Arizona Health Care Cost Containment System

AHCCCS Works

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.

HSAG HEALTH SERVICES ADVISORY GROUP

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1. Background

On January 18, 2019, Centers for Medicare & Medicaid Services (CMS) approved Arizona's request to amend its Section 1115 Demonstration project, entitled "Arizona Health Care Cost Containment System (AHCCCS)," in accordance with Section 1115(a) of the Social Security Act. The federal approval authorized Arizona's Medicaid Program to implement community engagement requirements for able bodied adult beneficiaries who are 19 to 49 years old and fall within the Group VIII population (individuals with incomes between 0 and 138% of the Federal Poverty Level who are not otherwise eligible for Medicaid in any other category).

Arizona's community engagement program, known as "AHCCCS Works," is designed to encourage qualifying beneficiaries to use existing community services and resources in order to gain and maintain meaningful employment, job training, education, or volunteer service experience. Beneficiaries who are required to comply with AHCCCS Works will participate in at least 80 hours of community engagement activities per month. Beneficiaries may satisfy community engagement requirements through a variety of qualifying activities including:

- Employment (including self-employment)
- Education (less than full-time education)
- Job or life skills training
- Job search activities
- Community service

Upon becoming subject to the community engagement requirements, beneficiaries will receive an initial three - month orientation period in which to become familiar with the AHCCCS Works program. During this period, the beneficiary will receive information about the community engagement requirements, how to comply, and how to access available community engagement resources. After the three-month orientation period, beneficiaries who do not complete at least 80 hours of community engagement per month will be suspended from AHCCCS coverage for two months, and then automatically reinstated. The AHCCCS Works requirements will not apply to individuals who meet any of the following conditions:

- Pregnant women and women up to the end of the month in which the 60th day of post-pregnancy occurs
- Former foster care youth up to age 26
- Beneficiaries who are members of federally recognized tribe
- Beneficiaries determined to have a serious mental illness (SMI)
- Beneficiaries currently receiving temporary or permanent long-term disability benefits from a private insurer or from the state or federal government, including workers compensation benefits
- Beneficiaries who are medically frail
- Beneficiaries who are in active treatment with respect to a substance use disorder (SUD)
- Full time high school, trade school, college or graduate students
- Victims of domestic violence
- Beneficiaries who are homeless
- Designated caretakers of a child under age 18
- Caregivers who are responsible for the care of an individual with a disability

- Beneficiaries who have an acute medical condition
- Beneficiaries who are receiving Supplemental Nutrition Assistance Program (SNAP), Cash Assistance, or Unemployment Insurance income benefits
- Beneficiaries participating in other AHCCCS approved work programs
- Beneficiaries not mentioned above who have a disability as defined by federal disabilities rights laws (ADA, Section 504, and Section 1557) who are unable to participate in AW Requirements for disability-related reasons

The AHCCCS Works demonstration is approved effective from January 18, 2019, through September 30, 2021, and will implemented no sooner than January 1, 2020.[1-1] The evaluation of this demonstration will test, in part, whether the demonstration increases the employment rates, income, and health status for those beneficiaries. As of October 2017, there were 398,519 individuals in the Group VIII eligibility category, including members eligible for exemption.[1-2] AHCCCS has requested to implement AHCCCS Works through a three staged phase-in approach, beginning with the most urbanized counties in Spring/Summer 2020, semi-urbanized counties in Spring/Summer 2021, and ending with least urbanized counties in Spring/Summer 2022.

AHCCCS' goal is to increase employment, employment opportunities, and activities to enhance employability, increase financial independence, and improve health outcomes of beneficiaries.[1-3] The objectives include increasing the number of beneficiaries with earned income and/or the capacity to earn income, reducing enrollment, and reducing the amount of "churn" (individuals moving on and off Medicaid repeatedly) by encouraging of greater access to employment and employer sponsored health insurance or health insurance through the Federally-Facilitated Marketplace.[1-4]

[1-1] CMS Approval Letter. Centers for Medicare & Medicaid Services. https://www.azahcccs.gov/Resources/Downloads/CMSApprovalLetter.pdf. Accessed on Jun 10, 2019.
[1-2] Arizona Section 1115 Waiver Amendment Request: AHCCCS Works Waiver. Arizona Health Care Cost Containment System. https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/az/az-hccc-pa6.pdf, Page 6 of 683. Accessed on June 10, 2019.
[1-3] CMS Approval Letter. Centers for Medicare & Medicaid Services. https://www.azahcccs.gov/Resources/Downloads/CMSApprovalLetter.pdf, Page 4 of 19. Accessed on June 10, 2019.
[1-4] Arizona Section 1115 Waiver Amendment Request: AHCCCS Works Waiver. Arizona Health Care Cost Containment System. https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/az/az-hccc-pa6.pdf, Page 11 of 683. Accessed on June 10, 2019.

2. Evaluation Questions and Hypotheses

The overarching goals of the Arizona Health Care Cost Containment System (AHCCCS) Works demonstration are to encourage beneficiaries to obtain employment and undertake additional community engagement activities to reduce beneficiaries' reliance on public assistance programs and promote health and wellness.

The primary purpose of this evaluation is to determine whether the AHCCCS Works demonstration waiver is achieving these goals. To develop hypotheses and research questions associated with these goals, AHCCCS developed a logic model which relates the inputs and activities of the program (i.e., requiring 80 hours of community engagement activities per month) to anticipated initial, intermediate, and long-term outcomes, which are associated with hypotheses.

Logic Model

As the Centers for Medicare & Medicaid Services (CMS) notes in its letter to State Medicaid Directors dated January 11, 2018, engaging in the activities required by AHCCCS Works has been shown to improve health and well-being.[2-1] For instance, education "can lead to improved health by increasing health knowledge and healthy behaviors."[2-2] A growing body of literature relates broader social determinants of health, including specific factors that AHCCCS Works targets such as employment, income, and education.[2-3] Therefore, increased employment, income, and education resulting from the community engagement requirements should lead to improved health outcomes and reduced reliance on Medicaid, thereby promoting sustainability of the program.

Figure 2-1 illustrates that, given resources to allow AHCCCS beneficiaries subject to the demonstration requirements to log qualifying hours, the intended outcome is for these recipients to engage in and report 80 or more hours of community engagement activities per month.[2-4] Since these activities include employment, job-seeking activities, job training or education, AHCCCS anticipates that initial outcomes of the demonstration will raise rates of beneficiaries engaging in these activities. With increased rates of beneficiaries gaining employment or engaging in educational activities, beneficiaries' income and educational attainment will increase in the intermediate term. In the long term, this will reduce reliance on public assistance and improve beneficiaries' health and well-being. Hypotheses associated with these outcomes are denoted in parentheses in the logic model (hypotheses descriptions can be found in Table 2-1).

