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

State Demonstrations Group

June 17, 2021

Dawn Stehle
Deputy Director for Health & Medicaid
Arkansas Department of Human Services
112 West 8th Street, Slot S401
Little Rock, AR 72201-4608

Dear Ms. Stehle:

The Centers for Medicare & Medicaid Services (CMS) completed its review of the Evaluation Design, which is required by the Special Terms and Conditions (STCs), specifically, STC #71, of Arkansas's section 1115 demonstration, "Arkansas Works" (Project No: 11- W-00298/1), effective through December 31, 2021. CMS has determined that the evaluation design, dated May 4, 2021, meets the requirements set forth in the STCs and our evaluation design guidance, and therefore, approves the state's evaluation design.

CMS has added the approved evaluation design to the demonstration's STCs as Attachment C. A copy of the STCs, which includes the new attachment, in enclosed with this letter. In accordance with 42 CFR 431.424, the approved evaluation design may now be posted to the state's Medicaid website within thirty days. CMS will also post the approved evaluation design as a standalone document, separate from the STCs, on Medicaid.gov.

Please note that an interim evaluation report, consistent with the approved evaluation design, is due to CMS on June 30, 2021. Likewise, a single summative evaluation report, consistent with this approved evaluation design, is due to CMS within 18 months of the end of the demonstration period. In accordance with 42 CFR 431.428 and the STCs, we look forward to receiving updates on evaluation activities in the demonstration monitoring reports.

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

Sincerely,

Danielle Daly -S
Digitally signed by Danielle Daly -S
Date: 2021.06.17 14:32:26 -04'00'

Andrea J. Casart -S
Digitally signed by Andrea J. Casart -S
Date: 2021.06.17 14:41:29 -04'00'

Danielle Daly
Director
Division of Demonstration Monitoring and Evaluation

Andrea Casart
Director
Division of Eligibility and Coverage Demonstrations

cc: Michala Walker, State Monitoring Lead, CMS Medicaid and CHIP Operations Group

Arkansas Works Program Evaluation for Section 1115 Demonstration Waiver Project Number 11-W-00287/6

Evaluation Design

May 4, 2021

ARKANSAS DEPARTMENT OF HUMAN SERVICES

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1 General Background Information

Arkansas was the first state to expand Medicaid using a Section 1115 demonstration funded by the Affordable Care Act (ACA) for Premium Assistance. In September 2013, the Centers for Medicare and Medicaid Services (CMS) approved Arkansas' request for a three-year Medicaid premium assistance demonstration entitled "Arkansas Health Care Independence Program (HCIP)," commonly referred to as the "Private Option." The demonstration allowed Arkansas to support healthcare coverage for individuals between 19 and 64 years of age with incomes at or below 138 percent of the federal poverty level through qualified health plans (QHPs) offered on the Health Insurance Marketplace (Marketplace) with premium assistance from Medicaid, effective January 1, 2014 through December 31, 2016.

On June 28, 2016, Governor Asa Hutchinson requested, via his letter to Secretary Burwell at the Department of Health and Human Services (DHHS), an extension and amendment application of the HCIP in accordance with legislation authorized by the Arkansas State Legislature with his concurrence entitled the *Arkansas Works Act of 2016*. The intent of the extension request was to build upon the HCIP's success of providing health insurance coverage for over 240,000 Arkansans having, as stated by Governor Hutchinson in his letter, "…*fulfilled its goals of promoting continuity of care, improving access to providers, smoothing the 'seams' across the continuum of coverage and furthering quality improvement and delivery system reform initiatives.*" CMS's approval letter for this request, dated December 8, 2016, updated the special terms and conditions (STCs) and acknowledged the demonstration project name change to "Arkansas Works."

Although additional Arkansas Works program revision requests from the State of Arkansas and approvals from CMS have been formalized since, the STCs dated December 8, 2016 prevail per CMS guidance letter dated May 14, 2019, and this updated Waiver Evaluation Design has been prepared in compliance with such. The employer sponsored insurance (ESI) premium assistance program is excluded from this evaluation. Although it is included in the prevailing STCs and had authorization to begin on January 1, 2017, the ESI program was eliminated by state law on May 4, 2017. CMS addressed ending the program in an amendment approval letter dated March 5, 2018, found at https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/ar/ar-works-ca.pdf, and was never reinstated. The minimal participation during the program's few active months would render any analysis invalid.

