

Arizona Health Care Cost Containment System



Prior Quarter Coverage Waiver

Evaluation Design Plan

July 2019

Draft Copy for CMS Review

This program is operated under an 1115 Research and Demonstration Waiver initially approved by the Centers for Medicare & Medicaid Services (CMS) on January 18, 2019.



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1. Background

On January 18, 2019, Centers for Medicare & Medicaid Services (CMS) approved Arizona’s requests to amend its Section 1115 Demonstration project, entitled “Arizona Health Care Cost Containment System (AHCCCS).” The amendment will allow AHCCCS to waive Prior Quarter Coverage (PQC) retroactive eligibility. PQC allows individuals who are applying for Title XIX coverage retroactive coverage for up to three months prior to the month of application as long as the individual remained eligible for Medicaid during that time. The amendment will allow AHCCCS to limit retroactive coverage to the month of application, which is consistent with the AHCCCS historical waiver authority prior to January 2014.¹⁻¹ The amendment will allow AHCCCS to implement the waiver no earlier than April 1, 2019 with an anticipated effective date of July 1, 2019, with the demonstration approved from January 18, 2019, through September 30, 2021.¹⁻² The demonstration will apply to all Medicaid beneficiaries, except for pregnant women, women who are 60 days or less postpartum, and infants and children under 19 years of age. AHCCCS will provide outreach and education to eligible members, current beneficiaries, and providers to inform those that may be impacted by the change.

The goals of the demonstration are to encourage beneficiaries to obtain and maintain health coverage, even when healthy, or to obtain health coverage as soon as possible after becoming eligible, increase continuity of care by reducing gaps in coverage that occur when members “churn” (individuals moving on and off Medicaid repeatedly), and therefore, improve health outcomes and reduce costs to AHCCCS, ensuring the long term fiscal sustainability of the Arizona Medicaid program.

¹⁻¹ Arizona Health Care Cost Containment System. Arizona Section 1115 Waiver Amendment Request: Proposal to Waive Prior Quarter Coverage. Apr 6, 2019. Available at:
https://www.azahcccs.gov/Resources/Downloads/PriorQuarterCoverageWaiverToCMS_04062018.pdf. Accessed on: Jun 19, 2019.

¹⁻² Centers for Medicare & Medicaid Services. CMS Approval Letter. Jan 18, 2019. Available at:
<https://www.azahcccs.gov/Resources/Downloads/CMSApprovalLetter.pdf>. Accessed on: Jun 19, 2019.

2. Evaluation Questions and Hypothesis

The overarching goals of the Arizona Health Care Cost Containment System (AHCCCS) demonstration in waiving prior quarter coverage (PQC) from three months of retroactive coverage to the month of enrollment are that members will be encouraged to obtain and continuously maintain health coverage, even when healthy; members will be encouraged to apply for Medicaid without delays, promoting continuity of eligibility and enrollment for improved health status; and Medicaid costs will be contained.²⁻¹ This will support the sustainability of the Medicaid program while more efficiently focusing resources on providing accessible high quality health care and limiting the resource-intensive process associated with PQC eligibility.

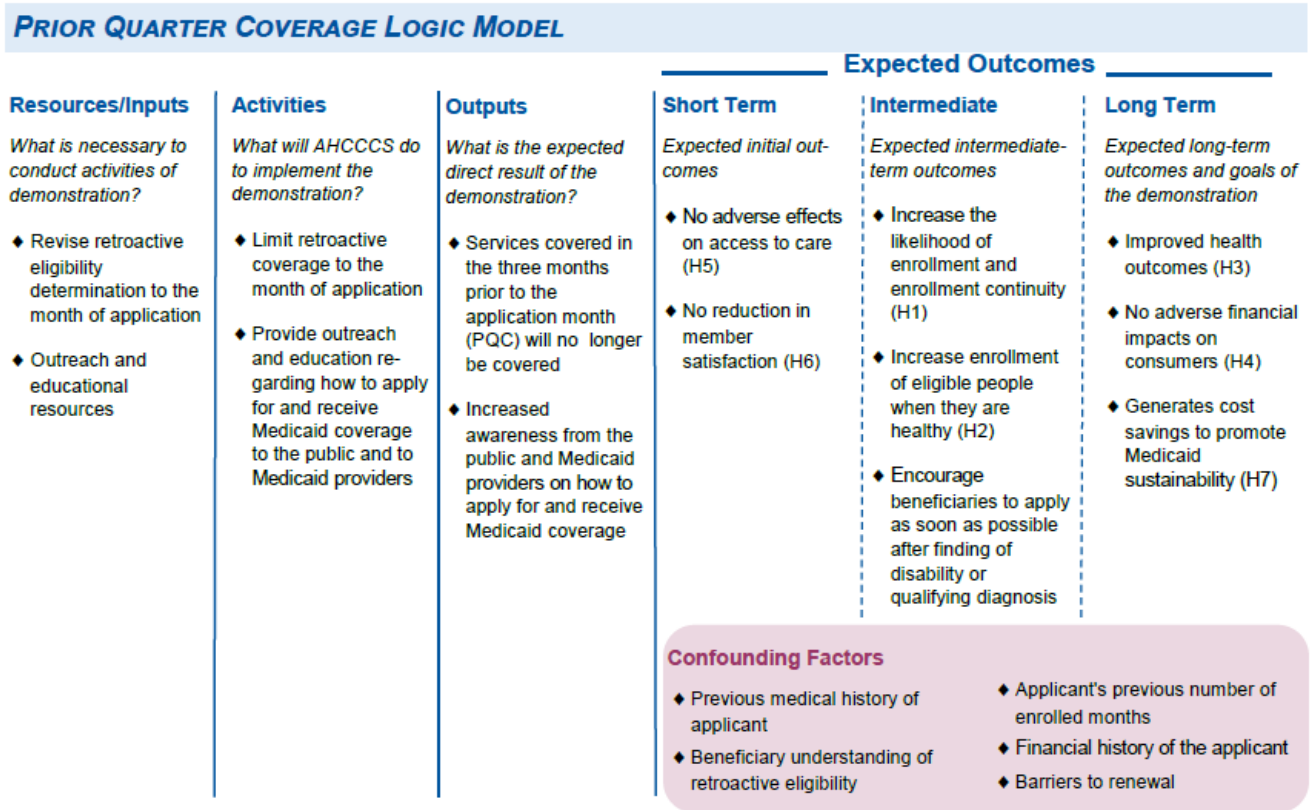
A primary purpose of this evaluation is to determine whether the AHCCCS demonstration to waive PQC is achieving these goals. To develop hypotheses and research questions associated with these goals, AHCCCS developed a logic model that relates the inputs and activities of the program to the anticipated initial, intermediate, and long-term outcomes, which are associated with hypotheses.

Logic Model

Figure 2-1 illustrates that through providing outreach and education to the public and providers regarding the demonstration and limiting retroactive eligibility to the month of application will lead to improved health outcomes, while having no negative effects on access to care and beneficiary satisfaction, as well as no negative financial impact to beneficiaries. These expected outcomes will not all happen simultaneously. Any effects on access to care and beneficiary satisfaction are expected to be impacted first. Later, there is the expectation that there will be an increase in the likelihood and continuity of enrollment and in the enrollment of eligible people while they are healthy. This aligns with the set objectives of the amendment. Longer term, there should be no financial impact on beneficiaries, while generating cost savings to promote Arizona Medicaid sustainability. Ultimately, this leads to improved health outcomes among beneficiaries. Hypotheses associated with these outcomes are denoted in parentheses in the logic model (hypotheses descriptions can be found in Table 2-1).

²⁻¹ Arizona Health Care Cost Containment System. Arizona Section 1115 Waiver Amendment Request: Proposal to Waive Prior Quarter Coverage. Apr 6, 2019. Available at: https://www.azahcccs.gov/Resources/Downloads/PriorQuarterCoverageWaiverToCMS_04062018.pdf. Accessed on: Jun 19, 2019.

Figure 2-1: PQC Logic Model



Hypotheses and Research Questions

To comprehensively evaluate the PQC demonstration waiver, eight hypotheses will be tested using 12 research questions. Table 2-1 lists the eight hypotheses.

Table 2-1: PQC Hypotheses

Hypotheses	
1	Eliminating prior quarter coverage will increase the likelihood and continuity of enrollment.
2	Eliminating prior quarter coverage will increase enrollment of eligible people when they are healthy relative to those eligible people who have the option of prior quarter coverage.
3	Health outcomes will be better for those without prior quarter coverage compared to Medicaid beneficiaries with prior quarter coverage.
4	Eliminating prior quarter coverage will not have adverse financial impacts on consumers.
5	Eliminating prior quarter coverage will not adversely affect access to care.
6	Eliminating prior quarter coverage will not result in reduced member satisfaction.

Hypotheses	
7	Eliminating prior quarter coverage will generate cost savings over the term of the waiver.
8	Eliminating prior quarter coverage will lead to timelier enrollment into Medicaid eligibility that relies on disability or diagnosis.

Hypothesis 1 will test whether the demonstration results in an increase in the likelihood and continuity of enrollment. The measures and associated research questions are listed in Table 2-2. Improvements in these outcomes would support the demonstration’s goal of increasing enrollment and its continuity among eligible beneficiaries.

