grimshaw, et al., 2003). Identifying comparison groups is not feasible due to the unique nature and statewide implementation of the Demonstration. The ITS method allows the target population to serve as its own comparison group in the pre/post analysis.

For outcome measures using ITS, the basic segmented regression model with one change point or intervention examines the relationship between the outcome of interest (Y_t) over time, before and after the policy change (e.g., specific DSRIP projects shifted to core activities):

$$Yt = \beta_0 + \beta_1 time + \beta_2 MMC\ expansion + \beta_3 postslope + \varepsilon_t$$

From the basic statistical model, β_0 reflects the baseline level of the outcome at the beginning of the baseline period before the Demonstration was renewed; β_1 estimates the trend before the Demonstration was renewed; β_2 estimates the immediate impact of the Demonstration renewal; and β_3 reflects the change in trend after the Demonstration was renewed. To ease interpretation, ITS results are presented as: baseline level, trend before Demonstration renewal, level change after Demonstration renewal, and trend after Demonstration renewal.

Pre and Post Time Periods for Interrupted Time Series

The pre and post time periods for the ITS analysis include a two-year baseline, or pre period, established during the two years prior to the Demonstration renewal.

The post period will continue for five years, depending on availability of the data (Table 10).

Overall Demonstration Methodological Limitations

There are several limitations to evaluating the overall Demonstration. First, given the statewide, multifaceted nature of the Demonstration, no valid comparison groups are available to compare outcomes under the conditions of the Demonstration to outcomes under baseline conditions. The proposed APM evaluation uses a newly-developed MCO APM Reporting Tool. While this tool underwent thorough review and vetting during its development, it has not yet been used so the quality and consistency of the self-reported MCO data is unknown at this time. Provider-level data gathered for the APM analysis will also be self-reported data.

Use of the Texas Emergency Department Data from THCIC is a strength of the Overall Demonstration evaluation since it contains individual-level data for Medicaid and uninsured individuals in Texas, but data are only available as of 2016. This allows for a pre/post comparison of ED outcomes before and after the Demonstration renewal (the focus of this evaluation), but does not allow for a comparison of outcomes earlier in the initial approval period or before the Demonstration began in FFY 2012.

Finally, the Budget Neutrality Worksheet includes actual Demonstration costs for years in which data are available ("with waiver'), but the "without waiver" costs are projections, as demonstrated by budget neutrality. While these simulated costs allow for a comparison of costs under Demonstration and non-Demonstration conditions, actual costs had the Demonstration not been implemented cannot be determined.

More broadly, the evaluation faces threats to internal validity from history and maturation. As noted, the Demonstration involves simultaneous implementation of multiple state efforts to address improvements in DSRIP/UC/MMC. These concurrent changes to the baseline conditions make it difficult to isolate the effect of one component, let alone determine which strategy is most successful. Maturation threats resulting from concurrent changes to economic, environmental (e.g., Hurricane Harvey), or demographic factors also present problems for causal inference.

Data Quality and Validation

The DSRIP reporting data is subject to compliance monitoring, the primary purpose of which is to validate data submitted by performing providers that serves as the basis of their DSRIP payments. As part of the approval of the DSRIP program, CMS required HHSC to contract with an independent assessor (also known as the compliance monitor) by the end of 2014, to conduct a transparent review of all RHPs established under DSRIP. The compliance monitor also performed additional reviews of the DSRIP projects to validate performance data reported by providers. With the extension of the waiver for the next several years, HHSC will continue to contract with a compliance monitor to validate provider performance data that serves as the basis for DSRIP payments. This validation includes a review of health outcomes and the population impact. Additionally, the compliance monitor may assist with other items as required by CMS during waiver negotiations. DSRIP performing providers are randomly selected for compliance monitoring and each has been selected at least once since the initiation of the DSRIP program.

The MMC encounter data have been processed by TMHP since January 1, 2004. TMHP performs internal edits for data quality and completeness. There is a six-month time lag for claims and encounter data. Prior analyses with Texas data showed that, on average, over 96 percent of the claims and encounters are complete by that time period.

Special Methodological Considerations

Given the Demonstration is a waiver renewal, Texas seeks to reduce evaluation reporting for MMC programs and populations now considered to be standard Medicaid policy that were rigorously evaluated and found to be successful (i.e., STAR and STAR+PLUS expansion to new SDAs). Additional results from the previous evaluation also found RHPs were successfully formed and DSRIP implemented (Texas Health and Human Services Commission, 2017). Therefore, this Evaluation Design Plan focuses on the CMS priority policy area of DSRIP (United States Government Accountability Office, 2018), continued evaluation of UC, and new MMC populations.

The Demonstration proposes to affect dynamic change throughout the health care delivery system for the MLIU population and providers in Texas. Systemic change does not occur quickly, and can rarely be measured immediately when it does

happen (Rose, 2001). Additionally, modifications to Demonstration operations and reporting present challenges to measuring changes in outcomes over time. Finally, data lags pose a challenge to measuring and reporting any change in a timely manner (Schoenberg, Heider, Rosenthal, Schwartz, & Kaye, 2015). Data lags specifically impact the UC (two-year lag) and the MMC (6-9 months lag) components of the Demonstration.

The evaluation of DSRIP involves several limitations, depending on the data source and analytic strategy. With regard to DSRIP provider reporting data, though DSRIP providers report the number of unique individuals served through their projects (DY2-6) and within their provider system (DY7-10), these counts are unique only at the performing provider level and cannot be aggregated across providers to enumerate the entire DSRIP population. It is unknown how many clients may participate in DSRIP activities implemented by multiple DSRIP performing providers. Additionally, DSRIP activities are intended to serve MLIU individuals, but 1) services are not limited to this population, and 2) it is not possible to link Medicaid clients with utilization of specific DSRIP services. Additionally, the change in reporting from project-level Category 1-4 reporting to provider-level Category A-D reporting means there is a lack of continuity in outcomes reporting, resulting in instrumentation threats to internal validity. While HLM is proposed to evaluate the DSRIP program, there may be insufficient Category C outcome data for these analyses.

Evaluating client-level DSRIP outcomes through encounter data also involves several drawbacks, including lack of data on the uninsured population and possible contamination of the treatment effect. Notably, the comparison group of non-DSRIP providers may have similar, non-DSRIP initiatives focused on the outcome of interest (e.g., diabetes control), which may dilute the treatment effect of DSRIP. It is also possible that some clients may receive care from both DSRIP and non-DSRIP providers, raising the possibility of individuals who are in both the treatment and comparison groups simultaneously.

Due to the statewide implementation of Texas' Demonstration, the MMC evaluation is limited by the lack of true comparison groups. All Medicaid clients in the state are subject to participation in the Demonstration. As a result, comparisons can only be made among beneficiaries; therefore while a pre/post evaluation design or comparison to baseline may suggest improvements in outcomes due to the Demonstration, associations do not imply causality.

The staggered expansion of DSRIP activities and MMC statewide, including geographic variations in implementation, present challenges for rigorous evaluation. Many components of the detailed evaluation design plan will need to be deferred until after additional DSRIP deliverables are available (Transition Plan STC 37 due October 1, 2019 and DSRIP protocols for DY9-10 due July 31, 2019). Additional amendments to STCs may require updates to the evaluation plan (STC 7(g)). Any changes will be reflected in STC Attachment S (Evaluation Design) tracking document (Appendix A: Document History Log).

While population-level data for the MMC evaluation is a strength of this evaluation, the reliance on administrative claims and encounters can be a limitation. These data have been designed and collected for billing purposes, but are used to determine changes in access to and quality of care. However, most of the selected measures are validated and widely used for this purpose. While administrative data might be able to identify key cases and statistical trends, they are usually limited in providing finer detailed health or health behavior information. Additionally, the use of population-level data precludes the use of significance testing since probability sampling and sampling error do not apply to measurements of difference at the population level. The effect size of measured differences represent true differences, though they may or may not correspond to meaningful changes at the program level.

Finally, history and maturation pose threats to the internal validity of the evaluation. Notably, the Demonstration involves simultaneous implementation of multiple state efforts to address improvements in DSRIP/UC/MMC. These concurrent changes to the baseline conditions make it difficult to isolate the effect of one component, let alone determine which strategy is most successful. Maturation threats resulting from concurrent changes to economic, environmental (e.g., Hurricane Harvey), or demographic factors also present problems for causal inference. However, the most serious confound in the evaluation is the COVID-19 pandemic, which coincides with the final three years of the Demonstration. The pandemic and ensuing economic recession significantly reordered priorities for clients and providers in the state, impacting enrollment, utilization, and health care delivery across the Medicaid system. HHSC anticipates the COVID-19 pandemic will have a direct or indirect impact on many of the measures used in this evaluation. At the time of writing, it is unknown how long the most severe effects of the pandemic will last. External evaluators will take care to adjust to the evaluation as necessary, and present pertinent findings within the appropriate context given the impact of the COVID-19 pandemic on the Demonstration.

Communication, Dissemination, and Reporting

The Interim and Summative Evaluation reports will be produced in alignment with the Attachment P of the STCs, *Preparing the Evaluation Report,* and the schedule of deliverables listed in the timeline (Table 12).

After the Interim Evaluation report is submitted, we will revisit the evaluation questions in the evaluation design plan to determine their relevance with respect to the Summative Evaluation. If revisions are necessary, we will work collaboratively with HHSC, CMS, and consider other stakeholder feedback to ensure the evaluation questions will provide meaningful information regarding the impact of the Demonstration.

Table 12. Schedule of Evaluation Deliverables

Deliverable	Date
STCs approved for the 1115(a) Waiver renewal	December 21, 2017
HHSC submits draft Evaluation Design Plan to CMS for comments and posts to the state's Demonstration website (no later than 120 calendar days after approval of demonstration extension)	April 19, 2018
HHSC received comments from CMS (no later than 60 business days of receipt of draft Evaluation Design Plan)	May 10, 2018
HHSC submits revised Evaluation Design (no later than 60 calendar days of receipt of CMS comments) and posts to the state's Demonstration website	July 9, 2018
HHSC procures an independent evaluator	By September 1,2019
HHSC submits draft Interim Evaluation Report to CMS for comment	September 30, 2021
HHSC receives comments from CMS (within 60 business days)	By December 29, 2021
HHSC submits final Interim Evaluation Report to CMS (within 60 calendar days of receipt of comments)	By March 28, 2022
HHSC submits draft Final Evaluation Report to CMS for comment	March 30, 2024
HHSC receives comments from CMS (within 60 business days)	By June 24, 2024
HHSC submits Final Evaluation Report to CMS (within 60 calendar days of receipt of comments)	By September 18, 2024

Note. STC=Special Terms and Conditions; HHSC=Health and Human Services Commission; CMS=Centers for Medicare and Medicaid Services.

State Presentations for the Centers for Medicare and Medicaid Services (CMS)

As specified in STC 71, if requested by CMS, Texas will participate in discussions with and/or present to CMS the Evaluation Design plan and/or evaluation findings.

Public Access

Texas shall post final versions of the Evaluation Design Plan, Interim Evaluation Report, and Summative Evaluation Report on the state's DSRIP website within 30 days of approval by CMS (STC 72).

Additional Publications and Presentations

Attachment O to the STCs, *Developing the Evaluation Design,* endorses dissemination of 1115(a) Demonstration evaluation findings on "what is or is not working and why," Texas proposes a protocol for communicating evaluation publications and presentations incorporating direction from CMS STC 73. Texas HHSC CADS Evaluation will make every effort to provide CMS ten (10) business days to review and comment on manuscripts and presentations submitted to a journal, or conference for consideration of publication or acceptance for presentation, respectively. Although STC 73 also refers to 'contractors and any third party directly connected to the demonstration,' HHSC CADS can only impose this requirement for CMS review on CADS evaluators and evaluation contractors, not other parties involved with the Demonstration in other ways (i.e., DSRIP performing providers).

Additionally, all peer-reviewed and non-peer-reviewed publications and presentations will be listed as an appendix in the Interim and Summative Evaluation Reports.

Appendix A: Document History Log

Table A1. Document History Log

Status[1]	Document Revision[2]	Effective Date	Description[3]
Baseline	n/a	April 20,2018	Initial version of STC Attachment S: "Evaluation Design Plan "
Revision	2.1	July 9, 2018	Updated based on CMS feedback received May 10, 2018
Revision	3.1	March 11, 2020	Updated technical specifications for Measure 3.5.2
Revision	4.1	November 6, 2020	Added Appendix F: Supplemental Evaluation Design for the Texas COVID-19 Public Health Emergency 1115(a) Demonstration Amendment
Revision	5.1	January 8, 2021	Updated sampling strategy, analytic methods, and measures associated with Hypothesis 1.2 Updated select measure specifications or analytic methods the external evaluator deemed infeasible Added COVID-19 pandemic to the Special Methodological Considerations
Revision	5.2	November 17, 2021	Addressed CMS feedback to Revision 5.1

Note. STC=Special Terms and Conditions; CMS=Centers for Medicare and Medicaid Services.

[1] Status should be represented as "Baseline" for initial issuances, "Revision" for changes to the Baseline version, and "Cancellation" for withdrawn versions.

[2] Revisions should be numbered according to the version of the issuance and sequential number of the revision - e.g., "1.2" refers to the first version of the document and the second revision.

[3] Brief description of the changes to the document made in the revision.

Appendix B: Independent Evaluator and Budget

The Special Terms and Conditions (STCs) state the Demonstration evaluation must be conducted by an independent evaluator. To meet this requirement, Health and Human Services Commission (HHSC) will identify and contract with an independent external evaluator.

External Independent Evaluator

Required Qualifications

HHSC will select an independent evaluator with the expertise, experience, and impartiality to conduct a scientifically rigorous program evaluation meeting all requirements specified in the STCs, including the skills needed to examine measures in Appendix C, and meet deadlines in table 5 (Schedule of Evaluation Deliverables). Required qualifications and experience include multi-disciplinary health services research skills and experience; an understanding of and experience with the Medicaid program; familiarity with Texas HHSC programs and populations; and experience conducting complex, multi-faced evaluations of large, multi-site health and/or social services programs.

Potential evaluation entities will be assessed on their relevant work experience, staff expertise, data management and analytic capacity, experience working with state agency program and research staff, proposed resource levels and availability of key staff, track record of related publications in peer-reviewed journals, and the overall quality of their proposal. Proposed deliverables must meet all standards of leading academic institutions and academic journal peer review. In the process of identifying, selecting, and contracting with an independent external evaluator, Texas will act appropriately to prevent a conflict of interest with the independent external evaluator, including the requirement to sign a declaration of "No Conflict of Interest."

HHSC will pursue a contract to secure independent evaluation services from a Texas university. The contracting process includes development of a project proposal and quote request specifying the Scope of Work, vendor qualifications, vendor requirements, timelines, milestones, and cost estimate template. The cost estimate template will include a breakdown of costs for staffing, fringe benefit, travel, equipment and supplies, data collection, other administrative, and indirect costs.

The project proposal and quote request is sent to the list of Texas universities allowing 30 calendar days for response. A team of reviewers at HHSC will be identified prior to the submission deadline of proposals. Each proposal submitted in response to the request will be reviewed by the HHSC team of reviewers. Respondents with the best proposal and value are identified by the team. HHSC will make a final decision for contract award based on the strength of the overall proposal and the abilities of the external entity to satisfy the requirements of the project proposal and quote request and conduct the independent evaluation in the timeframe required. The contracting process begins once a university is selected.

The timeframe for soliciting and contracting for an independent evaluator is 6-12 months from the date an Evaluation Design Plan is approved by the Centers for Medicare and Medicaid Services (CMS).

Evaluation Budget

As required by CMS in Attachment O of the STCs, Section F(2), the proposed budget shell includes: total estimated cost, estimated staff, administrative, and other costs for all aspects of the evaluation. The total budget for the external independent evaluator is estimated to be approximately $6 million for five years (September 1, 2019 through August 31, 2024)[5], but the final budget will not be available until the external evaluator is selected. The estimated budget amount will cover all evaluation expenses, including salary, fringe, administrative costs, other direct costs such as travel for data collection, conference calls, as well as indirect costs and those related to quantitative and qualitative data collection and analysis, and report development.