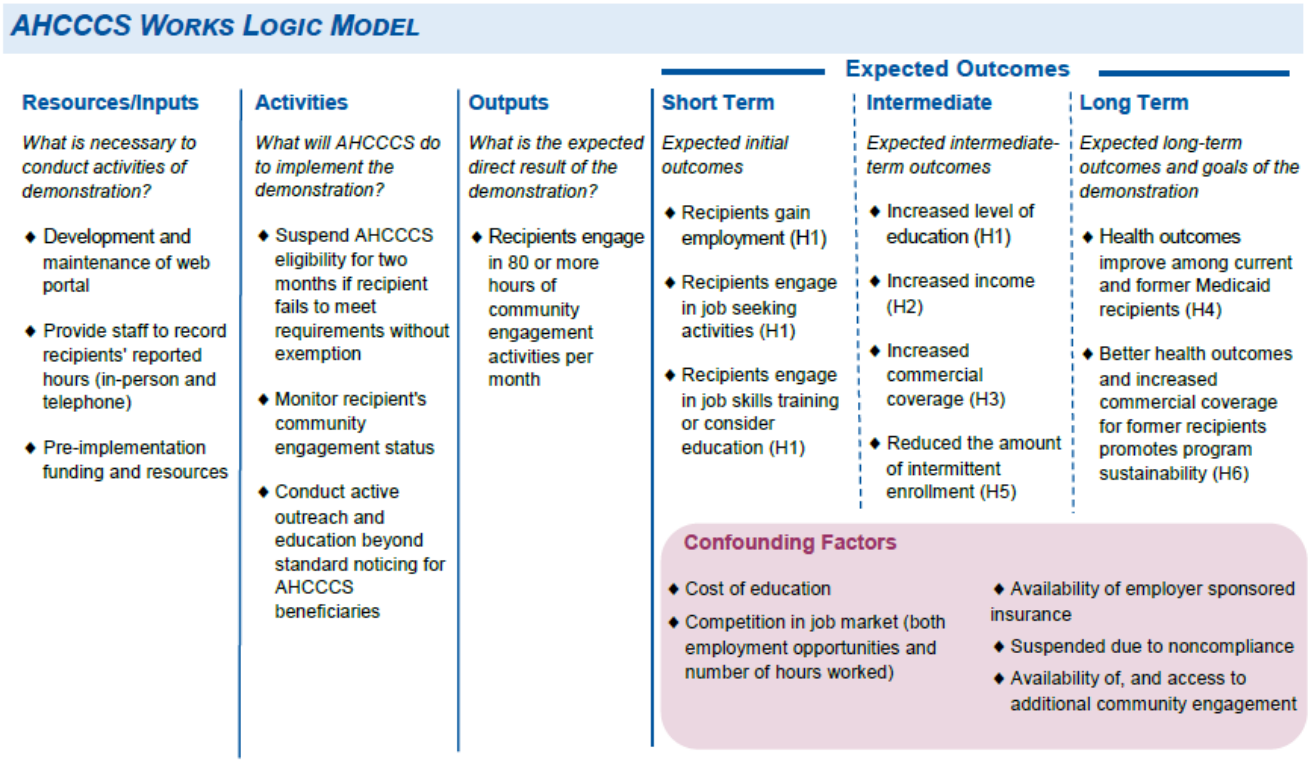
2-1 Centers for Medicare & Medicaid Services. Opportunities to Promote Work and Community Engagement Among Medicaid Directors. Jan 11, 2018. Available at: https://www.medicaid.gov/federal-policy-guidance/downloads/smd18002.pdf. Accessed on Jun 14, 2019.

2-2 ibid.

2-3 Braveman, P., & Gottlieb, L. (2014). The social determinants of health: it's time to consider the causes of the causes. Public health reports (Washington, D.C.: 1974), 129 Suppl 2(Suppl 2), 19–31. doi:10.1177/00333549141291S206.

2-4 Beneficiaries can log hours either through a web-based portal, through telephone, or in-person.

Figure 2-1: AHCCCS Works Logic Model



Hypotheses and Research Questions

To comprehensively evaluate the AHCCCS Works demonstration waiver, six hypotheses will be tested using 11 research questions. Table 2-1 lists the six hypotheses and Table 2-2 through Table 2-7 lists research questions and measures for each hypothesis.

Table 2-1: AHCCCS Works Hypotheses

Hypotheses	
1	Medicaid beneficiaries subject to the community engagement requirement will have higher employment and education levels than Medicaid beneficiaries not subject to the requirement.
2	Medicaid beneficiaries subject to the community engagement requirement will have higher average income than Medicaid beneficiaries not subject to the requirement.
3	Medicaid beneficiaries subject to the community engagement requirement will have a higher likelihood of transitioning to commercial health insurance after separating from Medicaid than Medicaid beneficiaries not subject to the requirement.
4	Current and former Medicaid beneficiaries subject to the community engagement requirement will have better health outcomes than Medicaid beneficiaries not subject to the requirement.

Hypotheses	
5	Medicaid beneficiaries subject to the community engagement requirement will have better continuity of enrollment compared to similar beneficiaries not subject to the community engagement requirement.
6	The community engagement requirement will promote Medicaid program sustainability.

Where possible, outcomes among beneficiaries subject to the demonstration will be compared against outcomes among beneficiaries not subject to the demonstration—either those meeting exemption criteria, or those in traditional, Non-group VIII eligibility groups.

Hypothesis 1 will test whether the demonstration ultimately results in higher employment and education levels for beneficiaries subject to the requirements. The measures to test this hypothesis and answer associated research questions are listed below in Table 2-2. Improvements in these outcomes would support the demonstration's goal of increasing employment and education opportunities among its targeted beneficiaries.

Table 2-2: Hypothesis 1 Research Questions and Measures

Hypothesis 1—Research Question and Measures	
Research Question 1.1: Does the community engagement requirement lead to increased job seeking activities for those subject to the requirements compared to those who are not?	
1-1	Percentage of beneficiaries who did not work during the previous week who actively sought a job during the past four weeks
1-2	Percentage of beneficiaries who met community engagement criteria through job search activities
Research Question 1.2: Does the community engagement requirement lead to increased rates of education enrollment or employment training programs?	
1-3	Percentage of beneficiaries attending school or an Employment Support and Development program
1-4	Percentage of beneficiaries who met community engagement criteria through attending school or an Employment Support and Development program
Research Question 1.3: Are beneficiaries subject to the community engagement requirement more likely to be employed (including new and sustained employment) compared to those who are not?	
1-5	Percentage of beneficiaries who usually worked at least 20 hours per week during previous year
1-6	Percentage of beneficiaries employed during each month of measurement year
1-7	Number of weeks worked last year (including as unpaid family worker, and paid vacation/sick leave)
Research Question 1.4: Does the community engagement requirement lead to better education outcomes?	
1-8	Beneficiaries' reported highest grade or level of education completed

Through increased rates of employment and/or hours worked, Hypothesis 2 will test whether the income among beneficiaries subject to the demonstration increases as a result. 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: Does the community engagement requirement increase income?	
2-1	Average monthly earnings
2-2	Average beneficiary reported monthly income
2-3	Percentage of beneficiaries who reported medical debt

A core theoretical underpinning of the AHCCCS Works demonstration program is that increased rates of employment and income should lead to decreased reliance on the Medicaid program, a stated goal of the program. Hypothesis 3 seeks to determine the impact of the demonstration on uptake of commercial insurance. The measures and associated research questions are presented in Table 2-4. Increases in commercial coverage among former Medicaid beneficiaries who were subject to the community engagement requirements could suggest that the demonstration had its intended impact to successfully reduce their reliance on Medicaid while maintaining healthcare coverage. A possible unintended consequence, however, is for these beneficiaries to separate from Medicaid but not maintain healthcare coverage. To measure this, the independent evaluator will survey former Medicaid beneficiaries who recently separated to determine whether they had periods where they were not covered by any health insurance.