Table 2-2: Hypothesis 1 Research Questions and Measures

Hypothesis 1—Research Question and Measures	
Research Question 1.1: Do eligible people without prior quarter coverage enroll in Medicaid at the same rates as other eligible people with prior quarter coverage?	
1-1	Percentage of Medicaid enrollees per month by eligibility group out of estimated eligible Medicaid recipients
1-2	Percentage of new Medicaid enrollees per month by eligibility group, as identified by those without a recent spell of Medicaid coverage out of estimated eligible Medicaid recipients
1-3	Number of Medicaid enrollees per month by eligibility group and/or per-capita of state
1-4	Percentage of new Medicaid enrollees per month by eligibility group, as identified by those without a recent spell of Medicaid coverage out of all Medicaid enrollees
1-5	Number of new Medicaid enrollees per month by eligibility group, as identified by those without a recent spell of Medicaid coverage
Research Question 1.2: What is the likelihood of enrollment continuity for those without prior quarter coverage compared to other Medicaid beneficiaries with prior quarter coverage?	
1-6	Percentage of Medicaid beneficiaries due for renewal who complete the renewal process
1-7	Average number of months with Medicaid coverage
Research Question 1.3: Do beneficiaries without prior quarter coverage who disenroll from Medicaid have shorter enrollment gaps than other beneficiaries with prior quarter coverage?	
1-8	Percentage of Medicaid beneficiaries who re-enroll after a gap of up to six months
1-9	Average number of months without Medicaid coverage for beneficiaries who re-enroll after a gap of up to six months
1-10	Average number of gaps in Medicaid coverage for beneficiaries who re-enroll after a gap of up to six months
1-11	Average number of days per gap in Medicaid coverage for beneficiaries who re-enroll after a gap of up to six months

Hypothesis 2 will test whether eliminating PQC increases the number of healthy enrollees. The measure and associated research question are presented in Table 2-3.

Table 2-3: Hypothesis 2 Research Questions and Measures

Hypothesis 2—Research Question and Measures	
Research Question 2.1: Do newly enrolled beneficiaries without prior quarter coverage have higher self-assessed health status than other newly enrolled beneficiaries with prior quarter coverage?	
2-1	Newly enrolled beneficiary reported rating of overall health
2-2	Newly enrolled beneficiary reported rating of overall mental or emotional health
2-3	Percentage of beneficiaries who reported prior year emergency room (ER) visit
2-4	Percentage of beneficiaries who reported prior year hospital admission
2-5	Percentage of beneficiaries who reported getting healthcare three or more times for the same condition or problem

A key goal of waiving PQC is that there will be improved health outcomes among both newly enrolled and established beneficiaries. Hypothesis 3 will test this by determining if beneficiaries without PQC have better outcomes than those with PQC or who have been enrolled since pre-implementation of the waiver. The measures and associated research questions are presented in Table 2-4.

Table 2-4: Hypothesis 3 Research Questions and Measures

Hypothesis 3—Research Question and Measures	
Research Question 3.1: Do beneficiaries without prior quarter coverage have better health outcomes than other beneficiaries with prior quarter coverage or who have been enrolled since pre-implementation of the waiver?	
3-1	Beneficiary reported rating of overall health for all beneficiaries
3-2	Beneficiary reported rating of overall mental or emotional health for all beneficiaries

It is crucial to evaluate the financial impact that the PQC waiver has on beneficiaries. This can determine if there are any unintended consequences, such as consumers having additional expenses due to the PQC waiver not covering medical expenses during the prior quarter. Hypothesis 4 evaluates the impact that the waiver has by measuring reported beneficiary medical debt. The measure and associated research question are presented in Table 2-5.

Table 2-5: Hypothesis 4 Research Question and Measure

Hypothesis 4—Research Question and Measures	
Research Question 4.1: Does the prior quarter coverage waiver lead to changes in the incidence of beneficiary medical debt?	
4-1	Percentage of beneficiaries who reported medical debt

It is important to ensure that the PQC waiver does not have an impact on access to care. Hypothesis 5 assesses this by examining utilization of office visits and facility visits for beneficiaries subject to the PQC waiver

compared to those who were not subject to the waiver. The measures and associated research questions are presented in Table 2-6.

Table 2-6: Hypothesis 5 Research Questions and Measures

Hypothesis 5—Research Question and Measures	
Research Question 5.1: Do beneficiaries without prior quarter coverage have the same or higher rates of office visits with prior quarter coverage or who have been enrolled since pre-implementation of the waiver?	
5-1	Beneficiary response to getting needed care right away
5-2	Beneficiary response to getting an appointment for a check-up or routine care at a doctor's office or clinic
Research Question 5.2: Do beneficiaries without prior quarter coverage have the same or higher rates of service and facility utilization as those with prior quarter coverage or who have been enrolled since pre-implementation of the waiver?	
5-3	Percentage of beneficiaries with a visit to a specialist (e.g. eye doctor, Ears Nose Throat [ENT], cardiologist)
5-4	Percentage of beneficiaries with a claim/encounter from a skilled nursing facility

As these changes will directly impact the beneficiaries, it is important to ensure that the beneficiaries remain satisfied with their healthcare. Hypothesis 6 seeks to quantify the change that the implementation of the waiver has on beneficiary satisfaction. The measure and associated research question are presented in Table 2-7.

Table 2-7: Hypothesis 6 Research Question and Measure

Hypothesis 6—Research Question and Measure	
Research Question 6.1: Do beneficiaries without prior quarter coverage have the same or higher satisfaction with their healthcare as those with prior quarter coverage or who have been enrolled since pre-implementation of the waiver?	
6-1	Beneficiary rating of overall healthcare

Hypothesis 7 measures estimates any cost savings to AHCCCS associated with the elimination of PQC, thereby enhancing the financial sustainability of the Arizona Medicaid program. The measures and associated research questions are presented in Table 2-8.

Table 2-8: Hypothesis 7 Research Questions and Measures

Hypothesis 7—Research Question and Measures	
Research Question 7.1: Do the average medical and pharmacy costs to AHCCCS decrease after implementation of the waiver compared to what they would have been in the absence of the waiver?	
7-1	Annual medical and pharmacy costs per beneficiary month
7-2	Annual administrative costs per beneficiary month
7-3	Total costs per beneficiary month
Research Question 7.2: Do costs to non-AHCCCS entities stay the same or decrease after implementation of the waiver compared to before?	
7-4	Reported costs for uninsured and/or likely eligible Medicaid recipients among potentially impacted providers and/or provider networks

Hypothesis 8 seeks to determine if the elimination of PQC encourages beneficiaries enroll soon after receiving a qualifying diagnosis. The measure and associated research question are presented in Table 2-9.

Table 2-9: Hypothesis 8 Research Question and Measure

Hypothesis 8—Research Question and Measure	
Research Question 8.1: Does the waiver encourage beneficiaries to apply for Medicaid as soon as possible after finding of disability a qualifying diagnosis (e.g., breast or cervical cancer)?	
8-1	Percentage of Medicaid beneficiaries who applied for Medicaid within the month of finding relevant diagnosis, by eligibility category

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3. Methodology

The primary goal of an impact assessment in policy and program evaluation is to identify the impact of the policy or program. To accomplish this, a comparison of outcomes between the intervention group and a valid counterfactual—the intervention group had they not been exposed to the intervention—must be made. The gold standard for experimental design is a randomized controlled trial which would be implemented by first identifying an intervention population, and then randomly assigning individuals to the intervention and the rest to a comparison group, which would serve as the counterfactual. However, random assignment is rarely feasible or desirable in practice, particularly as it relates to healthcare policies.

As such, a variety of quasi-experimental or observational methodologies have been developed for evaluating the effect of policies on outcomes. The research questions presented in the previous section will be addressed through at least one of these methodologies. The selected methodology largely depends on data availability factors relating to: (1) data to measure the outcomes; (2) data for a valid comparison group; and (3) data collection during the time periods of interest—typically defined as the year prior to implementation and annually thereafter. Table 3-1 illustrates a sampling of analytic approaches that could be used as part of the evaluation and whether the approach requires data gathered at the baseline (i.e., pre-implementation), requires a comparison group, or allows for causal inference to be drawn. It also notes key requirements unique to a particular approach.

Table 3-1: Sampling Analytic Approaches

Analytic Approach	Baseline Data	Comparison Group	Allows Causal Inference	Notes
Randomized Controlled Trial		✓	✓	Requires full randomization of treatment and comparison group.
Difference-in-Differences	✓	✓	✓	Trends in outcomes should be similar between comparison and intervention groups at baseline.
Panel Data Analysis	✓		✓	Requires sufficient data points both prior to and after implementation.
Regression Discontinuity		✓	✓	Program eligibility must be determined by a threshold.
Interrupted Time Series	✓		✓	Requires sufficient data points prior to implementation.
Cohort Analysis	✓			
Cross-sectional Analysis		✓		

Because the demonstration impacts all new Arizona Health Care Cost Containment System (AHCCCS) beneficiaries, excluding pregnant woman, women who are 60 days or less postpartum, and infants and children under 19 years of age, the excluded populations may serve as a comparison group. To account for differences between the two groups, propensity score matching, or weighting will be used to identify beneficiaries who share similar characteristics to those in the intervention (i.e., new members subject to the waiver requirements). Since age can impact many of the outcomes studied, one important consideration is adequately controlling for the

impact of age on the outcomes. This will isolate the effect of the demonstration on outcomes, rather than contaminate that effect with the impact of age on the outcome. This is discussed in sections below.

A second potential comparison group can be used comprising current beneficiaries who were not impacted by the PQC waiver because they enrolled prior to the waiver implementation. The independent evaluator will determine which comparison group is best suited for the evaluation or if both can be used.

Evaluation Design Summary

For measures in which a valid comparison group and baseline data are available, a difference-in-differences (DiD) study design will be used. DiD compares the changes in outcomes for the intervention group against the changes in the outcomes for the comparison group. Assuming that the trends in outcomes between the two groups would be the same in absence of the intervention, the changes in outcomes for the comparison group would serve as the expected change in outcomes for the intervention group.