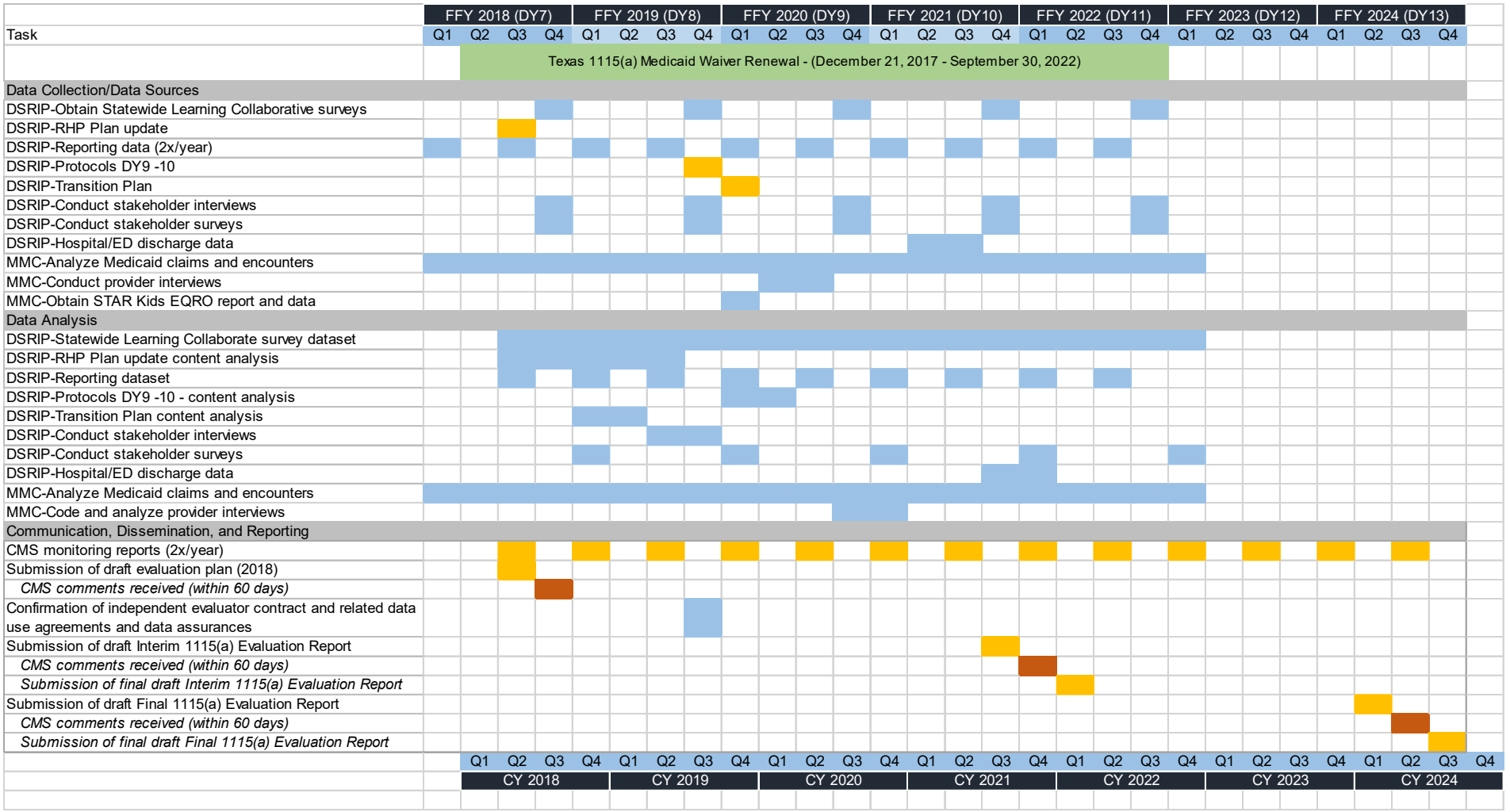
As part of the contracting process, potential contractors will populate the budget shell (Table B1).

[5] The external evaluator timeframe, September 1, 2019 through August 31, 2024, is based on the time needed for the Centers for Medicare and Medicaid Services (CMS) to approve the Evaluation Design Plan and to contract with an External Evaluator. The contract timeframe extends through CMS approval of the final Summative Evaluation Report, allowing time for External Evaluators to address any CMS comments/questions.

Table B1. Proposed Evaluation Budget

Category	Total Cost
Personnel	
Fringe	
Travel	
Indirect Costs	
Data Collection	
Equipment/Supplies	
Other Administrative Costs	
TOTAL EVALUATION COST	

Table B2. Estimated Evaluation Timeline and Major Milestones



Note. FFY=Federal fiscal year, October 1-September 30; DY=Demonstration year, October 1-September 30; Q1=October, November, and December; Q2=January, February, and March; Q3=April, May, and June; Q4=July, August, and September; DSRIP=Delivery System Reform Incentive Payment; RHP=Regional Healthcare Partnership; ED=Emergency department; MMC=Medicaid managed care; STAR Kids=MMC program for disabled through 20 years; EQRO=External quality review organization; CMS=Centers for Medicare and Medicaid Services; CY=Calendar year.

Appendix C: Detailed Tables

Evaluation Question 1: *Did the Delivery System Reform Incentive Payment (DSRIP) program incentivize changes to transform the health care system for the Medicaid and low-income uninsured (MLIU) population in Texas?*

Hypothesis 1.1: DSRIP incentivized changes to the health care system that maintained or increased collaboration among providers.

Measure 1.1.1	Type of collaboration
Definition	Ties, or collaborative relationships between organizations will be classified as: any collaboration, joint service delivery, resource sharing, data sharing, DSRIP learning collaborative, or HIE participation.
Study Population	• DSRIP performing providers
Measure Steward or Source	N/A
Technical Specifications	Ties identified will be categorized into all applicable categories: • Joint service delivery - working with another organization to provide services to patients • Resource sharing - two organizations share tangible resources (i.e., office space) • Data sharing - two organizations have a formal data sharing agreement to share patient data • DSRIP learning collaborative - two organizations attend the same DSRIP learning collaborative • HIE membership • Any collaboration - working with another organization in any capacity
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting (sampling frame) • Social network analysis survey • Learning collaborative reporting, if necessary
Comparison Group(s)/ Subgroup(s)	• RHP subgroups • DSRIP performing provider status subgroups
Analytic Methods	• Social network analysis • Descriptive statistics, including trend analysis with DY2-5 data, if possible
Benchmark	None

Note. DSRIP=Delivery System Reform Incentive Payment; HIE=Health information exchange; RHP=Regional Healthcare Partnership; DY=Demonstration year, October 1-September 30.

Measure 1.1.2	Number of ties
Definition	Count of ties, or collaborative relationships, between organizations
Study Population	• DSRIP performing providers
Measure Steward or Source	N/A
Technical Specifications	If an organization indicates it collaborates with another organization, this tie is counted. The collaboration does not necessarily need to be confirmed by the other organization. Unconfirmed (one-way, identified by one organization) and confirmed ties (ties identified by both organizations) are counted as one tie.
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting (sampling frame) • Social network analysis survey
Comparison Group(s)/ Subgroup(s)	• RHP subgroups • DSRIP performing provider status subgroup
Analytic Methods	• Social network analysis • Descriptive statistics, including trend analysis with DY2-5 data, if possible
Benchmark	None

Note. DSRIP=Delivery System Reform Incentive Payment; RHP=Regional Healthcare Partnership; DY=Demonstration year, October 1-September 30.

Measure 1.1.3	Strength of ties (multiplexity)
Definition	Indicated by the number of ties between two organizations. Organizations can have up to five types of ties between one another: joint service delivery, resource sharing, data sharing, DSRIP learning collaborative, and/or HIE membership. The greater number of types of ties between the pair, the stronger the tie.
Study Population	• DSRIP performing providers
Measure Steward or Source	N/A
Technical Specifications	The count of the types of ties shared by two organizations is the strength of the tie. For example, if two organizations share one type of tie, the strength of the tie is 1; if they share two types of ties, the strength of the tie is 2, etc.
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting (sampling frame) • Social network analysis survey
Comparison Group(s)/ Subgroup(s)	• RHP subgroups • DSRIP performing provider status subgroup
Analytic Methods	• Social network analysis • Descriptive statistics, including trend analysis with DY2-5 data, if possible
Benchmark	None

Note. DSRIP=Delivery System Reform Incentive Payment; HIE=Health information exchange; RHP=Regional Healthcare Partnership; DY=Demonstration year, October 1-September 30.

Measure 1.1.4	Density
Definition	The proportion of ties that exist among the ties that are possible. If all organizations in a network share ties (indicate they work together) the density of ties in the network is 100%.
Study Population	• DSRIP performing providers
Measure Steward or Source	N/A
Technical Specifications	Calculated as a percent: **Numerator:** Number of ties that exist among organizations (regardless of strength of the ties) **Denominator:** Total number of ties possible within the network among DSRIP performing providers **Density:** (numerator / denominator) * 100
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting (sampling frame) • Social network analysis survey
Comparison Group(s)/ Subgroup(s)	• RHP subgroups • DSRIP performing provider status subgroup
Analytic Methods	• Social network analysis • Descriptive statistics, including trend analysis with DY2-5 data, if possible
Benchmark	None

Note. DSRIP=Delivery System Reform Incentive Payment; RHP=Regional Healthcare Partnership; DY=Demonstration year, October 1-September 30.

Measure 1.1.5	Centralization
Definition	The degree to which ties are concentrated, or centered on one or more organizations in the network.
Study Population	• DSRIP performing providers
Measure Steward or Source	N/A
Technical Specifications	Network centralization is calculated using degree centrality for each individual node in the network (Hoff, n.d.):[6] **Numerator**: Sum of differences between each node's centrality and the centrality of the most central node **Denominator**: The maximum sum of differences between a perfectly central actor and all others; calculated as (n-1)*(n-2) in a network of n organizations **Centralization**: (numerator / denominator)
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting (sampling frame) • Social network analysis survey
Comparison Group(s)/ Subgroup(s)	• RHP subgroups • DSRIP performing provider status subgroups
Analytic Methods	• Social network analysis • Descriptive statistics, including trend analysis with DY2-5 data, if possible
Benchmark	None

Note. DSRIP=Delivery System Reform Incentive Payment; RHP=Regional Healthcare Partnership; DY=Demonstration year, October 1-September 30.

[6] Technical specifications reflect best practices for calculating network adequacy at the time of writing.

Measure 1.1.6	Attitude toward collaboration
Definition	How positively or negatively an organization views collaboration with other organizations.
Study Population	• DSRIP performing providers
Measure Steward or Source	None
Technical Specifications	Organizations participating in the structured interview for the social network analysis will be asked questions indicating how they feel about collaborating with other RHP member and non-member organizations. Attitudes toward collaboration will be measured on a Likert-type scale (1-5). Organizations will also be given the opportunity to provide additional comments regarding collaboration (open-ended).
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting (sampling frame) • Social network analysis survey
Comparison Group(s)/ Subgroup(s)	• RHP subgroups • DSRIP performing providers status subgroups
Analytic Methods	• Descriptive statistics, including trend analysis with DY2-5 data, if possible • Thematic content analysis (open-ended responses)
Benchmark	None

Note. DSRIP=Delivery System Reform Incentive Payment; RHP=Regional Healthcare Partnership; DY=Demonstration year, October 1-September 30.

Measure 1.1.7	Health information exchange membership
Definition	DSRIP performing providers who belong to HIE(s). DSRIP performing providers will be classified as HIE members or non-members, as well as the number of HIEs to which they belong.
Study Population	• DSRIP performing providers
Measure Steward or Source	None
Technical Specifications	DSRIP performing providers will be asked to report membership in HIE(s). They will be asked to report the name of the HIE(s) to which they belong.
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting
Comparison Group(s)/ Subgroup(s)	• RHP subgroups
Analytic Methods	• Descriptive statistics
Benchmark	None

Note. DSRIP=Delivery System Reform Incentive Payment; HIE=Health information exchange; RHP=Regional Healthcare Partnership.

Measure 1.1.8	Use of health information exchange data for Delivery System Reform Incentive Payment reporting
Definition	DSRIP performing providers who use information from HIEs in their DSRIP reporting.
Study Population	• DSRIP performing providers
Measure Steward or Source	None
Technical Specifications	DSRIP performing providers will be asked to provide the source of information used in DSRIP reporting, for both numerators and denominators, where appropriate. Data sources may include, but are not limited to: electronic health records, claims data, HIE, etc. **Numerator:** Number of providers using HIE as a data source for at least one measure **Denominator:** Number of DSRIP performing providers submitting reporting for Category A-D **Use of HIE data (%):** (numerator / denominator) * 100
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting
Comparison Group(s)/ Subgroup(s)	• RHP subgroups
Analytic Methods	• Descriptive statistics
Benchmark	None

Note. DSRIP=Delivery System Reform Incentive Payment; HIE=Health information exchange; RHP=Regional Healthcare Partnership.

Hypothesis 1.2: DSRIP incentivized performing providers to improve continuity, quality, and cost of care for Medicaid clients with Diabetes.

Measure 1.2.1	Usual provider of care
Definition	Maximum value of the proportion of office visits to the same provider (same TPI) over all office visits
Study Population	• Medicaid clients with a diagnosis of diabetes
Measure Steward or Source	N/A

Technical Specifications	• Obtain FFS and MMC clients with a diagnosis of diabetes according to the HEDIS® Value Set: Diabetes during DY7
	• For each client, count the number of office visits using:
	  ○ CPT codes for new or established office/outpatient visit (99201-99215), new or established preventative care (99381-99397), or clinic visit/encounter, all inclusive (T1015); or
	  ○ Place codes for office, hospital outpatient, rural health clinic, federally qualified health center, or public health clinic
	• Calculate each provider's share of total office visits as the number of office visits to the provider divided by the total number of office visits over 24 months.
	• Designate the usual provider as the provider with the largest share of visits over 24 months

Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Clients treated by DSRIP providers matched to clients treated by non-DSRIP providers • Race/ethnicity • RHP subgroups

Analytic Methods	• DID between Medicaid clients seen by a DSRIP providers versus non-DSRIP providers
	  ○ Proposed pre-period: 24-months before client index date*
	  ○ Proposed post-period: 24-months after client index date

Benchmark	None

Note. TPI = Texas Provider Identifier; FFS = Fee-for-service; MMC=Medicaid managed care; HEDIS®=Healthcare Effectiveness Data and Information Set; DY=Demonstration year, October 1-September 30; CPT=Current Procedural Terminology; DSRIP=Delivery System Reform Incentive Payment; RHP=Regional Healthcare Partnership; DID = Difference-in-difference.*The client index date is the date of the client's first diabetes-related visit to a DSRIP or non-DSRIP provider in DY7.

Measure 1.2.2	Interval between provider visits
Definition	The longest interval between office visits to the same PCP during the measurement period
Study Population	• Medicaid clients with a diagnosis of diabetes
Measure Steward or Source	N/A

Technical Specifications	• Obtain FFS and MMC clients with a diagnosis of diabetes according to the HEDIS® Value Set: Diabetes during DY7
	• For each client, count the number of office visits using:
	  ○ CPT codes for new or established office/outpatient visit (99201-99215), new or established preventative care (99381-99397), or clinic visit/encounter, all inclusive (T1015); or
	  ○ Place codes for office, hospital outpatient, rural health clinic, federally qualified health center, or public health clinic
	• Calculate the longest interval between office visits to the same PCP during the measurement period.
	6-month interval: Number of clients in which the longest interval is 8 months or less (6 months with buffer) over a 24-month measurement period
	12-month interval: Number of clients in which the longest interval is 14 months or less (12 months with buffer) over a 24-month measurement period

Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Clients treated by DSRIP providers matched to clients treated by non-DSRIP providers • Race/ethnicity • RHP subgroups

Analytic Methods	• DID between Medicaid clients seen by a DSRIP providers versus non-DSRIP providers
	  ○ Proposed pre-period: 24-months before client index date*
	  ○ Proposed post-period: 24-months after client index date

Measure 1.2.2	Interval between provider visits
Benchmark	None

Note. PCP=Primary care provider; FFS = Fee-for-service; MMC=Medicaid managed care; HEDIS®=Healthcare Effectiveness Data and Information Set; DY=Demonstration year, October 1-September 30; CPT=Current Procedural Terminology; DSRIP=Delivery System Reform Incentive Payment; RHP=Regional Healthcare Partnership; DID = Difference-in-difference. *The client index date is the date of the client's first diabetes-related visit to a DSRIP or non-DSRIP provider in DY7.