Table 2-4: Hypothesis 3 Research Questions and Measures

Hypothesis 3—Research Question and Measures	
Research Question 3.1: Does the community engagement requirement lead to increased take-up of commercial insurance, including employer-sponsored insurance (ESI) and Marketplace plans?	
3-1	Enrollment in commercial coverage within one year after Medicaid disenrollment
Research Question 3.2: Is the community engagement requirement associated with coverage losses (if people transition off Medicaid and do not enroll in commercial health insurance?)	
3-2	Average number of months beneficiaries reported being uninsured
3-3	Average number of months uninsured

Hypothesis 4 seeks to determine the impact of the demonstration on health outcomes among both current and former beneficiaries who recently separated from Medicaid. One of the overarching goals of the demonstration waiver is to increase the health outcomes of those subject to the community engagement requirements through increased rates of employment, education, and other community engagement activities. Table 2-5 presents the measures and survey questions that will be used to measure health outcomes.

Table 2-5: Hypothesis 4 Research Questions and Measures

Hypothesis 4—Research Question and Measures	
Research Question 4.1: Does the community engagement requirement lead to improved health outcomes?	
4-1	Beneficiary reported rating of overall health

Hypothesis 4—Research Question and Measures	
4-2	Beneficiary reported rating of overall mental or emotional health
4-3	Percentage of beneficiaries who reported prior year emergency room (ER) visit
4-4	Percentage of beneficiaries who reported prior year hospital admission

A planned consequence of the demonstration is to suspend Medicaid enrollment in a health plan due to noncompliance. Although health plan enrollment and Medicaid coverage will lapse during this time, beneficiaries will not lose Medicaid eligibility if they continue to fall below 138% Federal Poverty Level (FPL). Hypothesis 5 will assess continuity of Medicaid eligibility and Medicaid enrollment. The research questions and measures pertaining to this hypothesis will assess whether the demonstration had an impact on Medicaid enrollment and eligibility (Table 2-6).

Table 2-6: Hypothesis 5 Research Questions and Measures

Hypothesis 5—Research Question and Measures	
Research Question 5.1: Does the community engagement requirement impact continuous eligibility for Medicaid?	
5-1	Average number of gaps in Medicaid eligibility.
5-2	Percentage of beneficiaries with gaps in Medicaid eligibility
5-3	Percentage of non-exempt AHCCCS Works beneficiaries losing Medicaid eligibility per month, by discontinuance category
Research Question 5.2: Does the community engagement requirement impact continuous enrollment in Medicaid (i.e., suspended through noncompliance)?	
5-4	Average number of gaps in Medicaid enrollment
5-5	Percentage of beneficiaries with gaps in Medicaid enrollment
5-6	Percentage of non-exempt AHCCCS Works beneficiaries suspended due to noncompliance per month

A key requirement of a section 1115 waiver evaluation is to assess the impact of the demonstration on a state Medicaid program's financial sustainability.[2-5, 2-6] To that end, the independent evaluator will assess cost savings attributable to the demonstration with Hypothesis 6. The measures and associated research questions are presented in Table 2-7.

Table 2-7: Hypothesis 6 Research Questions and Measures

[2-5] Centers for Medicare & Medicaid Services. Evaluation Design Guidance for Section 1115 Eligibility and Coverage Demonstrations. Available at: https://www.medicaid.gov/medicaid/section-1115-demo/downloads/evaluation-reports/ce-evaluation-design-guidance.pdf. Accessed on: Jun 14, 2019.

[2-6] 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.

Hypothesis 6—Research Question and Measures	
Research Question 6.1: Do beneficiaries subject to the community engagement requirement generate cost savings to AHCCCS?	
6-1	Annual medical and pharmacy costs per beneficiary month
6-2	Annual administrative costs per beneficiary month
6-3	Total costs per beneficiary month

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 of Analytic Approaches

Analytic Approach	Baseline Data	Comparison Group	Allows Causal Inference	Notes
Randomized Controlled Trial		✓	✓	Requires full randomization of intervention 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		✓		

Given that Arizona Health Care Cost Containment System (AHCCCS) Works only impacts the Group VIII Medicaid expansion population, traditional beneficiaries in the Non-group VIII population may serve as a counterfactual. To account for differences between the two groups, propensity score matching, or weighting will be used to identify Non-group VIII beneficiaries who share similar characteristics to those in the intervention (i.e., Group VIII beneficiaries subject to the waiver requirements). A second potential comparison group may be used comprising Group VIII beneficiaries who meet exemption criteria and are therefore not subject to the waiver

requirements. The independent evaluator will determine which comparison group is best suited for the evaluation or if both can be used. Additionally, the anticipated start date for AHCCCS Works is Spring/Summer 2020, allowing time for baseline data collection.

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.

Outcomes that rely on state administrative data pertaining to employment and income have the potential to have repeated intra-year (e.g., monthly) measurements taken both prior to and after implementation. This can serve to build pre- and post-implementation trends in outcomes. With this frequency of data, a comparative interrupted time series or repeated measures DiD analysis can be utilized. A comparative interrupted time series design is similar to the DID approach, but with the benefit of being able to assess changes in *trends* in the outcome in addition to changes in the *level* of the outcome (averaged across pre- and post- implementation time periods), as given by a two-time period DiD approach.

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

For purposes of the evaluation, some measures rely on capturing outcomes among former Medicaid beneficiaries in addition to current Medicaid beneficiaries. Former Medicaid beneficiaries from both groups will be included in the evaluation of these measures.

Intervention Population

As described in the Background, the intervention group will consist of "able-bodied" Group VIII beneficiaries. Specifically, beneficiaries aged 19 to 49 eligible through Medicaid expansion will be the intervention population. In Arizona, the adult expansion population is defined by the following eligibility categories:

- Childless adults, 0-100% Federal Poverty Level (FPL) (Prop 204 Restoration)
- Adult expansion, 100-133% FPL

However, not all beneficiaries in these eligibility categories will be subject to the demonstration requirements. Specifically, those meeting the following criteria will be exempt:[3-1]

- Pregnant women and women up to the end of the month in which the 60th day of post-pregnancy occurs

[3-1] Note, some exemptions are listed explicitly for full transparency as to certain groups that will not be impacted, such as those aged 50 or above.