Table 1 below provides an overview of key information for the Arkansas Section 1115 Demonstration Project.

Table 1: Arkansas Medicaid Section 1115 Demonstration Project Key Information

Arkansas Medicaid Section 1115 Demonstration Project Key Information	
Waiver Proposal Submitted to CMS	August 6, 2013
Waiver Proposal Approved by CMS	September 27, 2013
HCIP Implemented	October 1, 2013
HCIP Expiration	December 31, 2016
Proposed Evaluation Plan Submitted to CMS	February 20, 2014
Evaluation Plan Approved by CMS	March 24, 2014
Extension Application Submitted to CMS	July 7, 2016
Extension Application Approved by CMS	December 8, 2016
Arkansas Works Implemented	January 1, 2017
Arkansas Works Expiration	December 31, 2021
Proposed Evaluation Plan Submitted to CMS	February 6, 2017
Evaluation Plan Approved by CMS	May 2021
Amendment Request Submitted to CMS	June 30, 2017
Amendment Request Approved by CMS	To be inserted by DHS or CMS
CMS Letter Reverting to December 8, 2016 STCs	May 14, 2019

Under the current Arkansas Works program, the state is determined to build on HCIP's achievements and continue its goals of:

- Improving continuity of care
- Improving access to care
- Improving quality of care
- Providing cost-effective healthcare

The figure below is a visual representation of how the program goals support each other in providing healthcare coverage to qualified individuals 19 through 64 years of age with incomes at or below 138 percent of the federal poverty level.