Measure 1.2.3	Testing HbA1c levels
Definition	Individuals with HbA1c tests during the measurement period
Study Population	• Medicaid clients with a diagnosis of diabetes
Measure Steward or Source	N/A
Technical Specifications	• Obtain FFS and MMC clients with a diagnosis of diabetes according to the HEDIS® Value Set: Diabetes during DY7 • Find all dates for HbA1c test using CPT codes 83036, 83037, 83020 or 83021 **HbA1c testing**: Number of clients with at least two HbA1c tests within an interval of 14 months or less (12 months with buffer) over a 24-month measurement period
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Clients treated by DSRIP providers matched to clients treated by non-DSRIP providers • Race/ethnicity • RHP subgroups

Analytic Methods	• DID between Medicaid clients seen by a DSRIP providers versus non-DSRIP providers
	  ○ Proposed pre-period: 24-months before client index date*
	  ○ Proposed post-period: 24-months after client index date

Benchmark	None

Note. HbA1c= Glycosylated Hemoglobin, Type A1C; FFS = Fee-for-service; MMC=Medicaid managed care; HEDIS®=Healthcare Effectiveness Data and Information Set; DY=Demonstration year, October 1-September 30; CPT=Current Procedural Terminology; DSRIP=Delivery System Reform Incentive Payment; RHP=Regional Healthcare Partnership; DID = Difference-in-difference. *The client index date is the date of the client's first diabetes-related visit to a DSRIP or non-DSRIP provider in DY7.

Measure 1.2.4	Diabetes medication adherence
Definition	Overall proportion of days covered (PDC) for diabetes medications
Study Population	• Medicaid clients with a diagnosis of diabetes
Measure Steward or Source	PQA, as detailed in CMS' Quality Rating System*
Technical Specifications	• Obtain FFS and MMC clients with a diagnosis of diabetes according to the HEDIS® Value Set: Diabetes during DY7 • Identify pharmaceutical claims for clients diagnosed with diabetes consisting of non-insulin diabetes medications PDC is the number of "covered" days in the measurement period divided by the number of days in the measurement period. PDC will be calculated for PQA's "Diabetes All Class" therapeutic category. **Numerator:** Number of clients who met the 80% PDC threshold during the measurement year, for the "Diabetes All Class" therapeutic category **Denominator:** Number of clients (18 years or older on first day of measurement year) with at least two prescriptions filled **Annual rate:** (Numerator / denominator)*100
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level pharmacy data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Clients treated by DSRIP providers matched to clients treated by non-DSRIP providers • Race/ethnicity • RHP subgroups

Analytic Methods	• DID between Medicaid clients seen by a DSRIP providers versus non-DSRIP providers
	  ○ Proposed pre-period: 24-months before client index date**
	  ○ Proposed post-period: 24-months after client index date

Benchmark	None

Note. PDC=Proportion of days covered; PQA = Pharmacy Quality Alliance; CMS=Centers for Medicare and Medicaid Services; FFS = Fee-for-service; MMC=Medicaid managed care; HEDIS®=Healthcare Effectiveness Data and Information Set; DY=Demonstration year, October 1-September 30; DSRIP=Delivery System Reform Incentive Payment; RHP=Regional Healthcare Partnership; DID = Difference-in-difference. *https://www.cms.gov/files/document/2021-qrs-measure-technical-specifications.pdf **The client index date is the date of the client's first diabetes-related visit to a DSRIP or non-DSRIP provider in DY7.

Measure 1.2.5	Emergency department visits for diabetes
Definition	ED visits with a primary or secondary diagnosis of diabetes
Target Population(s)	• Medicaid clients with a diagnosis of diabetes
Measure Steward or Source	Based on DSRIP Measure Bundle Protocol, Measure A1-508 NYU Wagner: https://wagner.nyu.edu/faculty/billings/acs-algorithm
Technical Specifications	Clients with diabetes have a diagnosis according to the HEDIS® Value Set: Diabetes Number of ED visits with a primary or secondary diagnosis of diabetes per 1,000 clients during the measurement period
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Clients treated by DSRIP providers matched to clients treated by non-DSRIP providers • Race/ethnicity • RHP subgroups
Analytic Method(s)	• DID between Medicaid clients seen by a DSRIP providers versus non-DSRIP providers ○ Proposed pre-period: 24-months before client index date* ○ Proposed post-period: 24-months after client index date
Benchmark	None

Note. ED=Emergency Department; DSRIP=Delivery System Reform Incentive Payment; NYU=New York University; HEDIS®=Healthcare Effectiveness Data and Information Set; FFS=Fee-for-service; MMC=Medicaid Managed Care; RHP=Regional Healthcare Partnership; DID = Difference-in-difference.
*The client index date is the date of the client's first diabetes-related visit to a DSRIP or non-DSRIP provider in DY7.

Measure 1.2.6	Cost of Care
Definition	Cost of care for Medicaid clients with diabetes
Target Population(s)	• Medicaid clients with a diagnosis of diabetes
Measure Steward or Source	N/A
Technical Specifications	Clients with diabetes have a diagnosis according to the HEDIS® Value Set: Diabetes Cost of care based on all encounters data for each client with diabetes during the measurement period
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level pharmacy data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Clients treated by DSRIP providers matched to clients treated by non-DSRIP providers • Race/ethnicity • RHP subgroups

Analytic Method(s)	• DID between Medicaid clients seen by a DSRIP providers versus non-DSRIP providers
	  ○ Proposed pre-period: 24-months before client index date*
	  ○ Proposed post-period: 24-months after client index date

Benchmark	• None

Note. HEDIS®=Healthcare Effectiveness Data and Information Set; FFS=Fee-for-service; MMC=Medicaid Managed Care; DSRIP=Delivery System Reform Incentive Payment; RHP=Regional Healthcare Partnership; DID = Difference-in-difference. *The client index date is the date of the client's first diabetes-related visit to a DSRIP or non-DSRIP provider in DY7.

Hypothesis 1.3: DSRIP incentivized performing providers to improve quality-related outcomes, specified as Category C population-based clinical outcome measures.

Measure 1.3.1	**Rate of emergency department visits for diabetes (A1-508*)**
Definition	The rate of ED utilization for preventable diabetes conditions or complications. This is a Category C measure in the measure bundle, A1: Improved Chronic Disease Management: Diabetes Care.
Target Population(s)	• MLIU sub-populations identified in DSRIP performing provider systems (adults with diabetes)
Measure Steward or Source	NYU Wagner: https://wagner.nyu.edu/faculty/billings/acs-algorithm
Technical Specifications	Following DSRIP Category C Measure Specifications, performing providers will report the numerator and denominator necessary to calculate a weighted and unweighted rate of ED visits for diabetes among the attributed target population in their provider system: **Numerator:** Total number of ED visits with a primary or secondary diagnosis of diabetes (E101, E131, E110, E130, E10641, E11641, E106, E116, E108, E118, E109, E119) **Denominator:** DSRIP attributed target population for the provider system **Rate:** (numerator / denominator) * 100 Note: Rate may be presented per 10,000 clients if prevalence is low
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting: Provider reported rate • RHP plan update: Provider and RHP characteristics for HLM model • DSRIP administrative data: Provider and RHP characteristics for HLM model
Comparison Group(s)/ Subgroup(s)	• RHP subgroups
Analytic Method(s)	• Descriptive trend analysis ○ Paired t-test or Wilcoxon signed-rank test • Hierarchical linear modeling or growth curve modeling, if feasible
Benchmark	• Baseline established CY17 • DY7 goal of 2.5% improvement over baseline • DY8 goal of 10% improvement over baseline

Note. ED=Emergency department; MLIU=Medicaid and low-income uninsured; NYU=New York University; DSRIP=Delivery System Reform Incentive Payment; RHP=Regional Healthcare Partnership; HLM=Hierarchical linear model; CY=Calendar year; DY=Demonstration year, October 1-September 30. *Selected Category C measure from the Measure Bundle Protocol (Texas Health and Human Services Commission, 2018).

Measure 1.3.2	Rate of emergency department visits for congestive heart failure, angina, and hypertension (A2-509*)
Definition	The rate of ED utilization for CHF, angina, and hypertension. This is a Category C measure in the measure bundle, A2: Improved Chronic Disease Management: Heart Disease.
Study Population	• MLIU sub-populations identified in DSRIP performing provider systems (adults with heart disease)
Measure Steward or Source	NYU Wagner: https://wagner.nyu.edu/faculty/billings/acs-algorithm
Technical Specifications	Following DSRIP Category C Measure Specifications, performing providers will report the numerator and denominator necessary to calculate a weighted and unweighted rate of ED visits for CHF, angina, and hypertension among the attributed target population in their provider system: **Numerator:** Total number of ED visits with a primary or secondary diagnosis of heart failure and pulmonary edema (I50, I110, J810), hypertension (I10, I119), or angina (I20, I240, I248, I249) **Denominator:** DSRIP attributed target population for the provider system **Rate:** (numerator / denominator) * 100 Note: Rate may be presented per 10,000 clients if prevalence is low
Exclusion Criteria	Numerator exclusions: • Heart failure/pulmonary edema and hypertension: Exclude cases with a surgical procedure starting with 02 • Angina: Exclude cases with a surgical procedure starting with 0 or 1
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting: Provider reported rate • RHP plan update: Provider and RHP characteristics for HLM model • DSRIP administrative data: Provider and RHP characteristics for HLM model
Comparison Group(s)/ Subgroup(s)	• RHP subgroups
Analytic Methods	• Descriptive trend analysis ○ Paired t-test or Wilcoxon signed-rank test • Hierarchical linear modeling or growth curve modeling, if feasible

Measure 1.3.2	Rate of emergency department visits for congestive heart failure, angina, and hypertension (A2-509*)
Benchmark	Improvement over self • Baseline established CY17 • DY7 goal of 2.5% improvement over baseline • DY8 goal of 10% improvement over baseline

Note. ED=Emergency department; CHF=Congestive heart failure; MLIU=Medicaid and low-income uninsured; DSRIP=Delivery System Reform Incentive Payment; NYU=New York University; RHP=Regional Healthcare Partnership; HLM=Hierarchical linear model; CY=Calendar year; DY=Demonstration year, October 1-September 30. *Selected Category C measure from the Measure Bundle Protocol (Texas Health and Human Services Commission, 2018).

Measure 1.3.3	Rates of emergency department visits for behavioral health and substance abuse (H2-510 / L1-387 / M1-387*)
Definition	The rates of ED utilization for BH and SA conditions (reported as two separate rates). This is a Category C measure in the measure bundle, H2: Behavioral health and appropriate utilization.
Study Population	• MLIU sub-populations identified in DSRIP performing provider systems (individuals with SMI)
Measure Steward or Source	HHSC-developed for DSRIP Measure Bundle Protocol DY7-10
Technical Specifications	Following DSRIP Category C Measure Specifications, performing providers will report the numerator and denominator necessary to calculate a weighted and unweighted rate of ED visits for each BH and SA conditions among the attributed target population in their provider system: **Rate 1 Numerator:** Total number of ED visits with a primary or secondary diagnosis of behavioral health conditions: • F20-F29 Schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders • F30-F39 Mood [affective] disorders • F40-F48 Anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders • F60-F69 Disorders of adult personality and behavior **Rate 2 Numerator:** Total number of ED visits with a primary or secondary diagnosis of substance abuse: • F10-F16, F18 - F19 Mental and behavioral disorders due to psychoactive substance use **Denominator (hospitals and physician practices):** DSRIP attributed target population for the provider system

Measure 1.3.3	Rates of emergency department visits for behavioral health and substance abuse (H2-510 / L1-387 / M1-387*)
	Denominator (LHDs, CMHCs): Either total number of ED visits for individuals 18 years or older during the measurement period OR DSRIP attributed target population for the provider system **Rate:** (numerator / denominator) * 100 Note: Rate may be presented per 10,000 clients if prevalence is low
Exclusion Criteria	Rate 2 numerator excludes nicotine
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting: Provider reported rate • RHP plan update: Provider and RHP characteristics for HLM model • DSRIP administrative data: Provider and RHP characteristics for HLM model
Comparison Group(s)/ Subgroup(s)	• RHP subgroups
Analytic Methods	• Descriptive trend analysis ○ Paired t-test or Wilcoxon signed-rank test • Hierarchical linear modeling or growth curve modeling, if feasible
Benchmark	• Baseline established CY17 • DY7 goal of 2.5% improvement over baseline • DY8 goal of 10% improvement over baseline

Note. ED=Emergency department; BH=Behavioral health; SA=Substance abuse; MLIU=Medicaid and low-income uninsured; DSRIP=Delivery System Reform Incentive Payment; SMI=Serious mental illness; HHSC=Health and Human Services Commission; DY=Demonstration year, October 1-September 30; LHD=Local health department; CMHC=Community mental health clinic; RHP=Regional Healthcare Partnership; HLM=Hierarchical linear modeling; CY=Calendar year. *Selected Category C measures from the Measure Bundle Protocol (Texas Health and Human Services Commission, 2018).

Measure 1.3.4	Prevention Quality Indicator 91: Adult acute composite indicator (C1-502*)
Definition	The PQI composite measure of acute conditions per 100,000 adult population. Includes admissions with a principal diagnosis of one of the following conditions: dehydration, bacterial pneumonia, or urinary tract infection. This is a Category C measure in the measure bundle, C1: Primary Care Prevention - Healthy Texans.
Study Population	• MLIU sub-populations identified in DSRIP performing provider systems (adults)
Measure Steward or Source	AHRQ: https://www.qualityindicators.ahrq.gov/Modules/PQI_TechSpec_ICD10_v70.aspx

Measure 1.3.4	Prevention Quality Indicator 91: Adult acute composite indicator (C1-502*)
Technical Specifications	This measure was developed by the AHRQ. Performing providers will report the numerator and denominator necessary to calculate a weighted and unweighted adult composite measure: **Numerator:** Number of discharges for clients 18 years and older in DSRIP attributed target population for the provider system, that meet the inclusion and exclusion rules for the numerator in any of the following PQIs: • PQI #10 Dehydration Admission Rate • PQI #11 Bacterial Pneumonia Admission Rate • PQI #12 Urinary Tract Infection Admission Rate Discharges are only counted once in the numerator, even if they qualify for more than one PQI listed above. **Denominator:** DSRIP attributed target population for the provider system (18 years and older) **Rate:** (numerator / denominator) * 100 Note: Rate may be presented per 10,000 clients if prevalence is low
Exclusion Criteria	Numerator excludes obstetric discharges, along with specific exclusion criteria listed in the PQI 10, 11, and 12 specifications
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting: Provider reported rate • RHP plan update: Provider and RHP characteristics for HLM model • DSRIP administrative data: Provider and RHP characteristics for HLM model
Comparison Group(s)/ Subgroup(s)	• RHP subgroups
Analytic Methods	• Descriptive trend analysis ○ Paired t-test or Wilcoxon signed-rank test • Hierarchical linear modeling or growth curve modeling, if feasible
Benchmark	• Baseline established CY17 • DY7 goal of 2.5% improvement over baseline • DY8 goal of 10% improvement over baseline

Note. PQI=Prevention Quality Indicator; MLIU=Medicaid and low-income uninsured; DSRIP=Delivery System Reform Incentive Payment; AHRQ=Agency for Healthcare Research and Quality; RHP=Regional Healthcare Partnership; HLM=Hierarchical linear model; CY=Calendar year; DY=Demonstration year, October 1-September 30. *Selected Category C measure from the Measure Bundle Protocol (Texas Health and Human Services Commission, 2018).