- Former foster care youth up to age 26
- Beneficiaries who are members of federally recognized tribe
- Beneficiaries determined to have a serious mental illness (SMI)
- Beneficiaries currently receiving temporary or permanent long-term disability benefits from a private insurer or from the state or federal government, including workers compensation benefits
- Beneficiaries who are medically frail
- Beneficiaries who are in active treatment with respect to a substance use disorder (SUD)
- Full time high school, trade school, college or graduate students
- Victims of domestic violence
- Beneficiaries who are homeless
- Designated caretakers of a child under age 18
- Caregivers who are responsible for the care of an individual with a disability
- Beneficiaries who have an acute medical condition
- Beneficiaries who are receiving Supplemental Nutrition Assistance Program (SNAP), Cash Assistance, or Unemployment Insurance income benefits
- Beneficiaries participating in other AHCCCS approved work programs
- Beneficiaries not mentioned above who have a disability as defined by federal disabilities rights laws (ADA, Section 504, and Section 1557) who are unable to participate in AW Requirements for disability-related reasons

Comparison Populations

AHCCCS does not maintain or have access to an all-payer claims database from which to feasibly pull commercial insurance claims and enrollment information to identify low income commercial insurance enrollees. As a result, the evaluation design will rely on:

- Non-group VIII adult Medicaid beneficiaries
- Group VIII beneficiaries meeting exemption criteria
- Prospective AHCCCS Works beneficiaries in other regions resulting from staged rollout of implementation

Identification of Valid Non-Group VIII Comparison Group

Adult Medicaid expansion beneficiaries are systematically different from many traditional Medicaid recipients on a variety of factors including age, income, number of dependents, and disability. Given these systematic differences, a subset comparison group must be identified from the full traditional Medicaid population who share similar characteristics to the Medicaid expansion population subject to the waiver requirements. Propensity score matching or other similar techniques will be employed to identify an appropriate comparison group using the following eligibility categories:[3-2]

[3-2] Arizona Health Care Cost Containment System. AHCCCS Population By Category. Available at: https://www.azahcccs.gov/Resources/Downloads/PopulationStatistics/2019/May/AHCCCSPopulationbyCategory.pdf. Accessed on: Jun 13, 2019.

- Supplemental Security Income (SSI) Cash
- SSI Related
- 1931 AHCCCS for Families & Children
- 1931 Related
- Traditional Medical Assistance

Based on May 2019 enrollment, there were a total of 550,446 Medicaid beneficiaries enrolled in the above eligibility categories, compared to a maximum of approximately 400,000 beneficiaries in the intervention population. This will serve as the eligible comparison group for the evaluation. 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.[3-3] Propensity score matching has been used extensively to match individuals from an eligible comparison group to individuals in the intervention group.[3-4] 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.[3-5] 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.

[3-3] 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).

[3-4] 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/

[3-5] 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.[3-6]

Identification of Valid Exempted Group VIII Comparison Group

Because the community engagement requirements do not apply to the full Group VIII population, an opportunity exists in which beneficiaries meeting certain exemptions may be considered for a comparison group. This secondary comparison group may not be large enough to cover those impacted by the requirements to serve as a primary comparison group. However, this comparison group could be used to supplement the comparison group consisting of Non-group VIII beneficiaries. Not all exempt beneficiaries are expected to serve as a valid comparison group. Indeed, many exemptions were created specifically because the beneficiaries meeting those criteria were expected to differ systematically from those who are not exempt. For example, individuals with a SMI will have significantly different needs and utilization patterns than non-SMI beneficiaries and are therefore unlikely to yield a valid comparison group.

The independent evaluator will explore creating a valid comparison group using the following eligibility categories in combination with propensity score matching:

- Former foster care youth up to age 26
- Beneficiaries who are members of federally recognized tribe
- Full time high school, trade school, college or graduate students
- Victims of domestic violence
- Designated caretakers of a child under age 18
- Caregivers who are responsible for the care of an individual with a disability
- Beneficiaries who are receiving Supplemental Nutrition Assistance Program (SNAP), Cash Assistance, or Unemployment Insurance income benefits
- Beneficiaries participating in other AHCCCS approved work programs

These categories represent a starting place for building the comparison group and may not reflect the final selection identified by the independent evaluator.

3-6 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/

Similarities in observable characteristics between the intervention population and those meeting exemptions will be assessed and if systematic differences are found, propensity score matching, or weighting will be used to normalize the comparison group to match the intervention group.

Prospective AHCCCS Works beneficiaries in other regions resulting from staged rollout of implementation

AHCCCS anticipates implementing AHCCCS Works through a three stage phase-in approach, beginning with the most urbanized counties in Spring/Summer 2020, semi-urbanized counties in Spring/Summer 2021, and ending with least urbanized counties in Spring/Summer 2022. This provides an opportunity to leverage beneficiaries not yet subject to the waiver requirements as a comparison group for beneficiaries who are subject to the requirements for early phase-in stages. However, since the geographical phase-in is based on urbanicity there may be systematic differences between the groups. The independent evaluator will assess the viability of utilizing beneficiaries not yet subject to the requirements from the staged rollout as a potential comparison group.

Evaluation Periods

AHCCCS Works is anticipated to be in effect beginning Spring/Summer 2020 with the initial demonstration approved through September 2021. Due to the timing of the Interim Evaluation Report the time period to be covered by the interim evaluation has yet to be determined at the time of writing this Evaluation Design Plan. The baseline period will be the year prior to implementation. The Summative Evaluation Report will cover one full year 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: AHCCCS Works Evaluation Periods

Evaluation Periods	Time Frame
Baseline	Year prior to implementation
Interim Evaluation*	To Be Determined
Summative Evaluation	First two years of demonstration
*Approval for the waiver ends September 30, 2021.	

Propensity score matching will be used to identify a valid comparison group, which will rely on administrative claims data collected during the baseline period. Claims data for AHCCCS typically have a six- to nine-month lag, which would allow adequate time to identify the comparison group prior to the end of the first demonstration year.

Evaluation Measures

Table 3-5 details the proposed measure(s), study populations, data sources and proposed analytic methods that will be used to evaluate the AHCCCS Works program. Detailed measure specifications can be found in Appendix D.

Table 3-5: AHCCCS Works Evaluation Design Measures

Research Question	Measure(s)	Comparison Group(s)	Data Source(s)	Analytic Approach
Hypothesis 1—Medicaid beneficiaries subject to the community engagement requirement will have higher employment and education levels than Medicaid beneficiaries not subject to the requirement.				
Research Question 1.1: Does the community engagement requirement lead to increased job seeking activities for those subject to the requirements compared to those who are not?	1-1: Percentage of beneficiaries who did not work during the previous week who actively sought a job during the past four weeks	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences
	1-2: Percentage of beneficiaries who met community engagement criteria through job search activities	N/A	Eligibility and program monitoring data	- Compare outcomes during first three months (i.e., orientation period) against outcomes for subsequent months - Rapid cycle reporting – statistical process control chart
Research Question 1.2: Does the community engagement requirement lead to increased rates of education enrollment or employment training programs?	1-3: Percentage of beneficiaries attending school or an Employment Support and Development program	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences
	1-4: Percentage of beneficiaries who met community engagement criteria through attending school or an Employment Support and Development program	N/A	Eligibility and program monitoring data	- Compare outcomes during first three months (i.e., orientation period) against outcomes for subsequent months - Rapid cycle reporting – statistical process control chart
Research Question 1.3: Are beneficiaries subject to the community engagement requirement more likely to be employed	1-5: Percentage of beneficiaries who usually worked at least 20 hours per week during previous year	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences