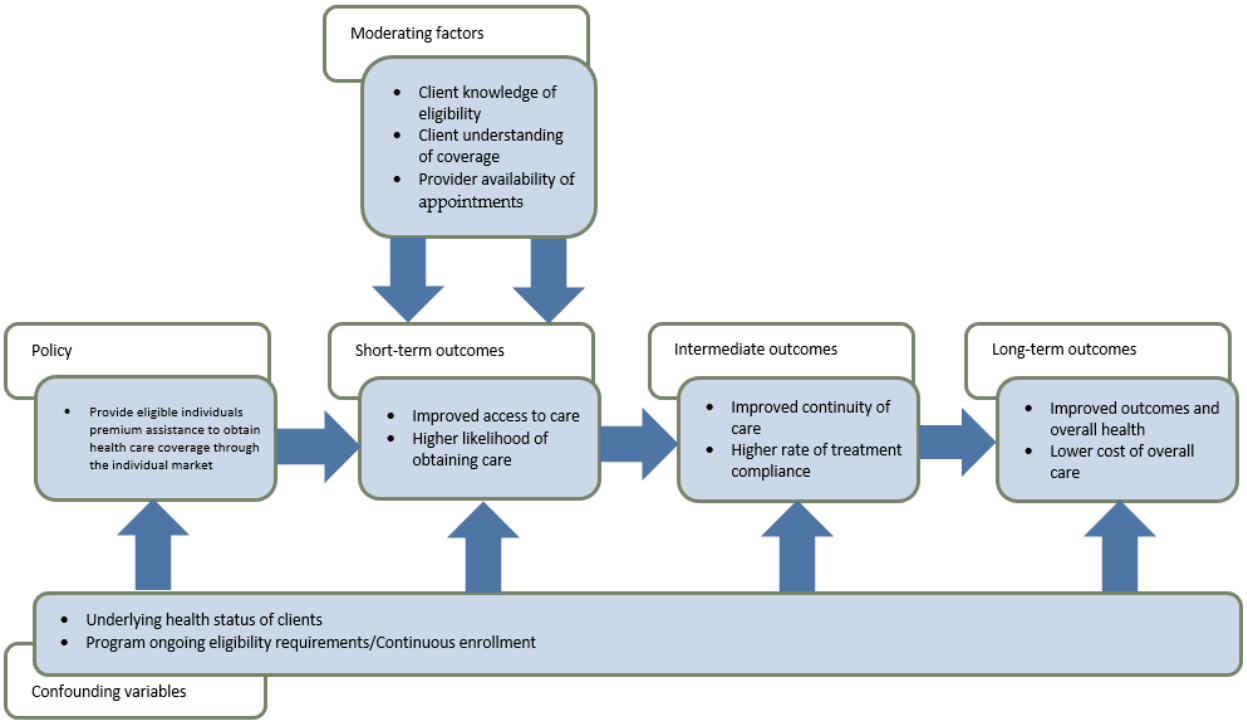

Figure 1: Arkansas Demonstration Waiver Evaluation Logic Model

The following details of the evaluation design respond to the requirements for the waiver evaluation as stipulated in Section XIII of the STCs dated December 8, 2016.

2 Evaluation Questions and Hypotheses

An effective evaluation design was developed with a Measure Diagram to help clearly depict the fundamental relationship between the aims for the demonstration, hypotheses to consider, and the measures identified to analyze the performance. The diagrams below provide a visual display of measurable criteria to verify the achievement of the demonstration goals. Each aim represents how the demonstration will positively affect its clients as compared with the traditional Medicaid fee-for-service (FFS) program. The hypotheses associate specific STCs from CMS to guide the comparison, and the measures stipulate the metrics applied to each hypothesis that will be analyzed to measure and validate the performance of the demonstration. Detailed information about each metric can be found in Section 3.4 of this document.