Measure 1.3.5	Pediatric Quality Indicator 91: Child acute composite indicator (D1-503*)
Definition	The PDI composite of acute conditions per 100,000 population, ages 3 months through 17 years. Includes admissions for gastroenteritis or urinary tract infection. This is a Category C measure in the measure bundle, D1: Pediatric Primary Care.
Study Population	• MLIU sub-populations identified in DSRIP performing provider systems (Children 3 months through 17 years)
Measure Steward or Source	AHRQ: https://www.qualityindicators.ahrq.gov/Modules/PDI_TechSpec_ICD10_v70.aspx
Technical Specifications	The PDI 91 composite measure was developed by AHRQ. Performing providers will report the numerator and denominator necessary to calculate a weighted and unweighted pediatric composite measure: **Numerator:** Number of discharges for clients 3 months through 17 years, that meet the inclusion and exclusion rules for the numerator in any of the following PDIs: • PDI 16 Gastroenteritis Admission Rate • PDI 18 Urinary Tract Infection Admission Rate Discharges are only counted once in the numerator, even if they qualify for more than one PDI listed above. **Denominator:** DSRIP attributed target population for the provider system (3 months through 17 years) **Rate:** (numerator / denominator) * 100 Note: Rate may be presented per 10,000 clients if prevalence is low
Exclusion Criteria	See measure source for specific inclusion and exclusion criteria.
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting: Provider reported rate • RHP plan update: Provider and RHP characteristics for HLM model • DSRIP administrative data: Provider and RHP characteristics for HLM model
Comparison Group(s)/ Subgroup(s)	• RHP subgroups
Analytic Methods	• Descriptive trend analysis ○ Paired t-test or Wilcoxon signed-rank test • Hierarchical linear modeling or growth curve modeling, if feasible

Measure 1.3.5	Pediatric Quality Indicator 91: Child acute composite indicator (D1-503*)
Benchmark	• Baseline established CY17 • DY7 goal of 2.5% improvement over baseline • DY8 goal of 10% improvement over baseline

Note. PDI=Pediatric Quality Indicator; MLIU=Medicaid and low-income uninsured; DSRIP=Delivery System Reform Incentive Payment; AHRQ=Agency for Healthcare Research and Quality; RHP=Regional Healthcare Partnership; HLM=Hierarchical linear model; CY=Calendar year; DY=Demonstration year, October 1-September 30. *Selected Category C measure from the Measure Bundle Protocol (Texas Health and Human Services Commission, 2018).

Hypothesis 1.4: DSRIP transformed the health care system, resulting in improvements in population health, as specified as DSRIP Category D outcomes.

Measure 1.4.1	Potentially preventable admissions (PPA)*
Definition	PPAs are facility admissions that may have resulted from the lack of adequate access to care or ambulatory care coordination. This measure is 1 of 4 in the Category D Hospital Statewide Reporting Measure Bundle specified in the Measure Bundle Protocol.
Study Population	• DSRIP performing providers
Measure Steward or Source	• 3M (licensed by the Texas EQRO)
Technical Specifications	Hospital admissions for any of the following ambulatory care sensitive conditions: congestive heart failure, diabetes, behavioral health/substance abuse, chronic obstructive pulmonary disease, adult asthma, pediatric asthma, angina and coronary artery disease, hypertension, cellulitis, respiratory infection, pulmonary edema and respiratory failure, and other. The EQRO will use 3M software** to calculate this ratio for each eligible DSRIP performing provider system. Following this proprietary protocol, APR-DRGs and Severity of Illness are assigned to each admission. If an admission is categorized as potentially preventable, it is assigned a relative weight based on resource utilization. PPA risk is then adjusted by CRG. **Ratio:** Actual PPA weight / Expected PPA weight
Exclusion Criteria	Specified in 3M technical specifications used by the EQRO
Data Source(s)	• Medicaid encounter data
Comparison Group(s)/ Subgroup(s)	• RHP and/or RHP tier
Analysis Methods	• Descriptive trend analysis of mean PPA ratio for DY7-DY11 ○ Paired t-test or Wilcoxon signed-rank test

Measure 1.4.1	Potentially preventable admissions (PPA)*
Benchmark	HHSC benchmark for STAR and STAR+PLUS programs Actual/Expected rate < 0.9

Note. PPA=Potentially preventable admission; DSRIP=Delivery System Reform Incentive Payment; EQRO=External quality review organization; APR-DRG=All Patient-Refined Diagnosis-Related Groups; CRG=Clinical Risk Group; RHP=Regional Healthcare Partnership; DY=Demonstration year, October 1-September 30; HHSC=Health and Human Services Commission. *Selected Category D measure from the Measure Bundle Protocol (Texas Health and Human Services Commission, 2018). **2016 Technical Notes available through the Texas Healthcare Learning Collaborative Portal: https://thlcportal.com/resources/

Measure 1.4.2	Potentially preventable readmissions (PPR)*
Definition	PPRs occur when an individual returns to the hospital within the specified readmission time interval for a specific condition that is clinically related to the initial hospital admission. This measure is 1 of 4 in the Category D Hospital Statewide Reporting Measure Bundle specified in the Measure Bundle Protocol.
Study Population	• DSRIP performing providers
Measure Steward or Source	• 3M (licensed by the Texas EQRO)
Technical Specifications	Hospital readmissions for any of the following conditions within a specified timeframe may qualify as a PPR: Congestive heart failure, diabetes, behavioral health/substance abuse, chronic obstructive pulmonary disease, cerebrovascular accident, adult asthma, pediatric asthma, acute myocardial infarction, angina and coronary artery disease, hypertension, cellulitis, renal failure, Cesarean delivery, sepsis, and others The EQRO will use 3M software** to calculate this measure for each eligible DSRIP performing provider system. Following this proprietary protocol, APR-DRGs and Severity of Illness are assigned to each readmission. Clinically-related potentially preventable readmissions are assigned relative weight based on resource utilization. PPRs that are related to the same initial admission are considered to be part of the same "readmission chain." PPRs are then weighted according to the state norm. **Ratio:** Actual PPR weight / Expected PPR weight
Exclusion Criteria	Specified in 3M technical specifications used by the EQRO
Data Source(s)/ Data Collection Method(s)	• Medicaid encounter data
Comparison Group(s)/	• RHP and/or RHP tier

Measure 1.4.2	Potentially preventable readmissions (PPR)*
Subgroup(s)	
Analytic Methods	• Descriptive trend analysis for mean of PPR ratio for DY7-DY11 ○ Paired t-test or Wilcoxon signed-rank test
Benchmark	HHSC benchmark for STAR and STAR+PLUS programs Actual/Expected rate < 0.9

Note. PPR=Potentially preventable readmission; DSRIP=Delivery System Reform Incentive Payment; EQRO=External quality review organization; APR-DRG=All Patient-Refined Diagnosis-Related Groups; RHP=Regional Healthcare Partnership; DY=Demonstration year, October 1-September 30; HHSC=Health and Human Services Commission. *Selected Category D measure from the Measure Bundle Protocol (Texas Health and Human Services Commission, 2018). **2016 Technical Notes available through the Texas Healthcare Learning Collaborative Portal: https://thlcportal.com/resources/

Measure 1.4.3	Potentially preventable complications (PPC)*
Definition	PPCs are in-hospital complications that are not present on admission, but result from treatment during the inpatient stay. This measure is 1 of 4 in the Category D Hospital Statewide Reporting Measure Bundle specified in the Measure Bundle Protocol.
Study Population	• DSRIP performing providers
Measure Steward or Source	• 3M (licensed by the Texas EQRO)
Technical Specifications	Complications that develop in the hospital, depending on risk assessment upon admission, due to the following conditions may qualify as PPCs: renal failure without dialysis; urinary tract infection; clostridium difficile colitis; encephalopathy; shock; pneumonia and other lung infections; acute pulmonary edema and respiratory failure without ventilation; stroke and intracranial hemorrhage; post hemorrhagic and other acute anemia with transfusion; venous thrombosis; ventricular fibrillation/cardiac arrest; major gastrointestinal complications without transfusion or significant bleeding; other complications of medical care; moderate infections; inflammation and other complications of devices, implants or grafts except vascular infection; post-operative hemorrhage and hematoma without hemorrhage control procedure or I&D procedure, septicemia and severe infections; acute pulmonary edema and respiratory failure with ventilation; post-operative infection and deep wound disruption without procedure; or infections due to central venous catheters The EQRO will use 3M software** to calculate this measure for each eligible DSRIP performing provider system. Following the proprietary protocol, APR-DRGs are assigned

Measure 1.4.3	Potentially preventable complications (PPC)*
	to each admission. Eligible admissions are then HCUP Relative PPC weights are assigned based on national resource utilization data. A state norm based on APR-DRGs and Severity of Illness is applied to each admission. **Ratio:** Actual PPC weight / Expected PPC weight
Exclusion Criteria	Specified in 3M technical specifications used by the EQRO
Data Source(s)/ Data Collection Method(s)	• Medicaid encounter data
Comparison Group(s)/ Subgroup(s)	• RHP and/or RHP tier
Analytic Methods	• Descriptive trend analysis of mean PPC ratio DY7-DY11 ○ Paired t-test or Wilcoxon signed-rank test
Benchmark	HHSC benchmark for STAR and STAR+PLUS programs Actual/Expected rate < 0.9

Note. PPC=Potentially preventable complication; DSRIP=Delivery System Reform Incentive Payment; EQRO=External quality review organization; APR-DRGs=All Patient-Refined Diagnosis-Related Groups; HCUP=Healthcare Cost and Utilization Project; RHP=Regional Healthcare Partnership; DY=Demonstration year, October 1-September 30; HHSC=Health and Human Services Commission. *Selected Category D measure from the Measure Bundle Protocol (Texas Health and Human Services Commission, 2018). **2016 Technical Notes available through the Texas Healthcare Learning Collaborative Portal: https://thlcportal.com/resources/

Measure 1.4.4	Potentially preventable emergency department visits (PPV)*
Definition	PPVs occur when emergency treatment is provided for a condition that could have been treated or prevented by a physician or other health care provider in a nonemergency setting. This measure is 1 of 4 in the Category D Hospital Statewide Reporting Measure Bundle specified in the Measure Bundle Protocol.
Study Population	• DSRIP performing providers
Measure Steward or Source	• 3M (licensed by the Texas EQRO)
Technical Specifications	ED visits for the following conditions may be considered PPVs: skin and integumentary system; breast; musculoskeletal system; respiratory system; cardiovascular system; hematologic, lymphatic and endocrine; gastrointestinal; genitourinary system; male reproductive system; female reproductive system; neurologic system; ophthalmologic system; otolaryngologic system; radiologic procedures; rehabilitation; mental illness and substance

Measure 1.4.4	Potentially preventable emergency department visits (PPV)*
	abuse therapies; nuclear medicine; radiation oncology; or dental procedures The EQRO will use 3M software** to calculate this measure for each eligible DSRIP performing provider system. Following this proprietary protocol, ED visits are assigned to a primary EAPG to determine the potentially preventable status. Each ED visit is then assigned a relative weight based on national resource utilization. PPVs are then risk-adjusted using a state-level norm PPV weight or each CRG category. **Ratio:** Actual PPV weight / Expected PPV weight
Exclusion Criteria	Specified in 3M technical specifications used by the EQRO
Data Source(s)	• Medicaid encounter data
Comparison Group(s)/ Subgroup(s)	• RHP and/or RHP tier
Analytic Methods	• Descriptive trend analysis for mean of PPV ratio for DY7-DY11 ○ Paired t-test or Wilcoxon signed-rank test
Benchmark	Actual/Expected rate < 0.9 HHSC benchmark for STAR and STAR+PLUS programs

Note. PPV=Potentially preventable emergency department visit; DSRIP=Delivery System Reform Incentive Payment; EQRO=External quality review organization; ED=Emergency department; EAPG=Enhanced Ambulatory Patient Groups; CRG=Clinical Risk Group; RHP=Regional Healthcare Partnership; DY=Demonstration year, October 1-September 30; HHSC=Health and Human Services Commission. *Selected Category D measure from the Measure Bundle Protocol (Texas Health and Human Services Commission, 2018). **2016 Technical Notes available through the Texas Healthcare Learning Collaborative Portal: https://thlcportal.com/resources/

Measure 1.4.5	Category D-related activities
Definition	Performing provider activities impacting population health, as indicated by Category D measures.
Study Population	• DSRIP performing providers
Measure Steward or Source	N/A
Technical Specifications	Category D outcomes (as calculated by the EQRO) will be sent to DSRIP performing providers who will answer qualitative questions about their specific outcomes and related activities.
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• DSRIP reporting
Comparison Group(s)/ Subgroup(s)	• RHP subgroup
Analytic Methods	• Thematic content analysis • Descriptive statistics, if feasible
Benchmark	None

Note. DSRIP=Delivery System Reform Incentive Payment; EQRO=External quality review organization; RHP=Regional Healthcare Partnership.

Evaluation Question 2*: Did the Demonstration impact unreimbursed costs associated with the provision of care to the MLIU population for Uncompensated Care (UC) providers?*

Hypothesis 2.1: The percentage of UC costs reimbursed through UC payments for each type of UC (overall, Medicaid shortfall, uninsured shortfall) will decrease throughout Demonstration Year (DY) 1-8 of the Demonstration.

Measure 2.1.1	**UC Costs Reimbursed (percentage)**
Definition	The percentage of UC costs reimbursed through UC payments by type (Medicaid shortfall, uninsured shortfall, and provider and pharmacy costs)
Study Population	• Providers reporting UC costs
Measure Steward or Source	• N/A
Technical Specifications	For each UC provider, use the DSH/UC application to determine the annual UC costs and payments overall and by type (Medicaid shortfall, uninsured shortfall, and the provider and pharmacy costs). **Numerator:** UC payment received for a given year **Denominator:** UC costs for a given year **Percentage:** (numerator / denominator) * 100
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• DSH/UC application
Comparison Group(s)/ Subgroup(s)	• Provider type • RHP and/or RHP tier • RUCC classification
Analytic Methods	• Descriptive trend analysis for mean of UC percentage reimbursed for DY1-DY8* ○ Paired t-test or Wilcoxon signed-rank test
Benchmark	None

Note. UC=Uncompensated Care; DSH=Disproportionate share hospital; RHP=Regional Healthcare Partnership; RUCC=Rural-Urban Continuum Codes; DY=Demonstration year, October 1-September 30. *Negotiations are ongoing (as of July 2018) to revise the UC program. Upon establishment of new UC rules, it will be determined whether it is appropriate to continue this analysis for DY9-DY11.

Hypothesis 2.2: The UC cost growth rate will slow over time for hospitals participating in the Demonstration.

Measure 2.2.1	Uncompensated Care Cost Growth Rate
Definition	Year-over-year growth rate (%) for UC costs reported by hospitals on the DSH/UC reporting tool
Study Population	• Hospitals reporting UC costs
Measure Steward or Source	N/A
Technical Specifications	For each hospital, use the DSH/UC application to determine the annual UC costs, consisting of the Medicaid shortfall, uninsured shortfall, and the provider and pharmacy costs. **Numerator:** Year 2 UC costs reported - Year 1 UC costs reported **Denominator:** Year 1 UC costs reported **Rate:** (numerator / denominator) * 100
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• DSH/UC application
Comparison Group(s)/ Subgroup(s)	• Hospital type subgroups • RHP and/or RHP tier • RUCC classification subgroups
Analytic Methods	• Multiple linear regression or growth curve modeling testing for trend over time in annual UC growth rate while controlling for hospital characteristics (e.g., type, bed count, case mix, etc.), regional/county-level characteristics (e.g., RUCC code, RHP tier, Rider 38 status, etc.), and other relevant factors (e.g., inflation, economic shocks, etc.)
Benchmark	None

Note. UC=Uncompensated Care; DSH=Disproportionate share hospital; RHP=Regional Healthcare Partnership; RUCC=Rural-Urban Continuum Codes.

Evaluation Question 3: ***Did the expansion of the Medicaid managed care (MMC) health care delivery model to additional populations and services improve health care (including access to care, care coordination, quality of care, and health outcomes) for MMC clients?***

The pre and post periods for proposed interrupted time series (ITS) analyses are listed in Table by MMC population, unless otherwise specified in the detailed table for a specific measure.

Table C1. Pre and Post Periods for Medicaid Managed Care Interrupted Time Series Analysis

MMC Population	Pre Period	Post Period
Children's Medicaid Dental Services	March 1, 2010-February 29, 2012	March 1, 2012 – September 30, 2020
Nursing Facility	March 1, 2013 – February 28, 2015	March 1, 2015 – September 30, 2020
Former Foster Care Children	September 1, 2015-August 31, 2017	September 1, 2017 – September 30, 2022
Adoption Assistance		
Permanency Care Assistance		
Medicaid for Breast and Cervical Cancer		

Note. MMC=Medicaid managed care. Pre period establishes baseline two years prior to MMC carve-in or shift in MMC program, post period starts with MMC carve-in or shift in MMC program.