Research Question	Measure(s)	Comparison Group(s)	Data Source(s)	Analytic Approach
(including new and sustained employment) compared to those who are not?	1-6: Percentage of beneficiaries employed during each month of measurement year	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	Eligibility and income data	- Comparative interrupted time series - Difference-in-differences - Rapid cycle reporting – statistical process control chart
	1-7: Number of weeks worked last year (including as unpaid family worker, and paid vacation/sick leave)	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences
Research Question 1.4: Does the community engagement requirement lead to better education outcomes?	1-8: Beneficiaries' reported highest grade or level of education completed	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences
Hypothesis 2—Medicaid beneficiaries subject to the community engagement requirement will have higher average income than Medicaid beneficiaries not subject to the requirement.				
Research Question 2.1: Does the community engagement requirement increase income?	2-1: Average monthly earnings	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	Eligibility and income data	- Comparative interrupted time series - Difference-in-differences - Rapid cycle reporting – statistical process control chart
	2-2: Average beneficiary reported monthly income	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences

Research Question	Measure(s)	Comparison Group(s)	Data Source(s)	Analytic Approach
	2-3: Percentage of beneficiaries who reported medical debt	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences
Hypothesis 3—Medicaid beneficiaries subject to the community engagement requirement will have a higher likelihood of transitioning to commercial health insurance after separating from Medicaid than Medicaid beneficiaries not subject to the requirement.				
Research Question 3.1: Does the community engagement requirement lead to increased take-up of commercial insurance, including employer-sponsored insurance (ESI) and Marketplace plans?	3-1: Enrollment in commercial coverage within one year after Medicaid disenrollment	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences
Research Question 3.2: Is the community engagement requirement associated with coverage losses (if people transition off Medicaid and do not enroll in commercial health insurance?)	3-2: Average number of months beneficiaries reported being uninsured	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences
	3-3: Average number of months uninsured	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State tax data (1095B)	Difference-in-differences
Hypothesis 4—Current and former Medicaid beneficiaries subject to the community engagement requirement will have better health outcomes than Medicaid beneficiaries not subject to the requirement.				

Research Question	Measure(s)	Comparison Group(s)	Data Source(s)	Analytic Approach
Research Question 4.1: Does the community engagement requirement lead to improved health outcomes?	4-1: Beneficiary reported rating of overall health	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences
	4-2: Beneficiary reported rating of overall mental or emotional health	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences
	4-3: Percentage of beneficiaries who reported prior year emergency room (ER) visit	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences
	4-4: Percentage of beneficiaries who reported prior year hospital admission	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State beneficiary survey	Difference-in-differences
Hypothesis 5—Medicaid beneficiaries subject to the community engagement requirement will have better continuity of enrollment compared to similar beneficiaries not subject to the community engagement requirement.				
Research Question 5.1: Does the community engagement requirement impact continuous	5-1: Average number of gaps in Medicaid eligibility	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State enrollment and eligibility data	Difference-in-differences

Research Question	Measure(s)	Comparison Group(s)	Data Source(s)	Analytic Approach
eligibility for Medicaid?	5-2: Percentage of beneficiaries with gaps in Medicaid eligibility	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State enrollment and eligibility data	Difference-in-differences
	5-3: Percentage of non-exempt AHCCCS Works beneficiaries losing Medicaid eligibility per month, by discontinuance category	N/A	State enrollment and eligibility data	Rapid cycle reporting – statistical process control chart
Research Question 5.2: Does the community engagement requirement impact continuous enrollment in Medicaid (i.e., suspended through noncompliance)?	5-4: Average number of gaps in Medicaid enrollment	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State enrollment and eligibility data	Difference-in-differences
	5-5: Percentage of beneficiaries with gaps in Medicaid enrollment	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	State enrollment and eligibility data	Difference-in-differences
	5-6: Percentage of non-exempt AHCCCS Works beneficiaries suspended due to noncompliance per month	N/A	- State enrollment and eligibility data - Compliance and monitoring data	Rapid cycle reporting – statistical process control chart
Hypothesis 6—The community engagement requirement will promote Medicaid program sustainability.				

Research Question	Measure(s)	Comparison Group(s)	Data Source(s)	Analytic Approach
Research Question 6.1: Do beneficiaries subject to the community engagement requirement generate cost savings to AHCCCS?	6-1: Annual medical and pharmacy costs per beneficiary month	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	Administrative claims data	Difference-in-differences
	6-2: Annual administrative costs per beneficiary month	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	Administrative claims data	Difference-in-differences
	6-3: Total costs per beneficiary month	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout	Administrative claims data	Difference-in-differences
Note: ER: Emergency room				

Data Sources

Multiple data sources will be utilized to evaluate the six research hypotheses for the AHCCCS Works evaluation. Data collection will include administrative and survey-based data such as Consumer Assessment of Healthcare Providers and Systems (CAHPS®), CAHPS-like survey questions. Administrative data sources include information extracted from Prepaid Medical Management Information System (PMMIS) and Health-e-Arizona Plus (HEAplus).[3-7] PMMIS and HEAplus will be used to collect, manage and maintain Medicaid recipient files (i.e., eligibility, enrollment, demographics, income, community engagement compliance), fee-for-service (FFS) claims, managed care encounter data, income and program compliance data. The combination of survey and the administrative data sources mentioned earlier will be used to assess the six research hypotheses.

State Beneficiary Survey Data

State beneficiary surveys will be used to assess beneficiaries' healthcare coverage and employment status before and during the AHCCCS Works program implementation. These surveys will be an important data source for

[3-7] CAHPS is a registered trademark of the Agency for Healthcare Research and Quality (AHRQ).

community engagement demonstration evaluations because the independent evaluator will need to capture information from beneficiaries after they separate from Medicaid in order to answer pertinent questions to the demonstration. Therefore, these instruments will include specific survey items designed to elicit information that addresses research hypotheses regarding member employment, income, health status and coverage transitions.

The survey questions will be designed to capture elements of the waiver Special Terms and Conditions (STCs) that cannot be addressed through administrative data. These surveys will be particularly crucial for former Medicaid beneficiaries as there will be limited administrative data for those individuals. The following concepts and hypotheses will be addressed in the beneficiary surveys:

1. **Employment status**—Hypothesis 1 states that Medicaid beneficiaries subject to community engagement requirements will have higher employment levels, including work in subsidized, unsubsidized, or self-employed settings, than Medicaid beneficiaries not subject to the requirements.
2. **Income**—Hypothesis 2 states that community engagement requirements will increase the average income of Medicaid beneficiaries subject to the requirements, compared to Medicaid beneficiaries not subject to the requirements.
3. **Transition to commercial health**—Hypothesis 3 states that community engagement requirements will increase the likelihood that Medicaid beneficiaries' transition to commercial health insurance after separating from Medicaid, compared to Medicaid beneficiaries not subject to the requirements.
4. **Health outcomes**—Hypothesis 4 states that community engagement requirements will improve the health outcomes of current and former Medicaid beneficiaries subject to the requirements, compared to Medicaid beneficiaries not subject to the requirements.