Since pregnant and recently postpartum women (up to 60 days), and those who are under 19 years of age are not subject to the limited retroactive eligibility waiver, these individuals may be used as a comparison group. If these beneficiaries are similar to the intervention group in unobserved characteristics, a comparative regression discontinuity model may estimate the impact that the waiver has on the outcomes. By including outcomes for children who are not subject to the waiver requirements, a regression discontinuity approach can identify any changes in outcomes at the age threshold of the waiver of 19. However, this comparison may yield results that would not be generalizable to the full age ranges of individuals subject to the waiver. By including outcomes for pregnant and recently postpartum women in the same model, differences in outcomes among older beneficiaries can be estimated.

For measures that do not target exclusively newly enrolled beneficiaries, this comparison group can be used in conjunction with beneficiaries who have been continuously enrolled since prior to the waiver implementation. Outcomes that rely on state administrative data pertaining to enrollment by eligibility category and rates of enrollment can have intra-year (e.g., monthly) measurements taken both prior to and after implementation. This can serve to build pre- and post-implementation trends. These analyses will not utilize a comparison group because children and adults have mutually exclusive eligibility categories. Therefore, these will not be able to necessarily provide an estimate of the waiver's impact on enrollment; however, these measures will serve as valuable rapid-cycle reporting for the State's implementation of the waiver.

Due to the implementation of multiple waivers that will be evaluated, the independent evaluator will leverage the staggered implementation of each waiver along with variations among intervention and comparison groups to identify waiver-specific impacts. This will be accomplished through varying the timing of survey collections as well as judicious employment of statistical controls identifying individual participation in each waiver.

Intervention and Comparison Populations

Intervention Population

The intervention group will consist of all eligible members who apply for coverage after implementation, expected to be July 1, 2019, excluding pregnant women, women who are 60 days or less postpartum, and infants and children under 19 years of age.

Comparison Populations

The full scope of potential in-state comparison groups includes eligible members who are 19 years of age or younger and current beneficiaries, as these populations are not subject to the intervention of limiting retroactive eligibility to the month of application. Additionally, similar beneficiaries in other states that provide retroactive coverage can be used as the counterfactual for some measures where an appropriate comparison group cannot be found in-state and out-of-state data are available.

Identification of Valid in State Comparison Groups

Exempt Beneficiary Subgroup

Newly enrolled beneficiaries who are exempt from the waiver requirements (i.e., under 19 years of age, pregnant and postpartum women) who apply for Medicaid both before and after the implementation of the waiver can be used as a comparison group to those newly enrolled members who are subject to limited retroactive eligibility. For this analysis, both the comparison group and the intervention group would be newly enrolled around the same time, allowing for the control of various factors, such as provider network and consistent medical costs. The independent evaluator will determine an appropriate age range of the comparison group.

Continuously Enrolled Beneficiaries

Current beneficiaries who have been continuously enrolled since prior to the implementation of the waiver may also be used as a comparison group. On the face of it, continuously enrolled beneficiaries are expected to share more similarities with the intervention population, requiring fewer statistical adjustments to ensure an appropriate comparison group; however, this group would not be suitable for measures that target only newly enrolled beneficiaries.

Identification of Valid Other-State Comparison Groups

In the event that the previous groups do not work, the independent evaluator will look at using other-state beneficiaries as the comparison group. Other-state members may come from state eligibility and enrollment data, such as Integrated Public Use Microdata Series (IPUMS) American Community Surveys (ACS).

There are two approaches that may be taken to identify a valid comparison using national datasets, such as IPUMS. They could be used either independently or together, and through the course of conducting analysis, the independent evaluator will determine the best approach. The first approach would be to identify a state with similar Medicaid beneficiaries and eligibility criteria as the intervention state (i.e., Arizona). This could be accomplished through a variety of methods, including background qualitative research in addition to quantitative assessments. Once a similar state or states are identified, national data from that state would be used. Identifying Medicaid beneficiaries during the time period of interest would depend on the data source. Some data sources, including IPUMS, currently provide a field on previous year Medicaid coverage. Alternatively, individuals likely eligible for Medicaid could be identified using additional data fields indicating household/family income, number of dependents, and/or disability status.

The second approach would involve identifying a state with roughly similar Medicaid beneficiaries and coverages, but utilizing propensity score matching to identify a subset of the eligible comparison group that is most similar to the intervention population based on observable characteristics, including demographic factors

and health conditions prior to implementation of the waiver.³⁻¹ The richness of data on observable characteristics will depend on the data source. Some national data sets may only contain broad information that could be used to balance populations based on general demographic and basic health/disability status, rather than detailed indicators of specific chronic physical and/or mental health conditions.

Identification of Similar Beneficiaries

Propensity score matching will be used to identify a subset of the eligible comparison group that is most similar to the intervention population based on observable characteristics, including demographic factors and health conditions prior to implementation of the waiver.³⁻² Propensity score matching has been used extensively to match individuals from an eligible comparison group to individuals in the intervention group.³⁻³ However, there are several risks to the use of propensity scores and subsequent matching on the propensity score (Table 3-2).

Table 3-2: Propensity Score Risks

Risk	Description
Insufficient coverage	Not enough individuals in the eligible comparison group similar enough to intervention population for 1:1 matching.
Unbalanced groups	Observable characteristics of the intervention and comparison groups after matching are not balanced.

When confronted with insufficient coverage, the independent evaluator should first explore alternative specifications in either the propensity score model and/or the matching algorithm before moving to alternative approaches. For example, instead of a typical 1:1 greedy matching algorithm, the independent evaluator could explore matching with replacement or optimal matching algorithms.³⁻⁴ If alternative matching algorithms do not yield a matched comparison group with sufficient coverage and balance, then propensity score weighting can be explored as the next step. Propensity score weighting utilizes the full eligible comparison group and assigns a higher statistical weight to beneficiaries who are predicted to be part of the intervention but were not. A risk of this methodology is that the analysis may be dominated by a handful of beneficiaries with extremely high weights.

Balance between the matched comparison and intervention groups will be assessed using a three-pronged approach to evaluate the similarity between the intervention group and comparison groups across observable characteristics, or covariates. Table 3-3 summarizes each of the three prongs.

³⁻¹ See, e.g., *Selecting the Best Comparison Group and Evaluation Design: A Guidance Document for State Section 1115 Demonstration Evaluations* for a detailed discussion of appropriate evaluation designs based on comparison group strategies (<https://www.medicaid.gov/medicaid/section-1115-demo/downloads/evaluation-reports/comparison-grp-evaldsgn.pdf>).

³⁻² See, e.g., *Selecting the Best Comparison Group and Evaluation Design: A Guidance Document for State Section 1115 Demonstration Evaluations* for a detailed discussion of appropriate evaluation designs based on comparison group strategies (<https://www.medicaid.gov/medicaid/section-1115-demo/downloads/evaluation-reports/comparison-grp-evaldsgn.pdf>).

³⁻³ Guo, S., and Fraser, M.W., (2010) *Propensity Score Analysis: Statistical Methods and Applications*, SAGE Publications, Inc., Thousand Oaks, CA; or Austin, P. C. (2011). An Introduction to Propensity Score Methods for Reducing the Effects of Confounding in Observational Studies. *Multivariate behavioral research*, 46(3), 399–424. doi:10.1080/00273171.2011.568786; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3144483/>

³⁻⁴ See, e.g., Austin P. C. (2014). A comparison of 12 algorithms for matching on the propensity score. *Statistics in medicine*, 33(6), 1057–1069. doi:10.1002/sim.6004; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4285163/>

Table 3-3: Assessment Approaches

Assessment Approach	Advantage	Cautionary Note
Covariate-level statistical testing	Provides quantitative evidence, or lack thereof, of significant differences between matched groups	Susceptible to false positives for large sample sizes and false negatives for small sample sizes
Standardized differences	Does not rely on sample size	No universal threshold to indicate balance or unbalance
Omnibus test	Provides a single quantitative assessment of balance across all covariates as a whole	Susceptible to false positives for large sample sizes and false negatives for small sample sizes

Each of these approaches ultimately assesses the similarity of the *mean* of the distribution for each covariate. Additional metrics pertaining to the distribution should also be considered as part of the balance assessment, such as reporting the standard deviations.³⁻⁵

Evaluation Periods

The PQC waiver is anticipated to be in effect beginning in July 1, 2019, through September 30, 2021. Due to the timing of the Interim Evaluation Report the time period covered by the interim evaluation will be July 1, 2019 through December 31, 2019, with three months of claims/encounter data run out. Due to this shortened evaluation period, measures using national data released annually may not be reportable in the Interim Evaluation Report. The baseline period will be July 1, 2018, through June 30, 2019. Because the baseline period will end prior to the beginning of the evaluation, baseline data collection will only be possible through administrative data and by asking retrospective questions on beneficiary surveys. The Summative Evaluation Report will cover two full years of the waiver with six months of claims/encounter data run out. Table 3-4 presents time frames for each of the evaluation periods.

Table 3-4: PQC Evaluation Periods

Evaluation Periods	Time Frame
Baseline	July 1, 2018 – June 30, 2019
Interim Evaluation*	July 1, 2019 – December 31, 2019
Summative Evaluation	July 1, 2019 – June 30, 2021
*Approval for the waiver ends September 30, 2021.	

³⁻⁵ Austin P. C. (2011). An Introduction to Propensity Score Methods for Reducing the Effects of Confounding in Observational Studies. *Multivariate behavioral research*, 46(3), 399–424. doi:10.1080/00273171.2011.568786; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3144483/>

Evaluation Measures

Table 3-5 details the proposed measure(s), study populations, data sources and proposed analytic methods used to evaluate the PQC waiver.