Hypothesis 3.1: Access to care will improve among clients whose Medicaid benefits shift from fee-for-service (FFS) to a MMC health care delivery model.

Measure 3.1.1	Centers for Medicare and Medicaid Services Child Core Measure: Percentage of eligibles who received preventative dental services (PDENT-CH)
Definition	The CMS PDENT-CH measures the percent of members aged 0 to 20 years who received at least one preventive dental service during the reporting period.
Study Population(s)	• CMDS
Measure Steward or Source	CMS
Technical Specifications	Claims and encounters will be used to determine the numerator and denominator to calculate the CMS-PDENT-CH measure by month or quarter. **Numerator:** Unduplicated number of clients receiving at least one preventive dental service by or under the supervision of a dentist as defined by HCPCS codes D1000 - D1999 (or equivalent CDT codes/CPT codes) **Denominator:** Total unduplicated number of clients ages 0 to 20 years who have been continuously enrolled in the Children's Medicaid Dental program. **Monthly or quarterly rate:** (Numerator / denominator)
Exclusion Criteria	Members not enrolled in a DMO. STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Pre-DMO (FFS) to post-DMO • SDA • Client demographics (age, sex, race/ethnicity)
Analytic Methods	• Interrupted time series analysis
Benchmark	None

Note. CMS=Centers for Medicare and Medicaid Services; PDENT-CH=Percent of clients receiving preventative dental services; CMDS=Children's Medicaid Dental Services; HCPCS=Healthcare Common Procedure Coding System Level II; CDT=Current Dental Terminology; CPT=Current Procedural Terminology; DMO=Dental maintenance organization; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area.

Measure 3.1.2	Adult access to preventive/ambulatory health service
Definition	Adult access to preventive/ambulatory health services measures members who had an ambulatory or preventive care visit in the past year.
Study Population(s)	• FFCC • MBCC • NF
Measure Steward or Source	NCQA-like measure (HEDIS® AAP)
Technical Specifications	HEDIS®-like technical specifications will be used to calculate the measure for MBCC, FFCC, and NF clients, with minor modifications to better align with the Demonstration: • To be consistent with DY, FFY will be used as the measurement year, instead of calendar year, making September 30, the anchor date. • The definition of PCP was defined according to the PCP provider types and provider specialty codes outlined in the MAXIMUS *Medicaid Managed Care and CHIP Joint Interface Plan EB 724* (2017). • For consistency, the same HEDIS®-like technical specifications, including value sets, will be used throughout the measurement period (FFY 2015 - 2022) • Monthly or quarterly rate:(Number of clients with an ambulatory visit per number of eligible clients)
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Client demographics (age, sex, race/ethnicity) • Stratification will include salient provider and service types
Analytic Methods	• Interrupted time series analysis

Measure 3.1.2	Adult access to preventive/ambulatory health service

Benchmark	2016 State Rate* for HEDIS® AAP
	• STAR
	  ○ Overall 85.67
	  ○ 20-44 years 85.19
	  ○ 45-64 years 89.22
	• STAR+PLUS
	  ○ Overall 85.00
	  ○ 20-44 years 78.47
	  ○ 45-64 years 89.89
	  ○ 65+ years 90.03

Note. FFCC=Former Foster Care Children; MBCC=Medicaid for Breast and Cervical Cancer; NF=Nursing Facility; NCQA=National Committee for Quality Assurance; HEDIS®= Healthcare Effectiveness Data and Information Set; AAP=Adult access to preventive/ambulatory health services; DY=Demonstration year, October 1-September 30; FFY=Federal fiscal year, October 1-September 30; PCP=Primary care provider; CHIP=Children's Health Insurance Plan; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area. *Texas Healthcare Learning Collaborative Portal: https://thlcportal.com/qoc/medical

Measure 3.1.3	Children and adolescent access to primary care services
Definition	The percentage of members 12 months – 19 years of age who had a visit with a PCP during the measurement year
Study Population(s)	• AA • PCA
Measure Steward or Source	NCQA-like measure (HEDIS® CAP)
Technical Specifications	HEDIS®-like technical specifications will be used to calculate the measure for AA and PCA clients, with minor modifications to better align with the Demonstration: • To be consistent with DY, FFY will be used as the measurement year, instead of the calendar year, making September 30, the anchor date. • PCP defined according to the MAXIMUS *Medicaid Managed Care and CHIP Joint Interface Plan EB 724* (2017) • Continuous enrollment as defined by HEDIS® may be modified to better align with enrollment patterns for study populations • For consistency, the same HEDIS®-like technical specifications, including value sets, will be used throughout the measurement period. • Monthly or quarterly rate: (Number of clients with a PCP visit per number of eligible clients)

Measure 3.1.3	Children and adolescent access to primary care services
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Client demographics (age, sex, race/ethnicity) • Stratification will include salient provider and service types
Analytic Methods	• Interrupted time series analysis
Benchmark	2016 state rate* for HEDIS® CAP in STAR: ○ Overall 91.74 ○ 12-24 months 96.42 ○ 25 months – 6 years 89.18 ○ 7-11 years 93.24

Note. PCP=Primary care provider; AA=Adoption Assistance; PCA=Permanency Care Assistance; NCQA=National Committee for Quality Assurance; HEDIS®=Healthcare Effectiveness Data and Information Set; CAP=Children and adolescent access to primary care services; DY=Demonstration year, October 1-September 30; FFY=Federal fiscal year, October 1-September 30; CHIP=Children's Health Insurance Plan; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area. *Texas Healthcare Learning Collaborative Portal: https://thlcportal.com/qoc/medical

Measure 3.1.4	Centers for Medicare and Medicaid Services Child Core Measure: Screening for depression and follow-up plan (CDF-CH/AD)
Definition	The CMS CDF-CH/AD measures the percentage of members aged 12 years and older screened for clinical depression on the date of the encounter using an age appropriate standardized depression screening tool and, if positive, having a follow-up plan documented on the date of the positive screening (CMS Core Measure).
Study Population(s)	• AA • FFCC • MBCC • NF • PCA
Measure Steward or Source	CMS*
Technical Specifications	Adapting the CMS measure specifications for 2017, claims and encounter data will be used to determine the numerator and denominator to calculate the CDF-CH/AD measure by month or quarter. Exclusion criteria will be applied to the extent possible using claims and encounter data.

Measure 3.1.4	Centers for Medicare and Medicaid Services Child Core Measure: Screening for depression and follow-up plan (CDF-CH/AD)
	Numerator: Clients screened for clinical depression using a standardized tool and having depression, and having a follow-up plan documented (G8431) on the same day as a positive or negative screen result (G8510). **Denominator:** Number of clients (12 – 64 years of age) with an outpatient visit for behavioral health. **Monthly or quarterly rate:** (Numerator / denominator)
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older. Denominator exclusion criteria: Active diagnosis of depression or bipolar disorder.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Client demographics (age, sex, race/ethnicity)
Analytic Methods	• Interrupted time series analysis
Benchmark	Not available

Note. CDF-CH/AD=Screening for depression and follow-up plan for children and adults; CMS=Centers for Medicare and Medicaid Services; AA=Adoption Assistance; FFCC=Former Foster Care Youth; MBCC=Medicaid for Breast and Cervical Cancer; NF=Nursing Facility; PCA=Permanency Care Assistance; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area.*https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/Downloads/MSSP-QM-Benchmarks-2016.pdf

Measure 3.1.5	Utilization of pharmacy benefits
Definition	Drug utilization measures of adherence will quantify the extent of medication use.
Study Population(s)	• AA • FFCC • MBCC • NF • PCA
Measure Steward or Source	PQA, as detailed in CMS' Quality Rating System*
Technical Specifications	Population-level measures of adherence (i.e., PDC) will be calculated. PDC is the number of "covered" days in the measurement period divided by the number of days in measurement period. PDC will be calculated for three therapeutic categories:

Measure 3.1.5	Utilization of pharmacy benefits
	• Renin Angiotensin System Antagonists • Diabetes All Class • Statins **Numerator:** Number of clients who met the 80% PDC threshold during the measurement year, for each therapeutic category separately **Denominator:** Number of clients (18 years or older on first day of measurement year) with at least two prescriptions filled, for each therapeutic category separately **Annual rate:** (Numerator / denominator)*100
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files • Member-level pharmacy data
Comparison Group(s)/ Subgroup(s)	• Pre-MMC policy change to post-MMC policy change • SDA • Client demographics (age, sex, race/ethnicity) • Salient drug classes
Analytic Methods	• Descriptive trend analysis
Benchmark	None

Note. AA=Adoption Assistance; FFCC=Former Foster Care Children; MBCC=Medicaid for Breast and Cervical Cancer; NF=Nursing facility; PCA=Permanency Care Assistance; PQA = Pharmacy Quality Alliance; CMS=Centers for Medicare and Medicaid Services; PDC=Proportion of days covered; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area.

*https://www.cms.gov/files/document/2021-qrs-measure-technical-specifications.pdf

Hypothesis 3.2: Care coordination will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.

Measure 3.2.1	Rate of service coordination utilization
Definition	Service coordination is an ongoing process to identify client needs, connect them with other providers to obtain necessary services, and follow-up to ensure needs are met.
Study Population(s)	• FFCC • MBCC • NF
Measure Steward or Source	N/A
Technical Specifications	**Numerator:** Paid and partially paid encounters of procedure codes for service coordination: T1017. These contacts must be documented in the client's record, but are not submitted as claims to Medicaid if they took place outside of the presence of the client or the client's parent or routine caregivers. **Denominator:** Number of clients within the reporting period **Monthly or quarterly rate:** (Numerator / denominator) per 1,000 member months
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Client demographics (age, sex, race/ethnicity) • Stratification will include salient provider and service types
Analytic Methods	• Interrupted time series analysis
Benchmark	None

Note. FFCC=Former Foster Care Children; MBCC=Medicaid for Breast and Cervical Cancer; NF=Nursing Facility; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area.

Measure 3.2.2	Rate of clients with SMI/SED receiving Targeted Case Management
Definition	This rate indicates the level of utilization of targeted case management among clients with SMI/SED during the measurement year.
Study Population(s)	• AA • FFCC • PCA
Measure Steward or Source	N/A
Technical Specifications	**Numerator:** Clients who met the HHSC SMI/SED criteria who received targeted case management services: T1017 during the measurement year **Denominator:** Clients diagnosed with HHSC-defined SMI/SED (Adults with "schizophrenia, major depression, bipolar disorder, or other severely disabling mental order," and "children and adolescents ages 3 through 17 years with a diagnosis of a mental illness or who exhibit a serious emotional disturbance.") **Monthly or quarterly rate:** (Numerator / denominator)
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Client demographics (age, sex, race/ethnicity) • Stratification will include salient provider and service types
Analytic Methods	• Interrupted time series analysis
Benchmark	None

Note. SMI=Serious mental illness, SED = Severe emotional disturbance; AA=Adoption Assistance; FFCC=Former Foster Care Children; PCA=Permanency Care Assistance; HHSC=Health and Human Services Commission; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area.

Hypothesis 3.3: Quality of care will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.

Measure 3.3.1	Antidepressant Medication Management
Definition	The percentage of clients 18 years and older who were treated with antidepressant medication, had a diagnosis of major depression and who remained on antidepressant medication treatment.
Study Population(s)	• FFCC • NF
Measure Steward or Source	NCQA-like measure (HEDIS® AMM)
Technical Specifications	Using Medicaid claims and encounter data, two rates are reported: **Numerators:** 1. Effective Acute Phase Treatment – The percentage of clients who remained on an antidepressant medication for at least 84 days (12 weeks) (calculated annually). 2. Effective Continuous Phase Treatment. The percentage of clients who remained on an antidepressant medication at least 180 days (6 months) (calculated annually). **Denominator:** Clients 18 years and older meeting HEDIS-like inclusion criteria related to major depression, negative medication history, and continuous enrollment requirements. HEDIS®-like technical specifications will be used to calculate the measure, with some minor modifications to better align with the Demonstration: 1. Measurement years will align with the MMC transition date (March 1 for NF and September 1 for FFCC) 2. The intake period will be the same as the measurement year 3. Continuous enrollment as defined by HEDIS® may be modified to better align with enrollment patterns for target populations 4. For consistency, the same HEDIS®-like technical specifications, including value sets, will be used throughout the measurement period
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files

Measure 3.3.1	Antidepressant Medication Management
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Client demographics (age, sex, race/ethnicity)
Analytic Methods	• Descriptive trend analysis
Benchmark	2016 state rates* for HEDIS® AMM (acute rate, continuous rate): • STAR 46.79, 29.59 • STAR Health 42.65, 30.88 • STAR Kids not available • STAR+PLUS 47.19, 33.33

Note. FFCC=Former Foster Care Children; NF=Nursing Facility; NCQA=National Committee on Quality Assurance; HEDIS®=Healthcare Effectiveness Data and Information System; AMM=Antidepressant Medication Management; MMC=Medicaid managed care; FFS=Fee-for-service; SDA=Service delivery area. *Texas Healthcare Learning Collaborative Portal: https://thlcportal.com/qoc/medical

Measure 3.3.2	Use of first-line psychosocial care for children and adolescents on antipsychotics
Definition	The percentage of children and adolescents 1-17 years of age who had a new prescription for an antipsychotic medication and had documentation of psychosocial care as first-line treatment.
Study Population(s)	• AA • FFCC • PCA
Measure Steward or Source	NCQA-like measure (HEDIS® APP)
Technical Specifications	HEDIS®-like technical specifications will be used to calculate the measure annually, with some minor modifications to better align with the Demonstration: • Measurement years will align with the MMC transition date (September 1 for FFCC, AA and PCA) • The intake period will be the same as the measurement year • For consistency, the same HEDIS®-like technical specifications, including value sets, will be used throughout the measurement period
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files • Member-level pharmacy data

Measure 3.3.2	Use of first-line psychosocial care for children and adolescents on antipsychotics
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Client demographics (age, sex, race/ethnicity) • Stratification will include salient provider and service types
Analytic Methods	• Descriptive trend analysis

Benchmark	• 2016 State Rate* for HEDIS® APP in STAR Health:
	  ○ Overall 89.85
	  ○ 1-5 years 83.33
	  ○ 6-11 years 91.27
	  ○ 12-17 years 89.49

Note. AA=Adoption Assistance; FFCC=Former Foster Care Children; PCA=Permanency Care Assistance; NCQA=National Committee for Quality Assurance; HEDIS®= Healthcare Effectiveness Data and Information Set; APP = Use of First-line Psychosocial Care for Children and Adolescents in Antipsychotics; MMC=Medicaid managed care; FFS=Fee-for-service; SDA=Service delivery area.
*Texas Healthcare Learning Collaborative Portal: https://thlcportal.com/qoc/medical

Measure 3.3.3	Percent of Medicaid for Breast and Cervical Cancer clients receiving recommended treatment
Definition	Percentage of MBCC clients receiving recommended treatment according to patient subgroup. Percentage of female patients aged 18 years and older diagnosed with breast cancer who were prescribed tamoxifen or AI during the measurement period.
Study Population(s)	• MBCC
Measure Steward or Source	N/A
Technical Specifications	**Numerator:** Female clients diagnosed with breast cancer and prescribed tamoxifen or AI during the measurement year **Denominator:** Female clients diagnosed with breast cancer **Monthly or quarterly rate:** (Numerator / denominator) * 100
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter • Member-level enrollment files

Measure 3.3.3	Percent of Medicaid for Breast and Cervical Cancer clients receiving recommended treatment
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Client demographics (age, race/ethnicity) • Stratification will include salient provider and service types
Analytic Methods	• Interrupted time series analysis
Benchmark	None

Note. MBCC=Medicaid for Breast and Cervical Cancer; ER=Estrogen receptor; PR=Progesterone receptor; AI=Aromatase inhibitor; ICD-10=International Classification of Diseases, 10th Revision, Clinical Modification; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area.