The independent evaluator will conduct single cross-sectional surveys during the baseline and measurement periods. Ideally, the independent evaluator will survey beneficiaries at the baseline before demonstration implementation; however, if the independent evaluator is unable to do so, they will conduct a baseline survey after implementation with retrospective survey questions clearly indicating time periods before demonstration policies are expected to affect beneficiaries' behavior or other outcomes. AHCCCS and its independent evaluator will aim to collect baseline data before the anticipated start date of Spring/Summer 2020.

To maximize response rates, a mixed-mode methodology for survey data collection will be used. The addition of email reminders, when data are available, or pre-notification letters to beneficiaries, has shown to increase response rates and will be incorporated into survey administration. Additionally, to the extent possible, the independent evaluator will align multiple demonstration surveys to minimize the number of surveys members receive and to increase response rates across all demonstrations with overlapping populations. A range of sampling protocols will be considered including simple random samples, stratified random samples, multistage stratifications (i.e., cluster), and targeted oversamples.

One of the anticipated challenges is contacting the hard-to-reach and disenrolled populations. Collection of data for beneficiaries who have left Medicaid will be critical to understanding the impact of the community engagement requirements associated with AHCCCS Works. The independent evaluator's approach will rely on identifying those who recently disenrolled and developing a robust set of survey questions targeted at this group. This method of primary data collection will allow the independent evaluator to measure outcomes for beneficiaries for whom AHCCCS no longer has administrative data.

One limitation to sending surveys for those who have left Medicaid is that these methods are subject to data reliability concerns. Only the recently disenrolled can be considered for survey sampling in the event an individual moves in the intervening time between disenrollment and survey administration. To the extent data are available in the HEAplus system and can be linked to former Medicaid beneficiaries, contact information from

this system can be used for these individuals. Additionally, data in the HEAplus system can be leveraged to gather information on the employment status and financial well-being of beneficiaries who leave the Medicaid program.

Administrative Data

AHCCCS's demonstration evaluation will allow the opportunity to utilize data from several sources (i.e., PMMIS and HEAplus) to determine the impact of AHCCCS Works. The administrative data sources are necessary to address the six research hypotheses primarily relating to income, insurance coverage, search for employment, educational activities, Medicaid enrollment, Medicaid eligibility, and cost savings, and to identify a valid comparison group.

Use of 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 evaluations 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 cost calculations.

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 for this evaluation:

1. Difference-in-differences (DiD)
2. Comparative interrupted time series (CITS)
3. Post-implementation trend analysis
4. Rapid cycle reporting – statistical process control chart

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 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:

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

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 **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

$\boldsymbol{\gamma}$ 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, 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:

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

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]

Comparative Interrupted Time Series

Measures for which data are collected with sufficient frequency prior to and after policy implementation, can use a CITS approach.[9] The CITS approach yields several advantages over a two-time period DiD. First, it controls for differences in baseline trends between the intervention and comparison groups. Second, the CITS approach can estimate changes in both the level of the outcome at the point of intervention and trends in the outcome, whereas the typical DiD approach evaluates changes in the outcomes averaged across the pre- and post-implementation periods. Finally, by virtue of additional data points, the statistical power of the analysis is increased. However, this may not necessarily translate into improved precision of the estimates due to the potential for increased variability in the outcome as the time between measurement decreases. The generic CITS regression model is:

$$Y_{it} = \beta_0 + \beta_1 X_i + \beta_2 R_t + \beta_3 (R_t X_i) + \beta_4 T_t + \beta_5 (T_t X_i) + \beta_6 (T_t R_t) + \beta_7 (X_i R_t T_t) \; + \boldsymbol{\gamma} \mathbf{D}'_{\boldsymbol{it}} + u_{it}$$

Where Y_{it} is the outcome of interest for individual i in time period t and X_i, R_t and $\mathbf{D}'_{\boldsymbol{it}}$ are as previously defined in the DiD section. The addition of the variable T_t represents a liner time trend since the start of the baseline period, where the first time period is coded as 0. The coefficient β_3 indicates the difference between intervention and comparison groups in the level of the outcome immediately after the intervention. The coefficient β_4 is the pre-intervention trend for the comparison group, β_5 represents the difference in the trend of the outcome between intervention and comparison groups prior to intervention, β_6 represents the change in the trend for the comparison group after intervention, and β_7 represents the difference between comparison and intervention groups in the trend of the outcome after implementation compared to the pre-implementation trends (similar to a DiD estimate in the slopes).[10] Importantly, both the CITS and DiD models can be extended to include multiple comparison groups, allowing for the possibility to use both potential comparison groups simultaneously in the evaluation.

[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] The independent evaluator will determine the viability of using monthly data in the analysis by evaluating the number of data points and variability in the outcome. It is possible for data collected at a relatively high-frequency to yield a large degree of variation, rendering this approach less viable.

[3-10] See, e.g., Linden, A., (2015) "Conducting interrupted time-series analysis for single- and multiple-group comparisons," *The Stata Journal*, 15(2), pp. 480-500. https://journals.sagepub.com/doi/pdf/10.1177/1536867X1501500208.

Post-Implementation Trend Analysis

Beneficiary survey data will be utilized to evaluate measures pertaining to job seeking activities and education or job skills using a DiD framework. While survey data allows for the collection of data among former Medicaid beneficiaries and comparison groups, these outcomes may also be collected more frequently through administrative program data for the post-implementation intervention group. As such, the higher frequency and alternative data source can be used to supplement the findings from these measures. Although these data will only be collected after implementation of the program, the fact that beneficiaries will have a three-month orientation period before they are liable to lose Medicaid coverage due to noncompliance, does allow in effect a brief quasi-pre-implementation period. Three data points is not enough to reliably determine a trend, but these data can be leveraged to compare against future data points through trending analysis; such analysis may include:

- Statistical test of three-month "baseline" against time period after the three-month orientation period.
- Statistical test of three-month "baseline" against last three months in the data series.
- Linear or non-linear regression of outcomes over time.

This analysis is designed to leverage additional data to supplement the primary findings for these measures to provide additional context and detail pertaining to trends in the intervention population's compliance with community engagement requirements. This analysis is not meant to determine the impact of the demonstration on employment, education, or job readiness training.

Rapid Cycle Reporting – Statistical Process Control Chart

Measures in which outcomes can be collected monthly are also conducive to rapid cycle reporting. Rapid cycle reporting provides an early warning of possible unintended consequences. These 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.

4. Methodology Limitations

There are several limitations to the proposed evaluation design. First, many hypotheses and research questions pertain to measuring outcomes for former Medicaid beneficiaries. Arizona Health Care Cost Containment System (AHCCCS) does not maintain an all-payor claims database (APCD) in which data from commercial insurance may be available. Instead of utilizing Medicaid and APCD administrative data, the primary data source for much of the evaluation will rely on surveys. This should not preclude causal inferences about the effects of the demonstration but could introduce biases during the execution phase of the evaluation. For example, if response rates are materially and structurally different between intervention and comparison groups, and more importantly, between current and former Medicaid beneficiaries, these differences can bias the final evaluation if inadequately accounted for in the evaluation.