Table 3-5: PQC Evaluation Design Measures

Research Question	Measure(s)	Comparison Group(s)	Data Source(s)	Analytic Approach
Hypothesis 1—Eliminating prior quarter coverage will increase the likelihood and continuity of enrollment.				
Research Question 1.1: Do eligible people without prior quarter coverage enroll in Medicaid at the same rates as other eligible people with prior quarter coverage?	<u>1-1:</u> Percentage of Medicaid enrollees per month by eligibility group out of estimated eligible Medicaid recipients	Similar members in states that provide retroactive eligibility	IPUMS ACS	Difference-in-differences
	<u>1-2:</u> Percentage of new Medicaid enrollees per month by eligibility group, as identified by those without a recent spell of Medicaid coverage out of estimated eligible Medicaid recipients	N/A	- Eligibility and enrollment data - IPUMS ACS	- Interrupted time series - Pre/post analysis
	<u>1-3:</u> Number of Medicaid enrollees per month by eligibility group and/or per-capita of state	N/A	Eligibility and enrollment data	Rapid-cycle reporting – statistical process control chart
	<u>1-4:</u> Percentage of new Medicaid enrollees per month by eligibility group, as identified by those without a recent spell of Medicaid coverage out of all Medicaid enrollees	N/A	Eligibility and enrollment data	Rapid-cycle reporting – statistical process control chart
	<u>1-5:</u> Number of new Medicaid enrollees per month by eligibility group, as identified by those without a recent spell of Medicaid coverage	N/A	Eligibility and enrollment data	Rapid-cycle reporting – statistical process control chart
Research Question 1.2: What is the likelihood of enrollment continuity for those without prior quarter coverage compared to other Medicaid beneficiaries with prior quarter coverage?	<u>1-6:</u> Percentage of Medicaid beneficiaries due for renewal who complete the renewal process	Exempt beneficiary subgroup	Eligibility and enrollment data	- Difference-in-differences - Regression discontinuity
	<u>1-7:</u> Average number of months with Medicaid coverage	Exempt beneficiary subgroup	Eligibility and enrollment data	- Difference-in-differences - Regression discontinuity
Research Question 1.3: Do beneficiaries without prior quarter coverage who disenroll	<u>1-8:</u> Percentage of Medicaid beneficiaries who re-enroll after a gap of up to six months	Exempt beneficiary subgroup	Eligibility and enrollment data	- Difference-in-differences - Regression discontinuity

Research Question	Measure(s)	Comparison Group(s)	Data Source(s)	Analytic Approach
from Medicaid have shorter enrollment gaps than other beneficiaries with prior quarter coverage?	1-9: Average number of months without Medicaid coverage for beneficiaries who re-enroll after a gap of up to six months	Exempt beneficiary subgroup	Eligibility and enrollment data	- Difference-in-differences - Regression discontinuity
	1-10: Average number of gaps in Medicaid coverage for beneficiaries who re-enroll after a gap of up to six months	Exempt beneficiary subgroup	Eligibility and enrollment data	- Difference-in-differences - Regression discontinuity
	1-11: Average number of days per gap in Medicaid coverage for beneficiaries who re-enroll after a gap of up to six months	Exempt beneficiary subgroup	Eligibility and enrollment data	- Difference-in-differences - Regression discontinuity
Hypothesis 2—Eliminating prior quarter coverage will increase enrollment of eligible people when they are healthy relative to those eligible people who have the option of prior quarter coverage.				
Research Question 2.1: Do newly enrolled beneficiaries without prior quarter coverage have higher self-assessed health status than other newly enrolled beneficiaries with prior quarter coverage?	2-1: Newly enrolled beneficiary reported rating of overall health	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	State beneficiary survey	- Difference-in-differences - Regression discontinuity
	2-2: Newly enrolled beneficiary reported rating of overall mental or emotional health	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	State beneficiary survey	- Difference-in-differences - Regression discontinuity
	2-3: Percentage of beneficiaries who reported prior year ER visit	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	State beneficiary survey	- Difference-in-differences - Regression discontinuity
	2-4: Percentage of beneficiaries who reported prior year hospital admission	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	State beneficiary survey	- Difference-in-differences - Regression discontinuity
	2-5: Percentage of beneficiaries who reported getting healthcare three or more times for the same condition or problem	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	State beneficiary survey	- Difference-in-differences - Regression discontinuity
Hypothesis 3—Health outcomes will be better for those without prior quarter coverage compared to Medicaid beneficiaries with prior quarter coverage.				
Research Question 3.1: Do beneficiaries without prior quarter coverage have better health outcomes than other beneficiaries with prior quarter coverage or who have been enrolled since pre-implementation of the waiver?	3-1: Beneficiary reported rating of overall health for all beneficiaries	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	State beneficiary survey	- Difference-in-differences - Regression discontinuity
	3-2: Beneficiary reported rating of overall mental or emotional health for all beneficiaries	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	State beneficiary survey	- Difference-in-differences - Regression discontinuity
Hypothesis 4—Eliminating prior quarter coverage will not have adverse financial impacts on consumers.				

Research Question	Measure(s)	Comparison Group(s)	Data Source(s)	Analytic Approach
Research Question 4.1: Does the prior quarter coverage waiver lead to changes in the incidence of beneficiary medical debt?	<u>4-1:</u> Percentage of beneficiaries who reported medical debt	- Continuously enrolled beneficiaries	State beneficiary survey	Difference-in-differences
Hypothesis 5—Eliminating prior quarter coverage will not adversely affect access to care.				
Research Question 5.1: Do beneficiaries without prior quarter coverage have the same or higher rates of office visits with prior quarter coverage or who have been enrolled since pre-implementation of the waiver?	<u>5-1:</u> Beneficiary response to getting needed care right away	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	State beneficiary survey	- Difference-in-differences - Regression discontinuity
	<u>5-2:</u> Beneficiary response to getting an appointment for a check-up or routine care at a doctor’s office or clinic	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	State beneficiary survey	- Difference-in-differences - Regression discontinuity
Research Question 5.2: Do beneficiaries without prior quarter coverage have the same or higher rates of service and facility utilization as those with prior quarter coverage or who have been enrolled since pre-implementation of the waiver?	<u>5-3:</u> Percentage of beneficiaries with a visit to a specialist (e.g. eye doctor, ENT, cardiologist)	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	- Eligibility and enrollment data - Administrative claims data	- Difference-in-differences - Regression discontinuity
	<u>5-4:</u> Percentage of beneficiaries with a claim/encounter from a skilled nursing facility	- Continuously enrolled beneficiaries	- Eligibility and enrollment data - Administrative claims data	- Difference-in-differences - Regression discontinuity
Hypothesis 6—Eliminating prior quarter coverage will not result in reduced member satisfaction.				
Research Question 6.1: Do beneficiaries without prior quarter coverage have the same or higher satisfaction with their healthcare as those with prior quarter coverage or who have been enrolled since pre-implementation of the waiver?	<u>6-1:</u> Beneficiary rating of overall healthcare	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	State beneficiary survey	- Difference-in-differences - Regression discontinuity
Hypothesis 7—Eliminating prior quarter coverage will generate cost savings over the term of the waiver.				
Research Question 7.1: Do the average medical and pharmacy costs to AHCCCS decrease after implementation of the waiver compared what they would have been in	<u>7-1:</u> Annual medical and pharmacy costs per beneficiary month	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	- Eligibility and enrollment data - Administrative claims data	- Difference-in-differences - Regression discontinuity
	<u>7-2:</u> Annual administrative costs per beneficiary month	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	- Eligibility and enrollment data - Administrative claims data	- Difference-in-differences - Regression discontinuity

Research Question	Measure(s)	Comparison Group(s)	Data Source(s)	Analytic Approach
the absence of the waiver?	7-3: Total costs per beneficiary month	- Exempt beneficiary subgroup - Continuously enrolled beneficiaries	- Eligibility and enrollment data - Administrative claims data	- Difference-in-differences - Regression discontinuity
Research Question 7.2: Do costs to non-AHCCCS entities stay the same or decrease after implementation of the waiver compared to before?	7-4: Reported costs for uninsured and/or likely eligible Medicaid recipients among potentially impacted providers and/or provider networks	N/A	Key informant interviews	Descriptive
Hypothesis 8—Eliminating prior quarter coverage will lead to timelier enrollment into Medicaid eligibility that relies on disability or diagnosis.				
Research Question 8.1: Does the waiver encourage beneficiaries to apply for Medicaid as soon as possible after finding of disability a qualifying diagnosis (e.g., breast or cervical cancer)?	8-1: Percentage of Medicaid beneficiaries who applied for Medicaid within a month of finding relevant diagnosis by eligibility category	N/A	- Eligibility and enrollment data - Administrative claims data	- Interrupted time series - Pre/post analysis
Note: ER: emergency room; ENT: ears, nose, throat.				

Data Sources

Multiple data sources will be utilized to evaluate the eight research hypotheses for the PQC waiver evaluation. These include administrative and survey-based data. Administrative data include state eligibility, enrollment, and claims/encounter data. These data will be extracted from the Prepaid Medical Management Information System (PMMIS). State beneficiary survey data will be used primarily to measure beneficiary health status and satisfaction. National data will be used to capture data elements not otherwise available.

Administrative Data

Administrative data containing information on Medicaid eligibility, enrollment, demographics, claims, and encounters will be used to calculate measures pertaining to enrollment patterns, service utilization, costs, and to identify a valid comparison group.