Measure 3.3.4	Behavior Modification
Definition	Percentage of NF clients on psychotropic medication with behavior modifications included in their care plan
Study Population(s)	• NF
Measure Steward or Source	N/A
Technical Specifications	Nursing Facility Quality Review (NFQR)* Psychotropic Medication Measure: • Residents with an active prescription for a psychotropic medication, and whose care plan included behavior modification interventions to address specific behaviors for which the medications were prescribed
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• NFQR – A biannual survey conducted among nursing facility residents in Texas since 2002, but this question was added in 2015
Comparison Group(s)/ Subgroup(s)	• Client demographics (age, sex, race/ethnicity, length of stay)
Analytic Methods	• Descriptive trend analysis
Benchmark	None

Note. NF=Nursing Facility; NFQR=Nursing Facility Quality Review. *Synopsis and most recent report available here: https://hhs.texas.gov/reports/2017/06/nursing-facility-quality-review-nfqr-2015

Hypothesis 3.4: Health and health care outcomes will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.

Measure 3.4.1	Centers for Medicare and Medicaid Services Child Core Measure: Children who have dental decay or cavities
Definition	Percentage of children, age 0-20 years, who have had tooth decay or cavities during the measurement period (CMS Core Child Measure).
Study Population(s)	• CMDS
Measure Steward or Source	CMS
Technical Specifications	**Numerator:** CMDS clients who had a cavity or decayed teeth. **Denominator:** CMDS clients with face-to-face interaction, office visit, established office visit, or initial office visits **Monthly or quarterly rate:** (Numerator / denominator) * 100
Exclusion Criteria	Members not enrolled in a DMO. STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Client demographics (age, sex, race/ethnicity)
Analytic Methods	• Interrupted time series analysis
Benchmark	CMS Performance Year 2016 Benchmark*: 1.65%, SD 3.24%

Note. CMS=Centers for Medicare and Medicaid Services; CMDS=Children's Medicaid Dental Services; DMO=Dental maintenance organization; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area; SD = Standard deviation.*Benchmarks for Measures Included in the Performance Year 2016 Quality and Resource Use Reports: https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Downloads/PY2016-Prior-Year-Benchmarks.pdf

Measure 3.4.2	Pressure Ulcers
Definition	Rate of pressure ulcers
Study Population(s)	• NF
Measure Steward or Source	N/A
Technical Specifications	**Numerator:** Number of pressure ulcers among NF clients **Denominator:** NF member months **Monthly or quarterly rate:** Number of pressure ulcers per 1,000 member months
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Stage of ulcer • Client demographics (age, sex, race/ethnicity)
Analytic Methods	• Interrupted time series analysis
Benchmark	None

Note. NF=Nursing Facility; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area.

Measure 3.4.3	Symptoms of Depression
Definition	NF residents with improvement in depressive symptoms with treatment
Study Population(s)	• NF
Measure Steward or Source	N/A
Technical Specifications	NFQR* Depression Measures: • Percentage of clients diagnosed with depression who report an improvement in depressive symptoms with treatment
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• NFQR – A biannual survey conducted among nursing facility residents in Texas since 2002 (Depression measure added to NFQR Survey in 2010)

Comparison Group(s)/ Subgroup(s)	• Pre/post comparison
	  ○ Pre: 2010 – 2014
	  ○ Post: 2015-2019
	• Client demographics (age, sex, race/ethnicity, length of stay)

Analytic Methods	• Descriptive trend analysis
Benchmark	None

Note. NF=Nursing Facility; NFQR=Nursing Facility Quality Review. *Synopsis and most recent report available here: https://hhs.texas.gov/reports/2017/06/nursing-facility-quality-review-nfqr-2015

Measure 3.4.4	Prevention/Pediatric Quality Overall Composite (PQI#90; PDI#90)
Definition	**PQI#90**: The rate of discharges per 100,000 adult members, for one of the following ambulatory care sensitive conditions: diabetes with short-term complications, diabetes with long-term complications, uncontrolled diabetes without complications, diabetes with lower-extremity amputation, chronic obstructive pulmonary disease, asthma, hypertension, heart failure, bacterial pneumonia, or urinary tract infection. **PDI#90**: The rate of discharges per 100,000 child members, for one of the following ambulatory care sensitive conditions: asthma, diabetes with short-term complications, gastroenteritis, or urinary tract infection.
Study Population(s)	• AA • FFCC • MBCC • NF • PCA
Measure Steward or Source	AHRQ, Quality Indicator-like measure
Technical Specifications	**Rate 1 Numerator (Adult, PQI#90):** Hospital discharges for adult clients for one of the following conditions: diabetes with short-term complications, diabetes with long-term complications, uncontrolled diabetes without complications, diabetes with lower-extremity amputation, chronic obstructive pulmonary disease, asthma, hypertension, heart failure, bacterial pneumonia, or urinary tract infection (as measured through PQI#1, PQI#3 PQI#5, PQI#7, PQI#8, PQI#11, PQI#12, PQI#14, PQI#15, and PQI#16) **Rate 2 Numerator (Child, PDI#90):** Hospital discharges for child clients for one of the following conditions: asthma, diabetes with short-term complications, gastroenteritis, or urinary tract infection (as measured through PDI#14, PDI#15, PDI#16, PDI#18) • Clients that meet the inclusion and exclusion rules for a numerator more than once will only counted only once in the composite numerator **Denominator:** Members per specified population **Monthly or quarterly rate:** Number of discharges per 100,000 members

Measure 3.4.4	Prevention/Pediatric Quality Overall Composite (PQI#90; PDI#90)
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Client demographics (age, sex, race/ethnicity) • Stratification will include salient provider and service types
Analytic Methods	• Interrupted time series analysis

Benchmark	• 2016 Adult State Rate* per 100,000 member months (PQI#90):
	  ○ STAR 52.32
	  ○ STAR Health 110.29
	  ○ STAR Kids Not available until 2017
	  ○ STAR+PLUS 473.40
	  ○ FFS 272.99
	• 2016 Child State Rate* per 100,000 member months (PDI#90):
	  ○ STAR 11.31
	  ○ STAR Health 25.40
	  ○ STAR Kids Not available
	  ○ STAR+PLUS 36.09
	  ○ FFS 28.60

Note. PQI = Prevention Quality Indicator; PDI = Pediatric Quality Indicator; AA=Adoption Assistance; FFCC=Former Foster Care Children; MBCC=Medicaid for Breast and Cervical Cancer; NF=Nursing facility; PCA=Permanency Care Assistance; AHRQ = Agency for Healthcare Research and Quality; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area. *Texas Healthcare Learning Collaborative Portal: https://thlcportal.com/qoc/medical

Measure 3.4.5	Rate of potentially preventable emergency department use
Definition	An emergency treatment for a condition that did not require immediate medical care; required immediate medical care but care could have been provided in a primary care setting; or, required immediate medical care but the nature of the condition was potentially preventable or avoidable if timely and effective primary care had been provided
Study Population(s)	• AA • FFCC • MBCC • NF • PCA
Measure Steward or Source	NYU Wagner: https://wagner.nyu.edu/faculty/billings/nyued-articles
Technical Specifications	Using the NYU algorithm, potentially preventable ED use is defined as ED visits that are: • Non-emergent; • Emergent, but primary care treatable; or, • Emergent and ED care needed, but preventable/avoidable **Monthly or quarterly rate:** Number of potentially preventable ED visits per 1,000 member months
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Client demographics (age, sex, race/ethnicity) • Stratification will include salient provider and service types
Analytic Methods	• Interrupted time series analysis

Measure 3.4.5	Rate of potentially preventable emergency department use

Benchmark	• 2016 State Rate* for PPV (cannot be used for direct comparison as state PPV rates use 3M® methodology):
	  ○ STAR 9.59
	  ○ STAR Health 11.82
	  ○ STAR Kids 10.10
	  ○ STAR+PLUS 26.60
	  ○ FFS 9.16

Note. ED=Emergency department; AA=Adoption Assistance; FFCC=Former Foster Care Children; MBCC=Medicaid for Breast and Cervical Cancer; NF=Nursing facility; PCA=Permanency Care Assistance; NYU = New York University; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area; PPV=Potentially preventable emergency department visit. *Texas Healthcare Learning Collaborative Portal: https://thlcportal.com/qoc/medical

Measure 3.4.6	Rate of emergency department visits for behavioral health or substance abuse (H2-510*)
Definition	The rates of ED utilization for BH and SA conditions. This is a Category C measure in the measure bundle, H2: Behavioral health and appropriate utilization.
Study Population(s)	• AA • FFCC • MBCC • NF • PCA
Measure Steward or Source	HHSC-developed for DSRIP Measure Bundle Protocol DY7-10
Technical Specifications	**Rate 1 Numerator**: Total number of ED visits with a primary or secondary diagnosis of BH conditions: • F20-F29 Schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders • F30-F39 Mood [affective] disorders • F40-F48 Anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders • F60-F69 Disorders of adult personality and behavior **Rate 2 Numerator:** Total number of ED visits with a primary or secondary diagnosis of SA: • F10-F16, F18 - F19 Mental and behavioral disorders due to psychoactive substance use **Denominator:** Number of clients in study population **Monthly or quarterly rate:** Number of ED visits for BH or SA per 1,000 member months
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.

Measure 3.4.6	Rate of emergency department visits for behavioral health or substance abuse (H2-510*)
Data Source(s)/ Data Collection Method(s)	• FFS claims and MMC encounter data • Member-level enrollment files
Comparison Group(s)/ Subgroup(s)	• Pre/post comparison • SDA • Client demographics (age, sex, race/ethnicity) • Stratification will include salient provider and service types
Analytic Methods	• Descriptive trend analysis • Interrupted time series analysis
Benchmark	Performance against self as defined in the HHSC Uniform Managed Care Manual.** According to this standard, any year-to-year change between -2.99% and 2.99% is considered consistent with the year before. Any change of +/-3.00% or greater indicates a change in the rate from the previous year.

Note. ED=Emergency department; BH=Behavioral health; SA=Substance abuse; AA=Adoption Assistance; FFCC=Former Foster Care Children; MBCC=Medicaid for Breast and Cervical Cancer; NF=Nursing facility; PCA=Permanency Care Assistance; HHSC=Health and Human Services Commission; DSRIP=Delivery System Reform Incentive Payment; DY=Demonstration year, October 1-September 30; FFS=Fee-for-service; MMC=Medicaid managed care; SDA=Service delivery area.
*Selected Category C measures from the Measure Bundle Protocol (Texas Health and Human Services Commission, 2018). **https://hhs.texas.gov/sites/default/files/documents/laws-regulations/handbooks/umcm/6-2-14.pdf

Hypothesis 3.5: Client satisfaction will improve among clients whose Medicaid benefits shift from FFS to a MMC health care delivery model.

Measure 3.5.1	Client Satisfaction - NF
Definition	Self-reported client satisfaction with nursing facility
Study Population(s)	• NF
Measure Steward or Source	N/A
Technical Specifications	NFQR* Satisfaction Measures: • Level of satisfaction with experience in nursing facility • Level of satisfaction with health care services received • Participation in care plan meeting* • Concerns the facility did not address
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• NFQR – A biannual survey conducted among nursing facility residents in Texas since 2002

Comparison Group(s)/ Subgroup(s)	• Pre/post comparison
	  ○ Pre: 2009 – 2014
	  ○ Post: 2015 – 2019
	• Client demographics (age, sex, race/ethnicity, length of stay)

Analytic Methods	• Descriptive trend analysis
Benchmark	None

Note. * This item was added to the NFQR in 2015. NF=Nursing Facility; NFQR=Nursing Facility Quality Review. *Synopsis and most recent report available here: https://hhs.texas.gov/reports/2017/06/nursing-facility-quality-review-nfqr-2015

Measure 3.5.2	Client Satisfaction - CAHPS
Definition	Self-reported client satisfaction with their MMC health plan (caregivers will report on behalf of children 17 years and younger).
Study Population(s)	• AA • MBCC • PCA
Measure Steward or Source	AHRQ (for CAHPS Health Plan Survey – Adult, Child)
Technical Specifications	Following AHRQ technical specification for administration of the CAHPS Health Plan Survey*, Texas' EQRO will include a sample of each study population in scheduled survey administration to the STAR (child) and STAR+PLUS populations. Survey schedule: • 2019: STAR children (AA/PCA) • 2020: STAR+PLUS (MBCC) • 2021: STAR children (AA/PCA) • 2011: STAR+PLUS (MBCC) (if data is available for analysis for final report)
Exclusion Criteria	STAR+PLUS Medicare/Medicaid (dual eligible) members. Members 65 years and older.
Data Source(s)/ Data Collection Method(s)	• CAHPS Health Plan Survey, Child (AA, PCA) • CAHPS Health Plan Survey, Adult (MBCC)
Comparison Group(s)/ Subgroup(s)	• Client demographics (age, sex, race/ethnicity), if available
Analytic Methods	• Descriptive trend analysis
Benchmark	

Note. CAHPS=Consumer Assessment of Healthcare Providers and Systems; MMC=Medicaid managed care; AA=Adoption Assistance; MBCC=Medicaid for Breast and Cervical Cancer; PCA=Permanency Care Assistance; AHRQ=Agency for Healthcare Quality and Research; EQRO=External quality review organization. *CAHPS Health Plan Survey – Agency for Health Care Research and Quality: https://www.ahrq.gov/cahps/surveys-guidance/hp/index.html

Evaluation Question 4: *Did the Demonstration impact the development and implementation of quality-based payment systems in Texas Medicaid?*

Hypothesis 4.1: The Demonstration will result in the development and/or implementation of a variety of alternative payment models (APMs) in Texas Medicaid.

Measure 4.1.1	Alternative payment models
Definition	APMs planned or implemented by MCOs and providers. CMS defines APMs as a payment approach that gives added incentive payments to provide high-quality and cost-efficient care.*
Study Population(s)	• DSRIP performing providers • MCOs
Measure Steward or Source	N/A
Technical Specifications	Various APMs and/or other quality-based payment systems will be identified, categorized, and enumerated to the extent possible, based on characteristics including but not limited to: Type of APM, APM framework category, level of financial risk for plan and providers, STAR product, SDA, provider service type, estimated number of members impacted by APM, claims paid, incentives paid and disincentives applied.
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• MMC APM reporting tool
Comparison Group(s)/ Subgroup(s)	Subgroups may include: • MCO size • SDA • RHP, if possible • Type of provider in APM
Analytic Methods	• Content analysis • Descriptive statistics, as applicable
Benchmark	None

Note. APM=Alternate payment model; MCO=Managed care organization; CMS=Centers for Medicare and Medicaid Services; DSRIP=Delivery System Reform Incentive Payment; SDA=Service delivery area; MMC=Medicaid managed care; RHP=Regional Healthcare Partnership.

*CMS: https://qpp.cms.gov/apms/overview

Measure 4.1.2	Perceived barriers to developing and/or implementing alternative payment models
Definition	MCO and DSRIP provider-identified challenges, or perceived barriers, experienced in developing and/or implementing APMs or other quality-based payment systems within the Texas MMC health care service delivery model.
Study Population(s)	• DSRIP performing providers • MCOs
Measure Steward or Source	N/A
Technical Specifications	Perceived barriers to the development and/or implementation of APMs and other quality-based payment systems will be identified and categorized or grouped by theme.
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	Possible data sources include: • APM survey (to be developed by external evaluator) • DSRIP reporting (if used to obtain APM information in lieu of a separate survey) • Other documents, as available (e.g., MCO APM reporting tool could include additional questions in lieu of separate survey)
Comparison Group(s)/ Subgroup(s)	Subgroups may include: • MCO size • SDA • RHP • Provider type
Analytic Methods	• Thematic content analysis
Benchmark	None

Note. MCO=Managed care organization; DSRIP=Delivery System Reform Incentive Payment; APM=Alternate payment model; MMC=Medicaid managed care; SDA=Service delivery area; RHP=Regional Healthcare Partnership.

Measure 4.1.3	Perceived benefits to developing and/or implementing alternative payment models
Definition	MCO and DSRIP provider-identified benefits, or perceived positive aspects, of developing and/or implementing APMs within the Texas MMC health care service delivery model
Study Population(s)	• DSRIP performing providers • MCOs
Measure Steward or Source	N/A
Technical Specifications	Perceived benefits of the development and/or implementation of APMs and other quality-based payment systems will be identified and categorized or grouped by theme.
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	Possible data sources include: • APM survey (to be developed by external evaluator) • DSRIP reporting (if used to obtain APM information in lieu of a separate survey) • Other documents, as available (e.g., MCO APM reporting tool could include additional questions in lieu of separate survey)
Comparison Group(s)/ Subgroup(s)	Subgroups may include: • MCO size • SDA • RHP • Provider type
Analytic Methods	• Thematic content analysis
Benchmark	None

Note. MCO=Managed care organization; DSRIP=Delivery System Reform Incentive Payment; APM=Alternate payment model; MMC=Medicaid managed care; SDA=Service delivery area; RHP=Regional Healthcare Partnership.