Another limitation or risk to the analysis is the availability of a comparison group. Because AHCCCS Works impacts virtually all able-bodied adults in Medicaid expansion eligibility groups, those who are exempt or eligible for non-expansion Medicaid may be systematically different. Propensity score matching will be the primary tool used to identify members from the exempt and/or non-expansion population who share similar characteristics to those in the intervention. While this is a proven technique and has been used in the past to conduct evaluations on a Medicaid expansion population, there are analytical risks to this technique that may ultimately hinder the ability to draw causal inferences. These risks and mitigation strategies are discussed above in the Intervention and Comparison Populations section.

5. Reporting

Following its annual evaluation of the Arizona Cost Containment System (AHCCCS) Works and subsequent synthesis of the results, AHCCCS and its independent evaluator 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 AHCCCS Works Evaluation

Deliverable	Date
AHCCCS Works Evaluation Design (STC #72)	
AHCCCS submits AHCCCS Works 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 AHCCCS Works 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 #52)	60 days after the quarter
AHCCCS to post AHCCCS Works Interim Evaluation Report on the State's website for public comment	TBD
Interim Evaluation Report (STC #76)	TBD
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 AHCCCS Works program 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.
7. The **Conclusions** section is a description of 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 to 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 11115 waiver evaluation meeting all of the requirements specified 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 AHCCCS Works program 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 Arizona Health Care Cost Containment System (AHCCCS) Works, 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 AHCCCS Works.

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 $391,696, the estimate assumes that a single independent evaluator will conduct all required AHCCCS waiver evaluations.

Table B-1: Proposed Budget Template for AHCCCS Works

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 AHCCCS Works 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 AHCCCS Works 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 AHCCCS Works program evaluation.

Figure C-1: AHCCCS Works 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
Prepare and Implement Study Design																	
Conduct kick-off meeting																	
Prepare methodology and analysis plan																	
Data Collection																	
Obtain Arizona Medicaid claims/encounter																	
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 Arizona Health Care Cost Containment System (AHCCCS) Works program evaluation.

Hypothesis 1—Medicaid beneficiaries subject to the community engagement requirement will have higher employment and education levels than Medicaid beneficiaries not subject to the requirement.

Research Question 1.1: Does the community engagement requirement lead to increased job seeking activities for those subject to the requirements compared to those who are not?

Percentage of Beneficiaries Who Did Not Work During the Previous Week Who Actively Sought a Job During the Past Four Weeks (Measure 1-1)	
Numerator/Denominator	Numerator: Number of beneficiaries responding they actively sought a job within the past four weeks (and did not work during the previous week) Denominator: Number of respondents to survey question who did not work during the previous week
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	Difference-in-differences

Percentage of Beneficiaries Who Met Community Engagement Criteria Through Job Search Activities (Measure 1-2)	
Numerator/Denominator	Numerator: Number of beneficiaries who met the community engagement criteria through job search activities Denominator: Number of non-exempt AHCCCS Works beneficiaries
Comparison Population	N/A
Measure Steward	N/A
Data Source	State administrative data
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	- Compare outcomes during first month or three months (i.e., orientation period) against outcomes for subsequent months - Rapid cycle reporting – statistical process control chart

Research Question 1.2: Does the community engagement requirement lead to increased rates of education enrollment or employment training programs?

Percentage of Beneficiaries Attending School or an Employment Support and Development Program (Measure 1-3)	
Numerator/Denominator	Numerator: Number of beneficiaries reported attendance of school or an Employment Support and Development program, or both, full time Denominator: Number of respondents to attendance of school or an Employment Support and Development program survey question
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	Difference-in-differences

Percentage of Beneficiaries Who Met Community Engagement Criteria Through Attending School or an Employment Support and Development Program (Measure 1-4)	
Numerator/Denominator	Numerator: Number of beneficiaries who met community engagement criteria through less than full-time education and job or life skills training Denominator: Number of non-exempt AHCCCS Works beneficiaries
Comparison Population	N/A
Measure Steward	N/A
Data Source	State administrative data
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	- Compare outcomes during first month or three months (i.e., orientation period) against outcomes for subsequent months - Rapid cycle reporting – statistical process control chart

Research Question 1.3: Are beneficiaries subject to the community engagement requirement more likely to be employed (including new and sustained employment) compared to those who are not?

Percentage of Beneficiaries Who Usually Worked at Least 20 Hours per Week During Previous Year (Measure 1-5)	
Numerator/Denominator	Numerator: Number of beneficiaries who reported usually working at least 20 hours per week during the time they were working, including paid vacation and sick leave Denominator: Number of respondents to hours usually worked per week survey question
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	Difference-in-differences

Percentage of Beneficiaries Employed During Each Month of the Measurement Year (Measure 1-6)	
Numerator/Denominator	Numerator: Number of beneficiaries indicating employment, including part-time, full-time, or self-employed Denominator: Number of beneficiaries in intervention/comparison group
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	Eligibility and income data
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	- Comparative interrupted time series - Difference-in-differences - Rapid cycle reporting – statistical process control chart

Number of Weeks Worked Last Year (Including as Unpaid Family Worker, and Paid Vacation/Sick Leave) (Measure 1-7)	
Numerator/Denominator	Numerator: Beneficiaries reported number of weeks worked last year (including as unpaid family worker, and paid vacation/sick leave) Denominator: Number of respondents to weeks worked survey question
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	An increase in the number of weeks worked supports the hypothesis
Analytic Approach	Difference-in-differences

Research Question 1.4: Does the community engagement requirement lead to better education outcomes?

Beneficiaries Reported Highest Grade or Level of Education Completed (Measure 1-8)	
Numerator/Denominator	Numerator: Beneficiaries reported highest grade or level of education completed Denominator: Number of respondents to highest grade or level of education completed survey question
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	An increase in the level of education supports the hypothesis
Analytic Approach	Difference-in-differences

Hypothesis 2—Medicaid beneficiaries subject to the community engagement requirement will have higher average income than Medicaid beneficiaries not subject to the requirement.

Research Question 2.1: Does the community engagement requirement increase income?

Average Monthly Earnings (Measure 2-1)	
Numerator/Denominator	Numerator: Beneficiaries monthly earnings as reported in HEAplus Denominator: Number of beneficiaries in intervention/comparison group
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	Medicaid income data; HEAplus
Desired Direction	An increase in earnings supports the hypothesis
Analytic Approach	- Comparative interrupted time series - Difference-in-differences - Rapid cycle reporting – statistical process control chart

Average Beneficiary Reported Monthly Income (Measure 2-2)	
Numerator/Denominator	Numerator: Beneficiaries reported monthly income Denominator: Number of respondents to monthly income survey question
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	An increase in income supports the hypothesis
Analytic Approach	Difference-in-differences

Percentage of Beneficiaries Who Reported Medical Debt (Measure 2-3)	
Numerator/Denominator	Numerator: Number of beneficiaries indicating outstanding medical debt or difficulty paying medical bills Denominator: Number of respondents to outstanding medical debt or difficulty paying medical bills survey question
Comparison Population	Propensity score matched beneficiaries among the following: - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
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 3—Medicaid beneficiaries subject to the community engagement requirement will have a higher likelihood of transitioning to commercial health insurance after separating from Medicaid than Medicaid beneficiaries not subject to the requirement.