Use of fee-for-service (FFS) claims and managed care encounters will be limited to final, paid status claims/encounters. Interim transaction and voided records will be excluded from all analyses because these types of records introduce a level of uncertainty (from matching adjustments and third-party liabilities to the index claims) that can impact reported rates and costs.

National Datasets

Data from the Integrated Public Use Microdata Series (IPUMS) will be utilized to estimate the number of Medicaid-eligible individuals in Arizona, as part of the analysis of *Percentage of Medicaid Enrollees per Month by Eligibility Group* (Measure 1-1) and *Percentage of New Medicaid Enrollees per Month by Eligibility Group*

(Measure 1-2). The Current Population Survey (IPUMS CPS) data “harmonizes microdata from the monthly U.S. labor force survey, covering the period 1962 to the present.”³⁻⁶ The independent evaluator will extract data that include demographic information, employment, disability, income data and program participation such as Medicaid enrollment information.

State Beneficiary Survey Data

Measures pertaining to Hypotheses 2, 3, 4, 5, and 6 will be based on a consumer survey, Consumer Assessment of HealthCare Providers and Systems (CAHPS[®]) and will include CAHPS-like questions specific to the PQC evaluation.³⁻⁷ CAHPS surveys are often used to assess satisfaction with provided healthcare services and are adapted to elicit information addressing the research hypotheses related to members’ continuity of healthcare coverage, and overall health status and utilization.

Since the program will be in effect after the evaluation design plan is completed, the independent evaluator will conduct a single survey to ask recipients retrospective questions where possible, effectively serving as a longitudinal survey that covers the same recipients across the baseline time period and the evaluation time period. For example, recipients will be asked “In general, how would you rate your overall health last year?” and “In general, how would you rate your overall health this year?” However, some measure elements may not be conducive to retrospective survey questions. These measures therefore will not have baseline data available and will be evaluated through a regression discontinuity approach, which does not require a baseline.

When administering the survey for children, the survey may include language on the cover page allowing for older children to answer directly; otherwise the parent or guardian will answer on their behalf. Surveys will be administered using a mixed mode methodology by enhancing the CAHPS mailing protocol and conducting computer assisted telephone interviewing (CATI) to maximize response rates. If possible, surveys will be conducted in alignment with the National Committee for Quality Assurance (NCQA) schedule for administering CAHPS surveys and/or in alignment with surveys administered as part of other waiver evaluations.

Key Informant Interviews

A possible unintended consequence of the retroactive eligibility waiver is that likely Medicaid-eligible beneficiaries who are uninsured will not have costs covered by Medicaid. This can adversely impact the financial well-being of these individuals, which is addressed through Measure 4-1 (Percentage of Beneficiaries Who Reported Medical Debt). Another effect of this, is that it could cause an increase in costs for healthcare providers through providing uncompensated care to the uninsured who are likely Medicaid eligible. To comprehensively evaluate the cost savings of the waiver, costs external to Medicaid should be captured to the extent possible. Measure 7-4, *Reported Costs for Uninsured and/or Likely Eligible Medicaid Recipients*, will be based on data obtained during key informant interviews. These interviews will be conducted with representatives of some of the healthcare providers who serve the likely Medicaid-eligible population in Arizona. Key informant interviews will gather information from individuals knowledgeable about their organization’s populations served, and associated costs and utilization particularly among Medicaid beneficiaries and likely Medicaid-eligible beneficiaries who are uninsured.

³⁻⁶ <https://cps.ipums.org/cps/>

³⁻⁷ CAHPS is a registered trademark of the Agency for Healthcare Research and Quality.

Analytic Methods

The evaluation reporting will meet traditional standards of scientific and academic rigor, as appropriate and feasible for each aspect of the evaluation (e.g., for the evaluation design, data collection and analysis, and the interpretation and reporting of findings). The Demonstration evaluation will use the best available data, will use controls and adjustments where appropriate and available, and will report the limitations of data and the limitations’ effects on interpreting the results. Three analytic approaches will be considered in this evaluation:

1. Difference-in-differences (DiD)
2. Regression discontinuity (RD)
3. Interrupted time series (ITS) or Pre-test/post-test
4. Rapid Cycle Reporting – Statistical Process Control Charts

Difference-in-Differences

A DiD analysis will be performed on all measures for which baseline and evaluation period data are available for both the intervention and comparison groups. This analysis will compare the changes in the rates or outcomes between the baseline period (e.g., July 2018 – June 2019) and the evaluation period for the two populations. This allows for expected costs and rates for the matched intervention group to be calculated by considering expected changes in outcomes had the policy not been implemented. This is done by subtracting the average change in the comparison group from the average change in the intervention group, thus removing biases from the evaluation period comparisons due to permanent differences between the two groups. In other words, any changes in the outcomes caused by factors external to the policy would apply to both groups equally, and the DiD methodology will remove the potential bias. The result is a clearer picture of the actual effect of the program on the evaluated outcomes. The generic DiD model is:

$$Y_{it} = \beta_0 + \beta_1 X_i + \beta_2 R_t + \beta_3 (R_t * X_i) + \gamma \mathbf{D}'_{it} + u_{it}$$

where Y_{it} is the outcome of interest for individual i in time period t . R_t is a dummy variable for the remeasurement time period (i.e., evaluation period). The dummy variable X_i identifies the intervention group with a 1 and the comparison group with a 0. The vector \mathbf{D}' will include all covariates used in the propensity score matching to ensure comparability of the groups for any measure-specific subgrouping (e.g. to address non-response bias) and γ is the related coefficient vector. The coefficient, β_1 , identifies the average difference between the groups prior to the effective date of the policy. The time period dummy coefficient, β_2 , captures the change in outcome between baseline and evaluation time periods. The coefficient of interest, β_3 , is the coefficient for the interaction term, $R_t * X_i$, which is the same as the dummy variable equal to one for those observations in the intervention group in the remeasurement period. This represents the estimated effect of the waiver on the intervention group, conditional on the included observable covariates. The final DiD estimate is:

$$\hat{\beta}_3 = (\bar{y}_{T,R} - \bar{y}_{T,B}) - (\bar{y}_{C,R} - \bar{y}_{C,B}) \mid \mathbf{D}'$$

Assuming trends in the outcome between the comparison and intervention groups are approximately parallel during the baseline period, the estimate will provide the expected costs and rates without intervention. If the β_3 coefficient is significantly different from zero, then it is reasonable to conclude that the outcome differed between the intervention and comparison group after the policy went into effect. In addition to assessing the degree of

statistical significance for the result, as represented by the p-value associated with β_3 , the results will be interpreted in a broader context of clinical and practical significance.³⁻⁸

Regression Discontinuity

RD design can be used in situations when pre-intervention data are not available, and selection for the intervention is determined by a cutoff value. Because the demonstration will only impact adults—children under the age of 19 are excluded—it is possible to use a regression discontinuity design for analyzing outcomes in which (A) pre-intervention data are not available, and to a lesser extent (B) age is not expected to be strongly related to the outcome. There are two primary approaches that can be taken when using an RD design, which are not necessarily mutually exclusive. Indeed, the evaluation contractor is encouraged to follow both to assess the robustness of findings and sensitivity in results to alternative specifications.

The first approach is a parametric estimation of the outcome; that is, all individuals in the eligible population are included in the analysis, such that those under 19 years of age will serve as a comparison group to those 19 years and older. Under this approach, the relationship between the assignment variable, age, and the outcome will need to be carefully inspected to assess for nonlinearity. The advantage of this approach is that all, or most, individuals can be included in the analysis, which results in greater statistical power and external validity if the functional form between the assignment variable and outcome is accurately specified.

The second approach restricts the sample pool to those only just below or just above the threshold, sometimes referred to as a nonparametric approach or local linear regression. Because the sample pool is restricted to those within some bandwidth around the threshold, any bias resulting from the potentially unknown relationship between the assignment variable and the outcome are mitigated. However, this comes at the cost of reduced statistical power and reduced external validity—the resulting estimates often will not apply to those far from the threshold. In other words, findings from an analysis using only those between, for example, 16 and 24 years of age are not expected to apply for older individuals far from the threshold.

The basic estimation of the parametric model is:

$$Y = \beta_0 + \beta_1 D + \beta_2 (f(X - c)) + \varepsilon$$

Where D is a dummy indicator for intervention group, X is the individual’s age, and c is the cutoff value, which in this application is 18, and $f(\cdot)$ is a functional form specification. The parameter β_0 is the average outcome at the cutoff point, and β_1 represents the difference in outcomes between the two groups at the cutoff point, or more simply, the effect of the demonstration on the outcome Y .³⁻⁹

The basic nonparametric model estimation is:

$$Y = \alpha + \tau D + \beta_l (X - c) + (\beta_r - \beta_l) D (X - c) + \varepsilon$$

where $c - h \leq X \leq c + h$ and β_l represents the slope coefficient on the left-hand side of the cutoff (i.e., children) and β_r represents the slope coefficient on the right-hand side of the cutoff (i.e., adults).

³⁻⁸ Results from statistical analyses will be presented and interpreted in a manner that is consistent with the spirit of recent guidance put forth in *The American Statistician*. Ronald L. Wasserstein, Allen L. Schirm & Nicole A. Lazar (2019) Moving to a World Beyond “ $p < 0.05$ ”, *The American Statistician*, 73:sup1, 1-19, DOI: 10.1080/00031305.2019.1583913

³⁻⁹ Lee, D.S., and Lemieux, T., (2010) “Regression Discontinuity Designs in Economics,” *Journal of Economic Literature*, 48(2): 281-355.

In this specification, h is a given bandwidth or window around the cutoff point. The independent evaluator will ultimately determine this value and test alternative specifications with wider or narrower windows.