Evaluation Question 5: *Did the Demonstration transform the health care system for the MLIU population in Texas?*

Hypothesis 5.1: The Demonstration will result in a reduction of potentially preventable ED use for the MLIU population.

Measure 5.1.1	Rate of potentially preventable emergency department use
Definition	An emergency treatment for a condition that did not require immediate medical care; required immediate medical care but care could have been provided in a primary care setting; or, required immediate medical care but the nature of the condition was potentially preventable or avoidable if timely and effective primary care had been provided

Measure 5.1.1	Rate of potentially preventable emergency department use
Study Population(s)	MLIU individuals
Measure Steward or Source	NYU Wagner: https://wagner.nyu.edu/faculty/billings/nyued-articles
Technical Specifications	Using the NYU algorithm, potentially preventable ED use is defined as ED visits that are: • Non-emergent; • Emergent, but primary care treatable; or, • Emergent and ED care needed, but preventable/avoidable **Monthly or quarterly rate:** Percentage of potentially preventable ED visits among total ED visits
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• THCIC - Emergency Department Research Data File

Comparison Group(s)/ Subgroup(s)	• Pre/post comparison (depending on data availability)
	  ○ Pre: 2016-2017 (pre-Demonstration renewal)
	  ○ Post: 2018-2022 (post-Demonstration renewal)
	• RHP and/or RHP tier
	• SDA
	• Payer type

Analytic Methods	• Interrupted time series
Benchmark	2016 State Rate* for count of PPVs (cannot be used for direct comparison as state PPV rates are based on Medicaid-only population and use 3M® methodology): STAR: At-risk ED visits 1,518,816; PPV Count 1,049,809 STAR Health: 20,907; 14,907 STAR Kids: 15,683; 10,698 STAR+PLUS: 317,732; 239,408 FFS: 222,203; 144,335

Note. ED=Emergency department; MLIU=Medicaid and Low-Income Individuals; NYU = New York University; THCIC=Texas Health Care Information Collection; RHP=Regional Healthcare Partnership; SDA=Service delivery area; PPV=Potentially preventable emergency department visit. *Texas Healthcare Learning Collaborative Portal: https://thlcportal.com/qoc/medical

Hypothesis 5.2: The Demonstration will result in overall cost savings compared to the Medicaid program without the Demonstration, as shown in the budget neutrality calculation.

Measure 5.2.1	Growth Rate of Demonstration Costs
Definition	The annual growth rate of the overall costs of the Demonstration as reported on the budget neutrality worksheet
Study Population(s)	MLIU individuals
Measure Steward or Source	N/A
Technical Specifications	Using total summary amounts reported in the Budget Neutrality Worksheet, annual growth rate of costs (actual or projected) will be compared over time: • Total WOW versus WW expenditures **Numerator:** (Annual waiver costs reported for DY_t) - (Annual waiver costs reported for DY_{t-1}) **Denominator:** Annual waiver costs reported for DY_t **Annual growth rate:** (Numerator / denominator) * 100
Exclusion Criteria	None
Data Source(s)/ Data Collection Method(s)	• HHSC Budget Neutrality Worksheet
Comparison Group(s)/ Subgroup(s)	• Overall costs WW versus costs WOW • Medicaid population
Analytic Methods	• Descriptive trend analysis comparing annual WOW growth rate to annual WW growth rate
Benchmark	WW costs are required to remain at or below WOW costs

Note. MLIU=Medicaid and Low-Income Individuals; WOW=Without waiver; WW=With waiver; DY=Demonstration Year, October 1-September 30; HHSC=Health and Human Services Commission.

Appendix D: List of Acronyms

Acronym	Full Name
AA	Adoption Assistance
AAP	Adult Access to Preventive/Ambulatory Health Services
AHRQ	Agency for Healthcare Research and Quality
AMM	Antidepressant Medication Management
APM	Alternate Payment Model
APP	Use of First-line Psychosocial Care for Children and Adolescents in Antipsychotics
APR-DRG	All Patient-Refined Diagnosis-Related Groups
BH	Behavioral Health
CADS	Center for Analytics and Decision Support
CAHPS	Consumer Assessment of Healthcare Providers and Systems
CAP	Children and Adolescents' Access to Primary Care
CDF-CH/AD	Screening for Depression And Follow-Up Plan For Children And Adults
CDT	Current Dental Terminology
CHF	Congestive Heart Failure
CHIP	Children's Health Insurance Program
CMDS	Children's Medicaid Dental Services
CMHC	Community Mental Health Center
CMS	Centers for Medicare and Medicaid Services
CPT	Current Procedural Terminology

CRG	Clinical Risk Group
CY	Calendar Year
DID	Difference-in-difference
DMO	Dental Maintenance Organization
DSH	Disproportionate Share Hospital
DSHS	Texas Department of State Health Services
DSRIP	Delivery System Reform Incentive Payment
DY	Demonstration Year
EAPG	Enhanced Ambulatory Patient Groups
ED	Emergency Department
EQRO	External Quality Review Organization
ER	Estrogen Receptor
FFCC	Former Foster Care Children
FFS	Fee-for-Service
FFY	Federal Fiscal Year
HbA1c	Glycosylated Hemoglobin, Type A1C
HCPCS	Healthcare Common Procedure Coding System Level II
HCUP	Healthcare Cost and Utilization Project
HEDIS®	Healthcare Effectiveness Data and Information Set
HHSC	Texas Health and Human Services Commission
HIE	Health Information Exchange
HLM	Hierarchical Linear Modeling

ICD-10-CM	International Classification of Diseases, 10th Revision, Clinical Modification
ITS	Interrupted Time Series
LHD	Local Health Department
MBCC	Medicaid for Breast and Cervical Cancer
MCO	Managed Care Organization
MLIU	Medicaid and Low-Income Uninsured
MLR	Multiple Linear Regression
MMC	Medicaid Managed Care
NCQA	National Committee for Quality Assurance
NF	Nursing Facility
NFQR	Nursing Facility Quality Review
NPI	National Provider Identifier
NYU	New York University
PCA	Permanency Care Assistance
PCCM	Primary Care Case Management
PCP	Primary Care Provider
PDC	Proportion Days Covered
PDI	Pediatric Quality Indicators
PPA	Potentially Preventable Admission
PPC	Potentially Preventable Complication
PPR	Potentially Preventable Readmission
PPV	Potentially Preventable Emergency Department Visits

PQA	Pharmacy Quality Alliance
PQI	Prevention Quality Indicator
PR	Progesterone Receptor
Q1-Q4	Quarter 1 - Quarter 4
RHP	Regional Healthcare Partnership
RUCC	Rural-Urban Continuum Codes
SA	Substance Abuse
SD	Standard Deviation
SDA	Service Delivery Area
SED	Severe Emotional Disturbance
SMI	Serious Mental Illness
STC	Special Terms and Conditions
THCIC	Texas Health Care Information Collection
TMHP	Texas Medicaid and Healthcare Partnership
TPI	Texas Provider Identifier
UC	Uncompensated Care
UPL	Upper Payment Limit
WOW	Without Waiver
WW	With Waiver

Appendix E: References

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Appendix F. Supplemental Evaluation Design for the Texas COVID-19 Public Health Emergency 1115(a) Demonstration Amendment

Introduction

On March 13, 2020, the President of the United States issued a proclamation that the COVID-19 outbreak in the United States constituted a national emergency by the authorities vested in him by the Constitution and the laws of the United States, including sections 201 and 301 of the National Emergencies Act (50 U.S.C. 1601 et seq.), and consistent with section 1135 of the Social Security Act (Act) as amended (42 U.S.C. 1320b-5). The Secretary of Health and Human Services invoked his authority to waive or modify certain requirements of titles XVIII, XIX, and XXI of the Act to the extent necessary, as determined by the Centers for Medicare & Medicaid Services (CMS), due to the consequences of the COVID-19 pandemic. Waivers or modifications to titles XVIII, XIX, and XXI of the Act ensure that sufficient health care items and services are available to meet the needs of individuals enrolled in the respective programs and to ensure that health care providers that furnish such items and services in good faith, but are unable to comply with one or more of such requirements as a result of the COVID-19 pandemic, may be reimbursed for such items and services and exempted from sanctions for such noncompliance, absent any determination of fraud or abuse. The Secretary's authority took effect as of 6:00 PM Eastern Standard Time on March 15, 2020, with a retroactive effective date of March 1, 2020. The authority will end upon termination of the public health emergency (PHE), including any extensions.

In an effort to assist states with addressing the COVID-19 pandemic, CMS created an 1115(a) demonstration opportunity to waive or modify requirements of titles XIX of the Act. The 1115(a) demonstration opportunity allows states flexibility and assistance enrolling and covering Medicaid beneficiaries during the COVID-19 pandemic. CMS announced the new 1115(a) demonstration opportunity on March 22, 2020; all approved demonstrations have a retroactive effective date of March 1, 2020 and will expire no later than 60 days after the end of the PHE, including any extensions.

Texas submitted a request for an 1115(a) demonstration to CMS on July 10, 2020. The amendment proposed to extend the 30-day spell of illness (SOI) limitation[7] in Texas' state plan for an additional 30 days for inpatient hospital stays related to COVID-19 (i.e., a stay for which the COVID-19 diagnosis is listed anywhere on the claim). The amendment would allow certain Medicaid beneficiaries up to 60 days of coverage for COVID-19-related inpatient hospital stays. In addition, the amendment would allow certain Medicaid beneficiaries to exceed the $200,000 inpatient hospital benefit limitation[7] for COVID-19-related inpatient hospital stays. CMS determined that the 1115(a) demonstration is necessary to assist Texas in delivering the most effective care to its beneficiaries in light of the COVID-19 PHE, and approved the state's 1115(a) demonstration amendment on September 3, 2020.

CMS requires all states conduct an evaluation of approved 1115(a) demonstrations. Texas' evaluation of the COVID-19 1115(a) demonstration amendment must test whether and how the approved expenditure authority affected Texas' response to the PHE. Texas is also required to track demonstration expenditures and to evaluate the connection between the expenditures and the cost-effectiveness of Texas' response to the PHE. Texas must submit a final evaluation report to CMS no later than one year after the end of the 1115(a) demonstration authority.

CMS approved use of the Texas Health and Human Services Commission's (HHSC's) Center for Analytics and Decision Support (CADS) to conduct the evaluation of the 1115(a) demonstration SOI amendment on a call August 27, 2020 and in writing on September 24, 2020. CADS is an independent department within HHSC, separate from the Medicaid and CHIP Services department. CADS has no role or responsibility in administration or implementation of the 1115(a) demonstration amendment. CADS is staffed by masters and doctoral-level researchers with extensive backgrounds in health and social science research methods. This

[7] The 30-day SOI limitation described in the state plan only applies to clients 21 and older receiving services through fee-for-service, STAR+PLUS, or STAR Health. The $200,000 inpatient hospital benefit limitation described in the state plan only applies to clients 21 and older receiving services through fee-for-service or STAR Health. In compliance with H.R. 6201, for the duration of the public health emergency, these limitations do not apply to clients who turned 21 on or after March 18, 2020. Under existing policy, these limitations do not apply to certain approved transplants and STAR+PLUS members with a severe and persistent mental illness. Not all clients subject to the state plan limitations are served under the Texas Healthcare Transformation and Quality Improvement Program 1115 demonstration. However, this evaluation includes all clients subject to the 30-day SOI limitation or $200,000 inpatient hospital benefit limitation.

evaluation design outlines CADS' plan for conducting the evaluation of the 1115(a) demonstration amendment.

Evaluation Questions and Hypotheses

To assess how the 1115(a) demonstration amendment affected the state's response to the PHE, Texas developed two evaluation questions and four corresponding hypotheses.

Evaluation Question 1. What challenges did the public health emergency pose to Medicaid policies regarding hospitalization limits?

Hypothesis 1.1. Due to COVID-19-related complications, some Medicaid clients required hospital stays that exceeded the 30-day SOI limitation.

Hypothesis 1.2. Due to COVID-19-related complications, some Medicaid clients required care that exceeded the $200,000 inpatient hospital benefit limitation.

Evaluation Question 2. How did the 1115(a) demonstration amendment help the state address challenges to hospitalization limits posed by the public health emergency?

Hypothesis 2.1. The 1115(a) demonstration amendment allowed the state greater flexibility in providing services to Medicaid clients with a COVID-19 diagnosis.

Hypothesis 2.2. The 1115(a) demonstration amendment reduced the financial burden on hospitals during the PHE by reimbursing hospital stays that exceeded the 30-day SOI or $200,000 inpatient hospital benefit limitations.

Methodology

The evaluation of the COVID-19 section 1115(a) demonstration amendment is guided by two evaluation questions and four hypotheses that examine how the amendment affected the state's response to the PHE. This section summarizes the evaluation design, study populations, data sources, analytic methods, and methodological limitations.

Evaluation Design

The evaluation will rely on a descriptive case study design, integrating both quantitative and qualitative data to provide a comprehensive understanding of how the demonstration amendment affected Texas' response to the PHE.

Evaluation Measures

Several measures have been identified to operationalize the above hypotheses. Table 13 presented on page 136 provides an overview of the proposed measures, study populations, data sources, and analytic methods by evaluation hypothesis. Specific details regarding each of the proposed measures can be found in the Detailed Tables section starting on page 139.

Study Populations

HHSC will draw on three study populations for this evaluation. The first study population includes Medicaid clients subject to the 30-day SOI or $200,000 inpatient hospital benefit limitations who had an inpatient hospital stay for COVID-19 during the PHE. In addition, the evaluation will identify Medicaid administrators (study population 2) and Managed Care Organization (MCO) staff (study population 3) to participate in semi-structured interviews based on their knowledge and familiarity with the administrative and financial aspects of Medicaid inpatient hospital stays. HHSC will identify between one and three representatives for each of the two interviewee groups (Medicaid administrators and MCO staff).

Data Sources

The evaluation will leverage both administrative and primary data sources to evaluate the 1115(a) demonstration amendment. Specifically, the evaluation will utilize fee-for-service (FFS) claims data, Medicaid managed care (MMC) encounter data, MCO administrative data, client enrollment files, and semi-structured interviews, as described below.

- **FFS claims and MMC encounter data.** FFS claims and MMC encounter data contain information on hospital stays, including the length of the stay, diagnosis codes, procedures, and costs. These data are processed and housed by Texas Medicaid and Health Partnership (TMHP), and finalized on an eight-month lag.

- **MCO administrative data.** MCO administrative data contain information on members who exceeded the 30-day SOI or $200,000 inpatient hospital benefit limitations, such as Member ID, admission dates, cost, and additional relevant information. MCO administrative data may be used to supplement data held in TMHP.
- **Client enrollment files.** The enrollment files will be used to obtain information about the client's age, sex, race/ethnicity, and county of residence. Enrollment data will be accessed using an HHSC Structured Query Language database that is finalized on an eight-month lag.
- **Semi-structured interviews.** Select Medicaid administrators and MCO staff will be interviewed via phone or videoconferencing software. Each interview will last approximately 30-45 minutes and will include an interviewer and one or two transcribers. HHSC will conduct interviews as soon as logistically feasible after approval of the Supplemental Evaluation Design for the Texas COVID-19 PHE SOI 1115(a) Demonstration Amendment. Depending on the length of the PHE, HHSC may conduct a second round of interviews to assess any substantial changes in Texas' response to the PHE.

Analytic Methods

Hypotheses will be tested using quantitative and qualitative methods. This section describes the proposed analytic strategies for examining the measures presented in Table 13.

- **Descriptive statistics.** Descriptive statistics, such as estimates of central tendency and dispersion, will be used to describe COVID-19-related inpatient hospital stays during the PHE. Descriptive statistics will include summaries of the inpatient hospital stays, such as total days and cost, as well as summaries of clients impacted by the 1115(a) demonstration amendment.
- **Descriptive trend analysis.** Descriptive trend analysis will be used to explore changes in COVID-19-related inpatient hospital stays over the course of the PHE.
- **Thematic analysis.** Hypotheses that rely on semi-structured interviews will be examined using thematic analysis. This qualitative method involves the identification of patterns and themes within interview data, and is well-suited to analyzing the diverse and nuanced information collected from study participants.