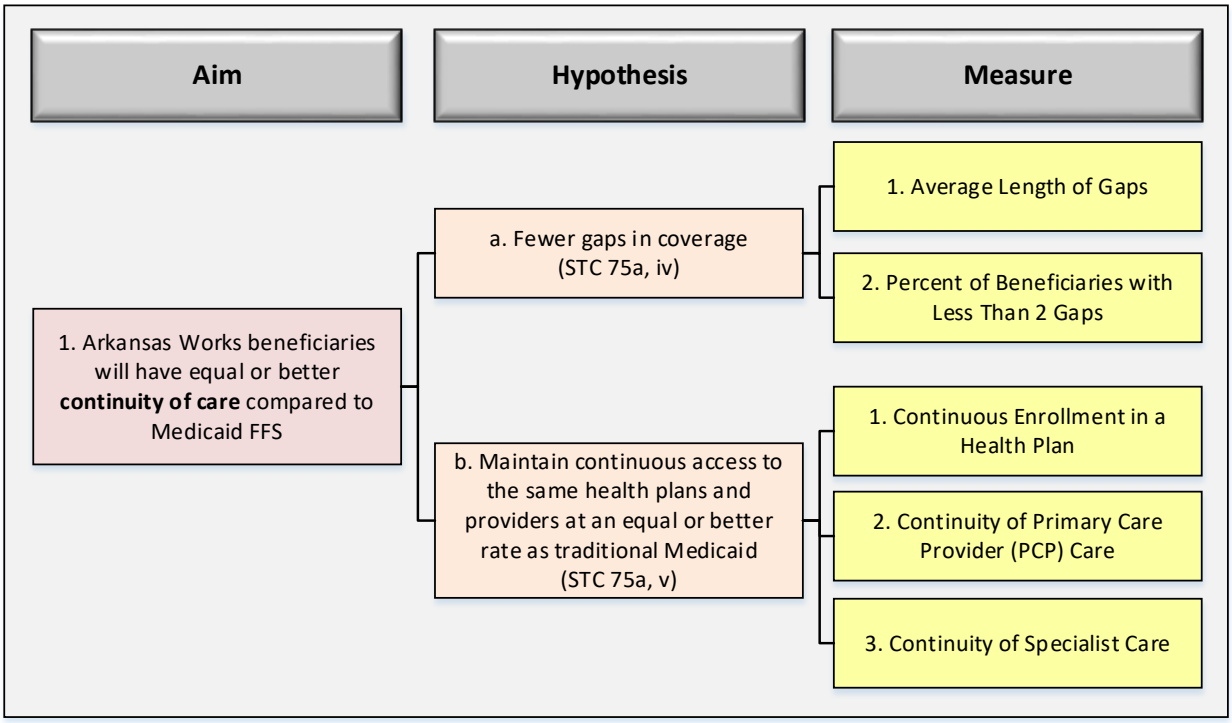

Figure 2: Measure Diagram Aim 1

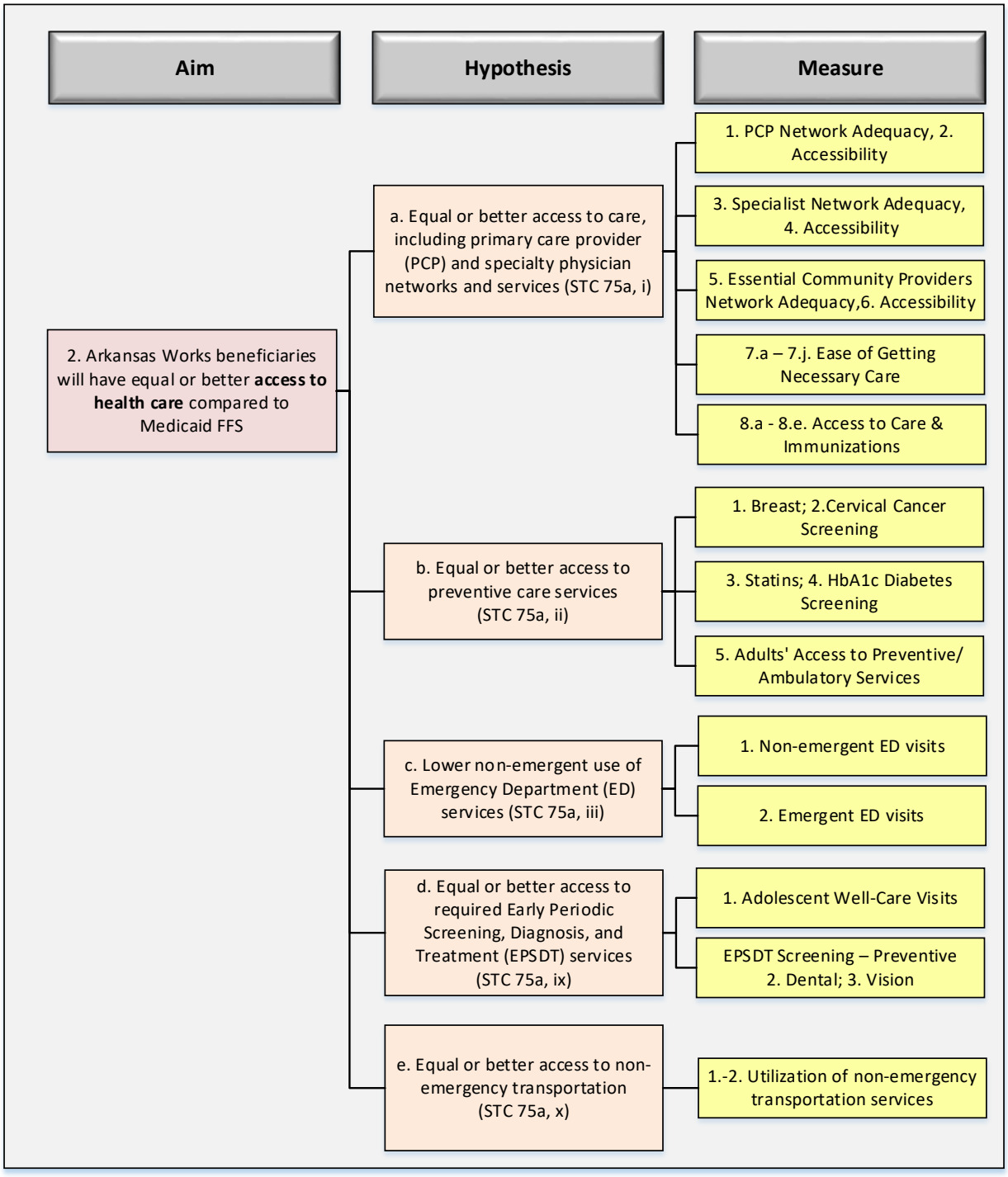