Additional covariates can be incorporated into the parametric and nonparametric models to control for observable differences across individuals.

There are three primary assumptions and threats to the RD design:³⁻¹⁰

- The relationship between the assignment variable (i.e., age) and outcome must be identifiable and accurately modeled.
- All other factors that affect the outcome should not also jump at the threshold value.
- The effect of the demonstration is constant across all values of the assignment variable (i.e., age).
 - One way to mitigate this threat is the use of a comparative RD design, which utilizes a comparison group on both sides of the threshold. Beneficiaries who have been continually enrolled and/or eligible for Medicaid since the demonstration start date may be used as this comparison group since they had not been exposed to the intervention. This design also has the advantage of identifying whether there was a discontinuity at the threshold of selection for intervention in the comparison group. If there is no discontinuity, the estimate of the program effect would remain unbiased. If there is a discontinuity (e.g. an external policy change affecting those on one side of the threshold) then this effect can be controlled for and removed from the estimate of the program effect, thereby further reducing bias in the estimate.

Interrupted Time Series

The independent evaluator will evaluate two measures in which data on a comparison group will not be available:

- Percentage of Medicaid enrollees by eligibility group out of estimated eligible Medicaid recipients.
- Percentage of Medicaid beneficiaries applying for Medicaid within the month of finding relevant diagnosis, by eligibility category.

These measures are intended to be captured monthly through administrative program data. As such, the higher frequency can be used to construct pre- and post-implementation trends using interrupted time series. An interrupted time series approach can be utilized to draw causal inferences if sufficient data points exist before and after implementation, there are no concurrent shocks in the trend around program implementation, and any seasonal effects are adequately accounted for.

Rapid Cycle Reporting – Statistical Process Control Charts

Rapid cycle reporting provides an early warning of possible unintended consequences. Rapid cycle reporting measures are primarily intended for waiver impact monitoring prior to the analyses that will be contained in the evaluation reports. Rapid cycle reporting measures will be presented on a regular schedule as determined by the independent evaluator using statistical process control charts. Statistical process control charts will be utilized as the tool to identify changes in time series data—data points or trends that depart from a baseline level of variation. This will be helpful in quickly identifying concerns requiring further investigation.

³⁻¹⁰ Lee, D.S., and Lemieux, T., (2010) “Regression Discontinuity Designs in Economics,” *Journal of Economic Literature*, 48(2): 281-355.

4. Methodology Limitations

There are several limitations to the proposed evaluation design. First, the comparison groups represent a unique challenge for this demonstration, particularly because the waiver affects almost all new members except for pregnant women, women who are 60 days or less postpartum, and infants and children less than 19 years of age.

Those under 19 years of age have very different health outcomes and lifestyles than other, older beneficiaries who are subject to the intervention, and outcomes may be impacted by their younger age. Survey results regarding utilization may be different for those under 19 as chronic conditions are less prevalent and the need for services may not be as great compared to older beneficiaries. This may also result in individuals under 19 having substantially lower healthcare costs. Additionally, those under 19 could have their health insurance decisions be largely guided by their parents or guardians, indicating that survey responses may reflect the caretakers' perceptions, who might be subject to the waiver.

Likewise, there are limitations of using continuously enrolled beneficiaries. Continuously enrolled beneficiaries have had healthcare coverage available which may impact health outcomes relative to newly enrolled beneficiaries. The extent to which newly enrolled Medicaid beneficiaries had prior healthcare coverage would be largely unknown within this evaluation framework. However, it is also possible that these continuously enrolled beneficiaries could have a higher probability of disenrolling from Medicaid.

Additionally, the waiver will be implemented on July 1, 2019, which is prior to the Center for Medicare & Medicaid Services' (CMS's) review of the evaluation design plan. This will impact the survey baseline data collection since there is no opportunity to collect information about the evaluation prior to implementation directly. The survey can ask new members questions regarding the implementation after it has occurred, but these retrospective questions may introduce recall bias.

5. Reporting

Following its annual evaluation of the Prior Quarter Coverage (PQC) Waiver and subsequent synthesis of the results, Arizona Cost Containment System (AHCCCS) and its evaluation contractor will prepare two reports of the findings and how the results compare to the research hypotheses. Both the interim evaluation report and the final summative evaluation report will be produced in alignment with Special Terms and Conditions (STCs) and the schedule of deliverables listed in Table 5-1. (See Appendix C for a detailed timeline.)

Table 5-1: Schedule of Deliverables for the PQC Evaluation

Deliverable	Date
PQC Evaluation Design (STC #72)	
AHCCCS submits PQC Waiver Evaluation Design Plan to CMS	07/17/2019
AHCCCS submits a revised draft Evaluation Design within sixty (60) calendar days after receipt of CMS' comments.	TBD
AHCCCS to post final approved PQC Waiver Evaluation Design Plan on the State's website within 30 days of approval by CMS	TBD
AHCCCS presentation to CMS on approved Evaluation Design	As Requested
Evaluation Report(s)	
Quarterly: AHCCCS to report progress of Demonstration to CMS (STC #83)	30 days after the quarter
AHCCCS to post PQC Interim Evaluation Report on the State's website for public comment	TBD
Interim Evaluation Report (STC #76)	September 30, 2020
AHCCCS submits a Final Interim Evaluation Report within sixty (60) calendar days after receipt of CMS' comments.	TBD
Final Summative Evaluation Report (STC #77)	March 30, 2023
AHCCCS submits a Final Summative Evaluation Report within sixty (60) calendar days after receipt of CMS' comments.	TBD
AHCCCS presentation to CMS on Final Summative Evaluation Report (STC #73)	As Requested

Each evaluation report will present results in a clear, accurate, concise, and timely manner. At minimum, all written reports will include the following nine sections:

1. The **Executive Summary** concisely states the goals for the Demonstration, presenting the key findings, the context of policy-relevant implications, and recommendations.
2. The **General Background Information about the Demonstration** section succinctly traces the development of the program from the recognition of need to the present degree of implementation. This section will also include a discussion of the State's implementation of the PQC waiver along with its successes and challenges.
3. The **Evaluation Questions and Hypotheses** section focuses on programmatic goals and strategies with the research hypotheses and associated evaluation questions.
4. The **Methodology** section will include the evaluation design with the research hypotheses and associated measures, along with the type of study design; targeted and comparison populations and stakeholders; data

sources that include data collection field, documents, and collection agreements; and analysis techniques with controls for differences in groups or with other State interventions, including sensitivity analyses when conducted.

5. The **Methodological Limitations** section is a summary of the evaluation designs limitations including its strengths and weaknesses.
6. The **Results** section is a summary of the key findings and outcomes of each hypothesis and research question, as well as the Demonstration's achievements.
7. The **Conclusions** section describes the evaluation's results, and the effectiveness and impact of the Demonstration.
8. The **Interpretations, Policy Implications, and Interactions with Other State Initiatives** section contains the policy-relevant and contextually appropriate interpretations of the conclusions, including the existing and expected impact of the Demonstration within the health delivery system in Arizona in the context of the implications for state and federal health policy, including the potential for successful strategies to be replicated in other state Medicaid programs. In addition, this section contains the interrelations between the Demonstration and other aspects of Arizona's Medicaid program, including interactions with other Medicaid waivers and other federal awards affecting service delivery, health outcomes, and the cost of care under Medicaid.
9. The **Lessons Learned and Recommendations** section discusses the opportunities for revisions or future demonstrations, based on the information collected during the evaluation.

All reports, including the Evaluation Design, will be posted on the State Website within 30 days of the approval of each document to ensure public access to evaluation documentation and to foster transparency. AHCCCS will notify CMS prior to publishing any results based on the Demonstration evaluation for CMS' review and approval. The reports' appendices will present more granular results and supplemental findings. AHCCCS will work with CMS to ensure the transmission of all required reports and documentation occurs within approved communication protocols.

A. Independent Evaluator

Arizona Health Care Cost Containment System (AHCCCS) will select an independent evaluator with experience and expertise to conduct a scientific and rigorous Medicaid Section 1115 waiver evaluation meeting all of the requirements as outlined in the Special Terms and Conditions (STCs).^{A-1} The independent evaluator will be required to have the following qualifications:

- Knowledge of public health programs and policy.
- Experience in healthcare research and evaluation.
- Understanding of AHCCCS programs and populations.
- Expertise with conducting complex program evaluations.
- Relevant work experience.
- Skills in data management and analytic capacity.
- Medicaid experience and technical knowledge.

Based on State protocols, AHCCCS will follow established policies and procedures to acquire an independent entity or entities to conduct the Prior Quarter Coverage (PQC) waiver evaluation. In addition, AHCCCS will ensure that the selected independent evaluator does not have any conflicts of interest and will require the independent evaluator to sign a “No Conflict of Interest” statement.

^{A-1} Centers for Medicare & Medicaid Services. Arizona Medicaid Section 1115 Demonstration Special Terms and Conditions. Jan 18, 2017. Available at: https://www.azahcccs.gov/shared/Downloads/News/FORSTATEArizonaAHCCCSSTCAndAuthorities_W_TIPFinal.pdf. Accessed on Jun 20, 2019.

B. Evaluation Budget

Due to the complexity and resource requirements of the Prior Quarter Coverage (PQC) waiver, Arizona Health Care Cost Containment System (AHCCCS) will need to conduct a competitive procurement to obtain the services of an independent evaluator to perform the services outlined in this evaluation design. Upon selection of an evaluation vendor, a final budget will be prepared in collaboration with the selected independent evaluator. Table B-1 displays the proposed budget shell that will be used for submitting total costs for PQC.