Research Question 3.1: Does the community engagement requirement lead to increased take-up of commercial insurance, including employer-sponsored insurance (ESI) and Marketplace plans?

Enrollment in Commercial Coverage Within One Year After Medicaid Disenrollment (Measure 3-1)	
Numerator/Denominator	Numerator: Number of beneficiaries who indicated gaining commercial coverage within one year after Medicaid disenrollment Denominator: Number of respondents to commercial coverage survey question
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	Difference-in-differences

Research Question 3.2: Is the community engagement requirement associated with coverage losses (if people transition off Medicaid and do not enroll in commercial health insurance)?

Average Number of Months Beneficiaries Reported Being Uninsured (Measure 3-2)	
Numerator/Denominator	Numerator: Beneficiaries response to number of full months without insurance coverage Denominator: Number of respondents to full months without insurance survey question
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	A decrease in months uninsured supports the hypothesis
Analytic Approach	Difference-in-differences

Average Number of Months Uninsured (Measure 3-3)	
Numerator/Denominator	Numerator: Number of full months without insurance coverage Denominator: Number of beneficiaries in intervention/comparison group
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State administrative data
Desired Direction	A decrease in months uninsured supports the hypothesis
Analytic Approach	Difference-in-differences

Hypothesis 4—Current and former Medicaid beneficiaries subject to the community engagement requirement will have better health outcomes than Medicaid beneficiaries not subject to the requirement.

Research Question 4.1: Does the community engagement requirement lead to improved health outcomes?

Beneficiary Reported Rating of Overall Health (Measure 4-1)	
Numerator/Denominator	Numerator: Number of beneficiaries who indicated high overall health rating in response to CAHPS question regarding overall health Denominator: Number of respondents to overall health survey question
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	NCQA
Data Source	State beneficiary survey
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	Difference-in-differences

Beneficiary Reported Rating of Overall Mental or Emotional Health (Measure 4-2)	
Numerator/Denominator	Numerator: Number of beneficiaries who indicated high overall mental or emotional health rating in response to CAHPS question regarding overall health Denominator: Number of respondents to overall mental or emotional health survey question
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	NCQA
Data Source	State beneficiary survey
Desired Direction	An increase in the rate supports the hypothesis
Analytic Approach	Difference-in-differences

Percentage of Beneficiaries Who Reported Prior Year Emergency Room (ER) Visit (Measure 4-3)	
Numerator/Denominator	Numerator: Number of beneficiaries who reported ER visits during previous 12 months Denominator: Number of respondents to ER visit survey questions
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State beneficiary survey
Desired Direction	A decrease in the rate supports the hypothesis

Analytic Approach	Difference-in-differences

Percentage of Beneficiaries Who Reported Prior Year Hospital Admission (Measure 4-4)	
Numerator/Denominator	Numerator: Number of beneficiaries who reported overnight hospital stays during previous 12 months Denominator: Number of respondents to overnight hospital stay survey questions
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
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—Medicaid beneficiaries subject to the community engagement requirement will have better continuity of enrollment compared to similar beneficiaries not subject to community engagement requirement.

Research Question 5.1: Does the community engagement requirement impact continuous eligibility for Medicaid?

Average Number of Gaps in Medicaid Eligibility (Measure 5-1)	
Numerator/Denominator	Numerator: Number of gaps in Medicaid eligibility (a gap is defined as lapse in eligibility on a monthly basis) Denominator: Number of beneficiaries in intervention/comparison group
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State eligibility data
Desired Direction	N/A
Analytic Approach	Difference-in-differences

Percentage of Beneficiaries with Gaps in Medicaid Eligibility (Measure 5-2)	
Numerator/Denominator	Numerator: Number of beneficiaries with a gap in Medicaid eligibility (a gap is defined as lapse in eligibility on a monthly basis) Denominator: Number of beneficiaries in intervention/comparison group
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State eligibility data
Desired Direction	N/A
Analytic Approach	Difference-in-differences

Percentage of Non-Exempt AHCCCS Works Beneficiaries Losing Medicaid Eligibility per Month, by Discontinuance Category (Measure 5-3)	
Numerator/Denominator	Numerator: Number of beneficiaries who have a Medicaid eligibility end date within the month Denominator: Number of non-exempt AHCCCS Works beneficiaries
Comparison Population	N/A
Measure Steward	N/A
Data Source	State eligibility data
Desired Direction	N/A
Analytic Approach	Rapid cycle reporting – statistical process control chart

Research Question 5.2: Does the community engagement requirement impact continuous enrollment in Medicaid (i.e., suspended through noncompliance)?

Average Number of Gaps in Medicaid Enrollment (Measure 5-4)	
Numerator/Denominator	Numerator: Number of gaps in Medicaid enrollment (a gap is defined as lapse in enrollment on a monthly basis) Denominator: Number of beneficiaries in intervention/comparison group
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State enrollment data
Desired Direction	A decrease in the number of enrollment gaps supports the hypothesis
Analytic Approach	Difference-in-differences

Percentage of Beneficiaries with Gaps in Medicaid Enrollment (Measure 5-5)	
Numerator/Denominator	Numerator: Number of beneficiaries with a gap at any point during the measurement period (a gap is defined as a lapse in enrollment on a monthly basis) Denominator: Number of beneficiaries in intervention/comparison group
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	State enrollment data
Desired Direction	A decrease in the rate supports the hypothesis
Analytic Approach	Difference-in-differences

Percentage of Non-exempt AHCCCS Works Beneficiaries Suspended Due to Noncompliance Per Month (Measure 5-6)	
Numerator/Denominator	Numerator: Number of beneficiaries who were suspended from Medicaid during the month due to noncompliance Denominator: Number of non-exempt AHCCCS Works beneficiaries
Comparison Population	N/A
Measure Steward	N/A
Data Source	State eligibility data
Desired Direction	N/A
Analytic Approach	Rapid cycle reporting – statistical process control chart

Hypothesis 6—The community engagement requirement will promote Medicaid program sustainability.

Research Question 6.1: Do beneficiaries subject to the community engagement requirement generate cost savings to AHCCCS?

Annual Medical and Pharmacy Costs Per Beneficiary Month (Measure 6-1)	
Numerator/Denominator	Numerator: Annual AHCCCS medical and pharmacy costs Denominator: Number of beneficiary months in intervention/comparison group
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
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

Annual Administrative Costs Per Beneficiary Month (Measure 6-2)	
Numerator/Denominator	Numerator: 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 AHCCCS Works Denominator: Number of beneficiary months in intervention/comparison group
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
Measure Steward	N/A
Data Source	Administrative program data
Desired Direction	A decrease in costs supports the hypothesis
Analytic Approach	Difference-in-differences

Total Costs Per Beneficiary Month (Measure 6-3)	
Numerator/Denominator	Numerator: Sum of estimated annual medical/pharmacy costs and administrative costs Denominator: Number of beneficiary months in intervention/comparison group
Comparison Population	Similar members not subject to community engagement requirements - Group VIII meeting exemptions - Non-group VIII population - Beneficiaries from staged rollout
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