Table 13. 1115(a) Demonstration Amendment Evaluation Measures

Evaluation Hypothesis	Measures	Study Population	Data Sources	Analytic Methods
Evaluation Question 1. What challenges did the public health emergency pose to Medicaid policies regarding hospitalization limits?				
1.1. Due to COVID-19-related complications, some Medicaid clients required hospital stays that exceeded the 30-day SOI limitation.	1.1.1. Number and proportion of clients with a COVID-19 diagnosis who exceeded the 30-day SOI limitation	Clients subject to the 30-day SOI limitation with a COVID-19 diagnosis on an inpatient claim/encounter	FFS Claims Data; MMC Encounter Data; Client Enrollment Files; MCO administrative data (if applicable)	Descriptive statistics; Descriptive trend analysis (subgroup analysis, where applicable)
1.2. Due to COVID-19-related complications, some Medicaid clients required care that exceeded the $200,000 inpatient hospital benefit limitation.	1.2.1. Number and proportion of clients with a COVID-19 diagnosis who exceeded the $200,000 inpatient hospital benefit limitation	Clients subject to the $200,000 inpatient hospital benefit limitation with a COVID-19 diagnosis on an inpatient claim/encounter	FFS Claims Data; MMC Encounter Data; Client Enrollment Files; MCO administrative data (if applicable)	Descriptive statistics; Descriptive trend analysis (subgroup analysis, where applicable)

Evaluation Hypothesis	Measures	Study Population	Data Sources	Analytic Methods
Evaluation Question 2. How did the 1115(a) demonstration amendment help the state address challenges to hospitalization limits posed by the public health emergency?				
2.1. The 1115(a) demonstration amendment allowed the state greater flexibility in providing services to Medicaid clients with a COVID-19 diagnosis.	2.1.1. SOI length for clients with a COVID-19 diagnosis 2.1.2. Cost of inpatient hospitalizations for clients with a COVID-19 diagnosis	Clients subject to the 30-day SOI or $200,000 inpatient hospital benefit limitation with a COVID-19 diagnosis on an inpatient claim/encounter	FFS Claims Data; MMC Encounter Data; Client Enrollment Files; MCO administrative data (if applicable)	Descriptive statistics; Descriptive trend analysis (subgroup analysis, where applicable)
	2.1.3. Impact of extending the 30-day SOI limitation on client care 2.1.4. Impact of waiving the $200,000 inpatient hospital benefit limitation on client care 2.1.5. HHSC and MCO process changes related to the 1115(a) demonstration amendment	Medicaid administrators; MCO staff	Interviews	Thematic analysis
2.2. The 1115(a) demonstration amendment reduced the financial burden on hospitals during the PHE by reimbursing hospital stays that exceeded the 30-day SOI or $200,000 inpatient hospital benefit limitations.	2.2.1 Impact of the 1115(a) demonstration amendment on the distribution of costs associated with Medicaid inpatient hospital stays	Medicaid administrators; MCO staff	Interviews	Thematic analysis

Note. The 30-day SOI limitation described in the state plan only applies to clients 21 and older receiving services through fee-for-service, STAR+PLUS, or STAR Health. The $200,000 inpatient hospital benefit limitation described in the state plan only applies to clients 21 and older receiving services through fee-for-service or STAR Health.

Anticipated Limitations

The goal of this evaluation is to determine how the 1115(a) demonstration amendment affected Texas' response to the PHE. Consistent with CMS guidance for COVID-19 PHE 1115(a) demonstration evaluations, analyses will be primarily descriptive and qualitative. Texas cannot test the causal impact of the 1115(a) demonstration amendment on the state's response to the PHE because the amendment was made retroactively effective at the beginning of the PHE. There is not an appropriate counterfactual condition available in which Texas was responding to the COVID-19 pandemic without COVID-19 hospitalization flexibilities in place.

Due to the reliance on interviews from a select number of Medicaid administrators and MCO staff, the evaluation may be susceptible to common threats to validity among qualitative methods, such as recall bias and social desirability bias. Texas will attempt to reduce these potential biases by using contextual reminders where appropriate and standardizing interview protocols. Despite these threats, this mode of data collection is strengthened by a high level of nuance and the ability to capture unique perspectives. Further, qualitative data will be supplemented with quantitative data on client hospitalizations. The combination of claims data and semi-structured interviews will provide broad insight into Texas' response to the PHE in light of the COVID-19 flexibilities granted under this amendment.

Evaluation Timeline

HHSC will follow the evaluation timeline shown in Table 14.

Table 14. 1115(a) Demonstration Amendment Evaluation Timeline

Date	Milestone/Deliverable
March 1, 2020	Effective date of Texas' COVID-19 PHE 1115(a) Demonstration Amendment
September 3, 2020	Texas' COVID-19 PHE 1115(a) Demonstration Amendment Approved
November 6, 2020	Texas' COVID-19 PHE 1115(a) Demonstration Amendment Evaluation Design Due
No later than 60 days after end of PHE	End date of Texas' COVID-19 PHE 1115(a) Demonstration Amendment
One year after expiration of demonstration	Final Report Due

Detailed Tables

Evaluation Question 1. *What challenges did the public health emergency pose to Medicaid policies regarding hospitalization limits?*

Hypothesis 1.1. Due to COVID-19-related complications, some Medicaid clients required hospital stays that exceeded the 30-day SOI limitation.

Measure 1.1.1	Number and proportion of clients with a COVID-19 diagnosis who exceeded the 30-day SOI limitation
Definition	The unique count of FFS, STAR+PLUS, and STAR Health clients subject to the 30-day SOI limitation who were hospitalized with COVID-19 for more than 30 days (days do not need to be consecutive) during a single spell of illness
Study Population	FFS, STAR+PLUS, and STAR Health clients[1] subject to the 30-day SOI limitation with a COVID-19 diagnosis (U071 diagnosis code) in any position on an inpatient claim/encounter
Technical Specifications	**Spell of illness**: The number of days a client is eligible to receive coverage for inpatient hospital care. Days counted under a single spell of illness may accrue intermittently or consecutively. A new spell of illness does not start until the client has been out of an acute care facility for 60 consecutive days. Present as an unduplicated number of clients and as a proportion of all clients with a COVID-19 diagnosis: **Numerator:** Total number of unduplicated clients subject to the 30-day SOI limitation with a COVID-19 diagnosis whose hospitalization exceeded 30 days during a single SOI **Denominator:** Total number of unduplicated clients subject to the 30-day SOI limitation with a COVID-19 diagnosis **Rate:** (number / denominator) * 100
Exclusion Criteria	None
Data Source(s)/Data Collection Method(s)	FFS Claims Data; MMC Encounter Data; Client Enrollment Files; MCO administrative data (if applicable)
Comparison Group(s)/Subgroup(s)	Client demographics (age, race/ethnicity, sex, region, etc.), where applicable
Analytic Methods	Descriptive statistics; Descriptive trend analysis (March 1, 2020 – no later than 60 days after the end of the PHE)

[1] The 30-day SOI limitation described in the state plan only applies to clients 21 and older receiving services through fee-for-service, STAR+PLUS, or STAR Health.

Note. COVID-19 = Coronavirus Disease 2019. SOI = Spell of illness. FFS = Fee-for-service. STAR+PLUS = Texas Medicaid Managed Care program for individuals age 21 and older with disabilities and individuals age 65 or older. STAR Health = Texas Medicaid Managed Care program for individuals under or transferring out of conservatorship or foster care. MMC = Medicaid Managed Care. MCO = Managed Care Organization. PHE = Public health emergency.

Hypothesis 1.2. Due to COVID-19-related complications, some Medicaid clients required care that exceeded the $200,000 inpatient hospital benefit limitation.

Measure 1.2.1	Number and proportion of Medicaid clients with a COVID-19 diagnosis who exceeded the $200,000 inpatient hospital benefit limitation
Definition	The unique count of FFS and STAR Health clients subject to the $200,000 inpatient hospital benefit limitation whose COVID-19 hospitalizations totaled more than $200,000 during a single spell of illness
Study Population	FFS and STAR Health clients[1] subject to the $200,000 inpatient hospital benefit limitation with a COVID-19 diagnosis (U071 diagnosis code) in any position on an inpatient claim/encounter
Technical Specifications	**Spell of illness**: The number of days a client is eligible to receive coverage for inpatient hospital care. Days counted under a single spell of illness may accrue intermittently or consecutively. A new spell of illness does not start until the client has been out of an acute care facility for 60 consecutive days. Present as an unduplicated number of clients and as a proportion of all clients with a COVID-19 diagnosis: **Numerator:** Total number of unduplicated clients subject to the $200,000 inpatient hospital benefit limitation with a COVID-19 diagnosis whose hospitalization totaled more than $200,000 **Denominator:** Total number of unduplicated clients subject to the $200,000 inpatient hospital benefit limitation with a COVID-19 diagnosis **Rate:** (number / denominator) * 100
Exclusion Criteria	None
Data Source(s)/Data Collection Method(s)	FFS Claims Data; MMC Encounter Data; Client Enrollment Files; MCO administrative data (if applicable)
Comparison Group(s)/Subgroup(s)	Client demographics (age, race/ethnicity, sex, region, etc.), where applicable
Analytic Methods	Descriptive statistics; Descriptive trend analysis (March 1, 2020 – no later than 60 days after the end of the PHE)

[1] The $200,000 inpatient hospital benefit limitation described in the state plan only applies to clients 21 and older receiving services through fee-for-service or STAR Health.

Note. COVID-19 = Coronavirus Disease 2019. FFS = Fee-for-service. STAR Health = Texas Medicaid Managed Care program for individuals under or transferring out of conservatorship or foster care. MMC = Medicaid Managed Care. MCO = Managed Care Organization. PHE = Public health emergency.

Evaluation Question 2. ***How did the 1115(a) demonstration amendment help the state address challenges to hospitalization limits posed by the public health emergency?***

Hypothesis 2.1. The 1115(a) demonstration amendment allowed the state greater flexibility in providing services to Medicaid clients with a COVID-19 diagnosis.

Measure 2.1.1	SOI length for clients with a COVID-19 diagnosis
Definition	Number of days spent in the hospital with a COVID-19 diagnosis per client subject to the 30-day SOI limitation per spell of illness
Study Population	FFS, STAR+PLUS, and STAR Health clients[1] subject to the 30-day SOI limitation with a COVID-19 diagnosis (U071 diagnosis code) in any position on an inpatient claim/encounter
Technical Specifications	**Spell of illness**: The number of days a client is eligible to receive coverage for inpatient hospital care. Days counted under a single spell of illness may accrue intermittently or consecutively. A new spell of illness does not start until the client has been out of an acute care facility for 60 consecutive days. Present mean, median, standard deviation, minimum, and maximum number of days per SOI for groups with sufficient sample sizes
Exclusion Criteria	None
Data Source(s)/Data Collection Method(s)	FFS Claims Data; MMC Encounter Data; Client Enrollment Files; MCO administrative data (if applicable)
Comparison Group(s)/Subgroup(s)	Client demographics (age, race/ethnicity, sex, region, etc.), where applicable Subgroup: Spells of illness that exceeded 30 days
Analytic Methods	Descriptive statistics; Descriptive trend analysis (March 1, 2020 – no later than 60 days after the end of the PHE)

[1] The 30-day SOI limitation described in the state plan only applies to clients 21 and older receiving services through fee-for-service, STAR+PLUS, or STAR Health.

Note. SOI = Spell of illness. COVID-19 = Coronavirus Disease 2019. FFS = Fee-for-service. STAR+PLUS = Texas Medicaid Managed Care program for individuals age 21 and older with disabilities and individuals age 65 or older. STAR Health = Texas Medicaid Managed Care program for individuals under or transferring out of conservatorship or foster care. MMC = Medicaid Managed Care. MCO = Managed Care Organization. PHE = Public health emergency.

Measure 2.1.2	Cost of inpatient hospitalizations for clients with a COVID-19 diagnosis
Definition	Cost of COVID-19-related inpatient hospitalizations per client subject to the $200,000 inpatient hospital benefit limitation per spell of illness
Study Population	FFS and STAR Health clients[1] subject to the $200,000 inpatient hospital benefit limitation with a COVID-19 diagnosis (U071 diagnosis code) in any position on an inpatient claim/encounter
Technical Specifications	**Spell of illness**: The number of days a client is eligible to receive coverage for inpatient hospital care. Days counted under a single spell of illness may accrue intermittently or consecutively. A new spell of illness does not start until the client has been out of an acute care facility for 60 consecutive days. Present mean, median, standard deviation, minimum, and maximum cost per SOI for groups with sufficient sample sizes
Exclusion Criteria	None
Data Source(s)/Data Collection Method(s)	FFS Claims Data; MMC Encounter Data; Client Enrollment Files; MCO administrative data (if applicable)
Comparison Group(s)/Subgroup(s)	Client demographics (age, race/ethnicity, sex, region, etc.), where applicable Subgroup: Spells of illness that exceeded $200,000
Analytic Methods	Descriptive statistics; Descriptive trend analysis (March 1, 2020 – no later than 60 days after the end of the PHE)

[1] The $200,000 inpatient hospital benefit limitation described in the state plan only applies to clients 21 and older receiving services through fee-for-service or STAR Health.

Note. COVID-19 = Coronavirus Disease 2019. FFS = Fee-for-service. STAR Health = Texas Medicaid Managed Care program for individuals under or transferring out of conservatorship or foster care. MMC = Medicaid Managed Care. MCO = Managed Care Organization. PHE = Public health emergency.

Measure 2.1.3	Impact of extending the 30-day SOI limitation on client care
Definition	Semi-structured interviews will explore the impact of extending the 30-day SOI limitation on the care of Medicaid clients infected with COVID-19
Study Population	Medicaid administrators; MCO staff
Technical Specifications	N/A
Exclusion Criteria	None
Data Source(s)/Data Collection Method(s)	Semi-structured interviews
Comparison Group(s)/Subgroup(s)	Interviewee group (Medicaid administrators; MCO staff), where applicable
Analytic Methods	Thematic Analysis

Note. SOI = Spell of illness. COVID-19 = Coronavirus Disease 2019. MCO = Managed Care Organization.

Measure 2.1.4	Impact of waiving the $200,000 inpatient hospital benefit limitation on client care
Definition	Semi-structured interviews will explore the impact of waiving the $200,000 inpatient hospital benefit limitation on the care of Medicaid clients infected with COVID-19
Study Population	Medicaid administrators; MCO staff
Technical Specifications	N/A
Exclusion Criteria	None
Data Source(s)/Data Collection Method(s)	Semi-structured interviews
Comparison Group(s)/Subgroup(s)	Interviewee group (Medicaid administrators; MCO staff), where applicable
Analytic Methods	Thematic Analysis

Note. COVID-19 = Coronavirus Disease 2019. MCO = Managed Care Organization.

Measure 2.1.5	HHSC and MCO process changes related to the 1115(a) demonstration amendment
Definition	Semi-structured interviews will explore HHSC and MCO process changes related to the 1115(a) demonstration amendment
Study Population	Medicaid administrators; MCO staff
Technical Specifications	N/A
Exclusion Criteria	None
Data Source(s)/Data Collection Method(s)	Semi-structured interviews
Comparison Group(s)/Subgroup(s)	Interviewee group (Medicaid administrators; MCO staff), where applicable
Analytic Methods	Thematic Analysis

Notes. MCO = Managed Care Organization.

Hypothesis 2.2. The 1115(a) demonstration amendment reduced the financial burden on hospitals during the PHE by reimbursing hospital stays that exceeded the 30-day SOI or $200,000 inpatient hospital benefit limitations.

Measure 2.2.1	Impact of the 1115(a) demonstration amendment on hospital financial burden
Definition	Semi-structured interviews will explore the impact of the 1115(a) demonstration amendment on the distribution of costs associated with Medicaid inpatient hospital stays
Study Population	Medicaid administrators; MCO staff
Technical Specifications	N/A
Exclusion Criteria	None
Data Source(s)/Data Collection Method(s)	Semi-structured interviews
Comparison Group(s)/Subgroup(s)	Interviewee group (Medicaid administrators; MCO staff), where applicable
Analytic Methods	Thematic Analysis

Notes. MCO = Managed Care Organization.