The costs presented in Table B-1 will include the total estimated cost, as well as a breakdown of estimated staff, administrative and other costs for all aspects of the evaluation such as any survey and measurement development, quantitative and qualitative data collection and cleaning analyses and report generation. A final budget will be submitted once a final independent evaluator has been selected. The total estimated cost for this evaluation is \$396,735, the estimate assumes that a single independent evaluator will conduct all required AHCCCS waiver evaluations.

Table B-1: Proposed Budget Template for PQC

Staff Title	Year X		
	Loaded Rate	Hours	Total
Project Director			
Project Manager			
Project Support			
Statistician(s)			
Analysts			
Reports Team			
Subtotal Direct and Indirect Costs			
Data Procurement			
Subcontractor – Survey Vendor			
Other Administrative Costs			
Annual Total			

C. Timeline and Milestones

The following project timeline has been prepared for the Prior Quarter Coverage (PQC) Waiver program evaluation outlined in the preceding sections. This timeline should be considered preliminary and subject to change based upon approval of the Evaluation Design and implementations of the PQC Waiver program. A final detailed timeline will be developed upon selection of the Independent Evaluator tasked with conducting the evaluation.

Figure C-1 outlines the proposed timeline and tasks for conducting the Prior Quarter Coverage Waiver program evaluation.

Figure C-1: PQC Waiver Evaluation Project Timeline

Task	CY2019					CY2020					CY2021					CY2022					CY2023				
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Prepare and Implement Study Design																									
Conduct kick-off meeting	■																								
Prepare methodology and analysis plan	■																								
Data Collection																									
Obtain Arizona Medicaid claims/encounters	■		■			■				■				■											
Obtain Arizona Medicaid member, provider, and eligibility/enrollment data	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									
Obtain financial data			■	■						■						■									
Integrate data; generate analytic dataset																									
Conduct Analysis																									
Rapid Cycle Assessment																									
Prepare and calculate metrics	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									
Generate reports	■																								
Non-Survey Analyses																									
Prepare and calculate metrics		■	■	■						■	■	■	■	■	■	■									
Conduct statistical testing and comparison																									
CAHPS/CAHPS-like Survey Analyses																									
Develop survey instrument	■									■															
Field survey; collect satisfaction data		■	■	■						■	■	■	■	■	■	■									
Conduct survey analyses																									
Reporting																									
Draft Interim Evaluation Report				■	■	■																			
Final Interim Evaluation Report																									
Draft Summative Evaluation Report																				■					
Final Summative Evaluation Report																				■					

Note: Timeline based on approval for the waiver after September 30, 2021.

D. Proposed Measure Specifications

The tables in this section provide the detailed measure specifications for the Prior Quarter Coverage (PQC) waiver evaluation.

Hypothesis 1—Eliminating prior quarter coverage will increase the likelihood and continuity of enrollment.

Research Question 1.1: Do eligible people without prior quarter coverage enroll in Medicaid at the same rates as other eligible people with prior quarter coverage?

Percentage of Medicaid Enrollees Per Month by Eligibility Group Out of Estimated Eligible Medicaid Recipients (Measure 1-1)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries covered by Medicaid last year (ASEC:HIMCAID). <u>Denominator</u> : Number of individuals likely eligible for Medicaid last year based on IPUMS survey data on family income (ASEC:FTOTVAL) and disability (ASEC:DISABWRK).
Comparison Population	Similar members in states that provide retroactive eligibility
Measure Steward	N/A
Data Source	Integrated Public Use Microdata Series (IPUMS) American Community Surveys (ACS)
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	Difference-in-differences

Percentage of New Medicaid Enrollees Per Month by Eligibility Group, As Identified by Those Without a Recent Spell of Medicaid Coverage Out of Estimated Eligible Medicaid Recipients (Measure 1-2)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries beginning enrollment in Medicaid. <u>Denominator</u> : Number of individuals likely eligible for Medicaid based on IPUMS survey data on family income (ASEC: FTOTVAL) and disability (ASEC: DISABWRK). Re-weighted to represent full Arizona population (ASECWT).
Comparison Population	N/A
Measure Steward	N/A
Data Source	State enrollment and eligibility data; IPUMS ACS
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	Interrupted time series

Number of Medicaid Enrollees Per Month by Eligibility Group and/or Per-Capita of State (Measure 1-3)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries beginning enrollment in Medicaid <u>Denominator</u> : Estimated current year population of Arizona
Comparison Population	N/A
Measure Steward	N/A
Data Source	State enrollment and eligibility data; State of Arizona Office of Economic Opportunity
Desired Direction	N/A
Analytic Approach	Rapid-cycle reporting—Statistical process control chart

Percentage of New Medicaid Enrollees Per Month by Eligibility Group, As Identified by Those Without A Recent Spell of Medicaid Coverage Out of All Medicaid Enrollees (Measure 1-4)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries beginning enrollment in Medicaid who did not have Medicaid coverage for at least six months prior <u>Denominator</u> : Number of individuals likely eligible for Medicaid based on previous year IPUMS survey data on family income (ASEC: FTOTVAL) and disability (ASEC: DISABWRK)
Comparison Population	N/A
Measure Steward	N/A
Data Source	State enrollment and eligibility data; IPUMS ACS
Desired Direction	N/A
Analytic Approach	Rapid-cycle reporting—Statistical process control chart

Number of New Medicaid Enrollees Per Month by Eligibility Group, as Identified by Those Without a Recent Spell of Medicaid Coverage (Measure 1-5)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries beginning enrollment in Medicaid who did not have Medicaid coverage for at least six months prior <u>Denominator</u> : N/A
Comparison Population	N/A
Measure Steward	N/A
Data Source	State enrollment and eligibility data
Desired Direction	N/A
Analytic Approach	Rapid-cycle reporting—Statistical process control chart

Research Question 1.2: What is the likelihood of enrollment continuity for those without prior quarter coverage compared to other Medicaid beneficiaries with prior quarter coverage?

Percentage of Medicaid Beneficiaries Due for Renewal Who Complete the Renewal Process (Measure 1-6)	
Numerator/Denominator	<u>Numerator</u> : Beneficiaries completing the renewal process <u>Denominator</u> : Beneficiaries enrolled in Medicaid who were due for renewal during previous 12 months
Comparison Population	Exempt beneficiary subgroup
Measure Steward	N/A
Data Source	State eligibility and enrollment data
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Average Number of Months with Medicaid Coverage (Measure 1-7)	
Numerator/Denominator	<u>Numerator</u> : Number of full months with Medicaid coverage <u>Denominator</u> : Number of Medicaid beneficiaries
Comparison Population	Exempt beneficiary subgroup
Measure Steward	N/A
Data Source	State eligibility and enrollment data
Desired Direction	An increase in the number of months supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Research Question 1.3: Do beneficiaries without prior quarter coverage who disenroll from Medicaid have shorter enrollment gaps than other beneficiaries with prior quarter coverage?

Percentage of Medicaid Beneficiaries Who Re-enroll After A Gap of Up to Six Months (Measure 1-8)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries who re-enrolled in Medicaid during evaluation period after a gap of up to 6 months <u>Denominator</u> : Number of beneficiaries who disenrolled from Medicaid during the first six months of evaluation period
Comparison Population	Exempt beneficiary subgroup
Measure Steward	N/A
Data Source	State eligibility and enrollment data
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Average Number of Months Without Medicaid Coverage For Beneficiaries Who Re-Enroll After a Gap of Up to Six Months (Measure 1-9)	
Numerator/Denominator	<u>Numerator</u> : Number of months without Medicaid coverage after disenrolling <u>Denominator</u> : Number of beneficiaries who disenrolled from Medicaid during the first six months of evaluation period and subsequently re-enrolled
Comparison Population	Exempt beneficiary subgroup
Measure Steward	N/A
Data Source	State eligibility and enrollment data
Desired Direction	A decrease in the number of months without coverage supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Average Number of Gaps in Medicaid Coverage for Beneficiaries Who Re-Enroll After a Gap of Up to Six Months (Measure 1-10)	
Numerator/Denominator	<u>Numerator</u> : Number of gaps in Medicaid coverage. A gap is defined as one day or more without Medicaid enrollment <u>Denominator</u> : Number of beneficiaries who disenrolled from Medicaid during the first six months of evaluation period and subsequently re-enrolled
Comparison Population	Exempt beneficiary subgroup
Measure Steward	N/A
Data Source	State eligibility and enrollment data
Desired Direction	A decrease in the number of gaps supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Average Number of Days Per Gap in Medicaid Coverage for Beneficiaries Who Re-Enroll After a Gap of Up to Six Months (Measure 1-11)	
Numerator/Denominator	<u>Numerator</u> : Number of gap days in Medicaid coverage <u>Denominator</u> : Number of gaps in coverage for beneficiaries who disenrolled from Medicaid during the first six months of evaluation period and subsequently re-enrolled. A gap is defined as one day or more without Medicaid enrollment
Comparison Population	Exempt beneficiary subgroup
Measure Steward	N/A
Data Source	State eligibility and enrollment data
Desired Direction	A decrease in the number of days per gap supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Hypothesis 2—Eliminating prior quarter coverage will increase enrollment of eligible people when they are healthy relative to those eligible people who have the option of prior quarter coverage.

Research Question 2.1: Do newly enrolled beneficiaries without prior quarter coverage have higher self-assessed health status than other newly enrolled beneficiaries with prior quarter coverage?

Newly Enrolled Beneficiary Reported Rating of Overall Health (Measure 2-1)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries who indicated high overall health rating in response to CAHPS question regarding overall health <u>Denominator</u> : Number of respondents to overall health survey question among beneficiaries who have not had Medicaid coverage for the first six months of evaluation period
Comparison Population	Exempt beneficiary subgroup
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	An increase in the rating of overall health supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Newly Enrolled Beneficiary Reported Rating of Overall Mental or Emotional Health (Measure 2-2)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries who indicated high overall mental or emotional health rating in response to CAHPS question regarding overall mental or emotional health <u>Denominator</u> : Number of respondents to overall mental or emotional health survey question among beneficiaries who have not had Medicaid coverage for the first six months of evaluation period
Comparison Population	Exempt beneficiary subgroup
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	An increase in the rating of overall mental or emotional health supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Percentage of Beneficiaries Who Reported Prior Year Emergency Room (ER) Visit (Measure 2-3)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries who reported any ER visits during previous 12 months <u>Denominator</u> : Number of respondents to ER visit survey question among beneficiaries who have not had Medicaid coverage for the first six months of evaluation period
Comparison Population	Exempt beneficiary subgroup
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	A decrease in the rate supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Percentage of Beneficiaries Who Reported Prior Year Hospital Admission (Measure 2-4)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries who reported any overnight hospital stays during previous 12 months <u>Denominator</u> : Number of respondents to overnight hospital stay survey question among beneficiaries who have not had Medicaid coverage for the first six months of evaluation period
Comparison Population	Exempt beneficiary subgroup
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	A decrease in the rate supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Percentage of Beneficiaries Who Reported Getting Healthcare Three or More Times for The Same Condition or Problem (Measure 2-5)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries who received healthcare services three or more times for the same condition <u>Denominator</u> : Number of respondents to multiple services for same condition survey question among beneficiaries who have not had Medicaid coverage for the first six months of evaluation period
Comparison Population	Exempt beneficiary subgroup
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	A decrease in the rate supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Hypothesis 3—Health outcomes will be better for those without prior quarter coverage compared to other Medicaid beneficiaries with prior quarter coverage.

Research Question 3.1: Do beneficiaries without prior quarter coverage have better health outcomes than other beneficiaries with prior quarter coverage or who have been enrolled since pre-implementation of the waiver?

Beneficiary Reported Rating of Overall Health for All Beneficiaries (Measure 3-1)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries who indicated high overall health rating in response to CAHPS question regarding overall health <u>Denominator</u> : Number of respondents to overall health survey question
Comparison Population	- Exempt beneficiary subgroup - Continuously enrolled since pre-implementation
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	An increase in the rating of overall health supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Beneficiary Reported Rating of Overall Mental or Emotional Health for All Beneficiaries (Measure 3-2)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries who indicated high overall mental or emotional health rating in response to CAHPS question regarding overall health <u>Denominator</u> : Number of respondents to overall mental or emotional health survey question
Comparison Population	- Exempt beneficiary subgroup - Continuously enrolled since pre-implementation
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	An increase in the rating of overall mental or emotional health supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Hypothesis 4—Eliminating prior quarter coverage will not have adverse financial impacts on consumers.

Research Question 4.1: Does the prior quarter coverage waiver lead to changes in the incidence of beneficiary medical debt?

Percentage of Beneficiaries Who Reported Medical Debt (Measure 4-1)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries indicating outstanding medical debt or difficulty paying medical bills <u>Denominator</u> : Number of respondents to outstanding medical debt or difficulty paying medical bills survey question
Comparison Population	Continuously enrolled since pre-implementation
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	A decrease in the rate supports the hypothesis
Analytic Approach	Difference-in-differences

Hypothesis 5—Eliminating prior quarter coverage will not adversely affect access to care.

Research Question 5.1: Do beneficiaries without prior quarter coverage have the same or higher rates of office visits as those with prior quarter coverage or who have been enrolled since pre-implementation of the waiver?

Beneficiary Response to Getting Needed Care Right Away (Measure 5-1)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries indicating the ability to get needed care right away <u>Denominator</u> : Number of respondents to getting needed care survey question
Comparison Population	- Exempt beneficiary subgroup - Continuously enrolled since pre-implementation
Measure Steward	NCQA
Data Source	State beneficiary survey
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Beneficiary Response to Getting an Appointment for a Check-Up or Routine Care at a Doctor’s Office or Clinic (Measure 5-2)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries indicating the ability to get an appointment for a check-up or routine care at a doctor’s office or clinic <u>Denominator</u> : Number of respondents to get an appointment for a check-up or routine care at a doctor’s office or clinic survey question
Comparison Population	- Exempt beneficiary subgroup - Continuously enrolled since pre-implementation
Measure Steward	NCQA
Data Source	State beneficiary survey
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Research Question 5.2: Do beneficiaries without prior quarter coverage have the same or higher rates of service and facility utilization as those with prior quarter coverage or who have been enrolled since pre-implementation of the waiver?

Percentage of Beneficiaries with A Visit to A Specialist (e.g., Eye Doctor, ENT, Cardiologist) (Measure 5-3)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries with a visit to a specialist during previous 12 months <u>Denominator</u> : Number of beneficiaries enrolled in Medicaid during previous 12 months
Comparison Population	- Exempt beneficiary subgroup - Continuously enrolled since pre-implementation
Measure Steward	N/A
Data Source	State eligibility and enrollment data; claims/encounter data
Desired Direction	No difference/an increase in the rate supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Percentage of Beneficiaries with A Claim/Encounter from A Skilled Nursing Facility (Measure 5-4)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries with a claim/encounter from a skilled nursing facility during previous 12 months <u>Denominator</u> : Number of beneficiaries enrolled in Medicaid during previous 12 months
Comparison Population	Continuously enrolled since pre-implementation
Measure Steward	N/A
Data Source	State eligibility and enrollment data; claims/encounter data
Desired Direction	No difference/an increase in the rate supports the hypothesis
Analytic Approach	Difference-in-differences

Hypothesis 6—Eliminating prior quarter coverage will not result in reduced member satisfaction.

Research Question 6.1: Do beneficiaries without prior quarter coverage have the same or higher satisfaction with their healthcare as those with prior quarter coverage or who have been enrolled since pre-implementation of the waiver?

Beneficiary Rating of Overall Healthcare (Measure 6-1)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries reporting a high-level of satisfaction with overall healthcare <u>Denominator</u> : Number of respondents to overall healthcare satisfaction survey question
Comparison Population	- Exempt beneficiary subgroup - Continuously enrolled since pre-implementation
Measure Steward	NCQA
Data Source	State beneficiary survey
Desired Direction	No difference/an increase in the rating of overall healthcare supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Hypothesis 7—Eliminating prior quarter coverage will generate cost savings over the term of the waiver.

Research Question 7.1: Do the average medical and pharmacy costs to AHCCCS decrease after implementation of the waiver compared to what they would have been in the absence of the waiver?

Annual Medical and Pharmacy Costs Per Beneficiary Month (Measure 7-1)	
Numerator/Denominator	<u>Numerator</u> : Annual AHCCCS medical and pharmacy costs <u>Denominator</u> : Number of beneficiary months in intervention/comparison group
Comparison Population	- Exempt beneficiary subgroup - Continuously enrolled since pre-implementation
Measure Steward	N/A
Data Source	Administrative eligibility, enrollment, claims/encounter data
Desired Direction	A decrease in costs supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Annual Administrative Costs Per Beneficiary Month (Measure 7-2)	
Numerator/Denominator	<u>Numerator</u> : Sum of the estimated administrative portion of the monthly capitation payments for the year and the annual administrative costs to AHCCCS of implementing and administering the prior quarter coverage waiver <u>Denominator</u> : Number of beneficiary months in intervention/comparison group
Comparison Population	- Exempt beneficiary subgroup - Continuously enrolled since pre-implementation
Measure Steward	N/A
Data Source	Administrative program data
Desired Direction	N/A
Analytic Approach	- Difference-in-differences - Regression discontinuity

Total Costs Per Beneficiary Month (Measure 7-3)	
Numerator/Denominator	<u>Numerator</u> : Sum of estimated annual medical/pharmacy costs and administrative costs <u>Denominator</u> : Number of beneficiary months in intervention/comparison group
Comparison Population	- Exempt beneficiary subgroup - Continuously enrolled since pre-implementation
Measure Steward	N/A
Data Source	Administrative eligibility, enrollment, claims/encounter, and program data
Desired Direction	A decrease in costs supports the hypothesis
Analytic Approach	- Difference-in-differences - Regression discontinuity

Research Question 7.2: Do costs to non-AHCCCS entities stay the same or decrease after implementation of the waiver compared to before?

Reported Costs for Uninsured and/or Likely Eligible Medicaid Recipients Among Potentially Impacted Providers and/or Provider Networks (Measure 7-4)	
Numerator/Denominator	N/A
Comparison Population	N/A
Measure Steward	N/A
Data Source	Key informant interviews
Desired Direction	N/A
Analytic Approach	Descriptive

Hypothesis 8—Eliminating prior quarter coverage will lead to timelier enrollment into Medicaid eligibility that relies on disability or diagnosis.

Research Question 8.1: Does the waiver encourage beneficiaries to apply for Medicaid as soon as possible after finding of disability a qualifying diagnosis (e.g., breast or cervical cancer)?

Percentage of Medicaid Beneficiaries Who Applied for Medicaid Within the Month of Finding Relevant Diagnosis by Eligibility Category (Measure 8-1)	
Numerator/Denominator	<u>Numerator</u> : Number of beneficiaries with a qualifying diagnosis during month of application, by month and eligibility group <u>Denominator</u> : Number of new Medicaid beneficiaries by month and eligibility group
Comparison Population	N/A
Measure Steward	N/A
Data Source	Administrative eligibility and enrollment data, claims data
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	Interrupted time series

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