Figure 3: Measure Diagram Aim 2

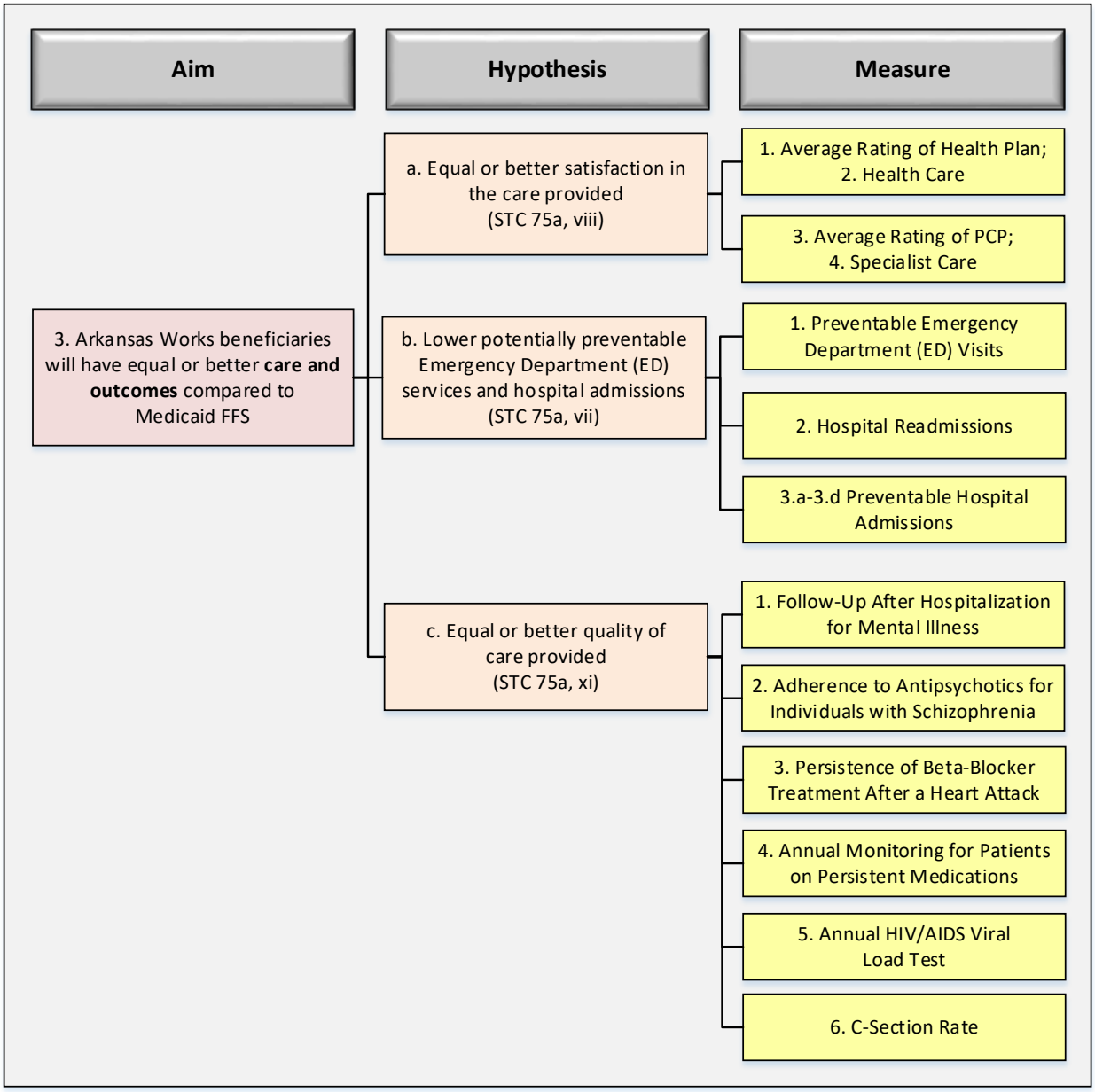

Figure 4: Measure Diagram Aim 3

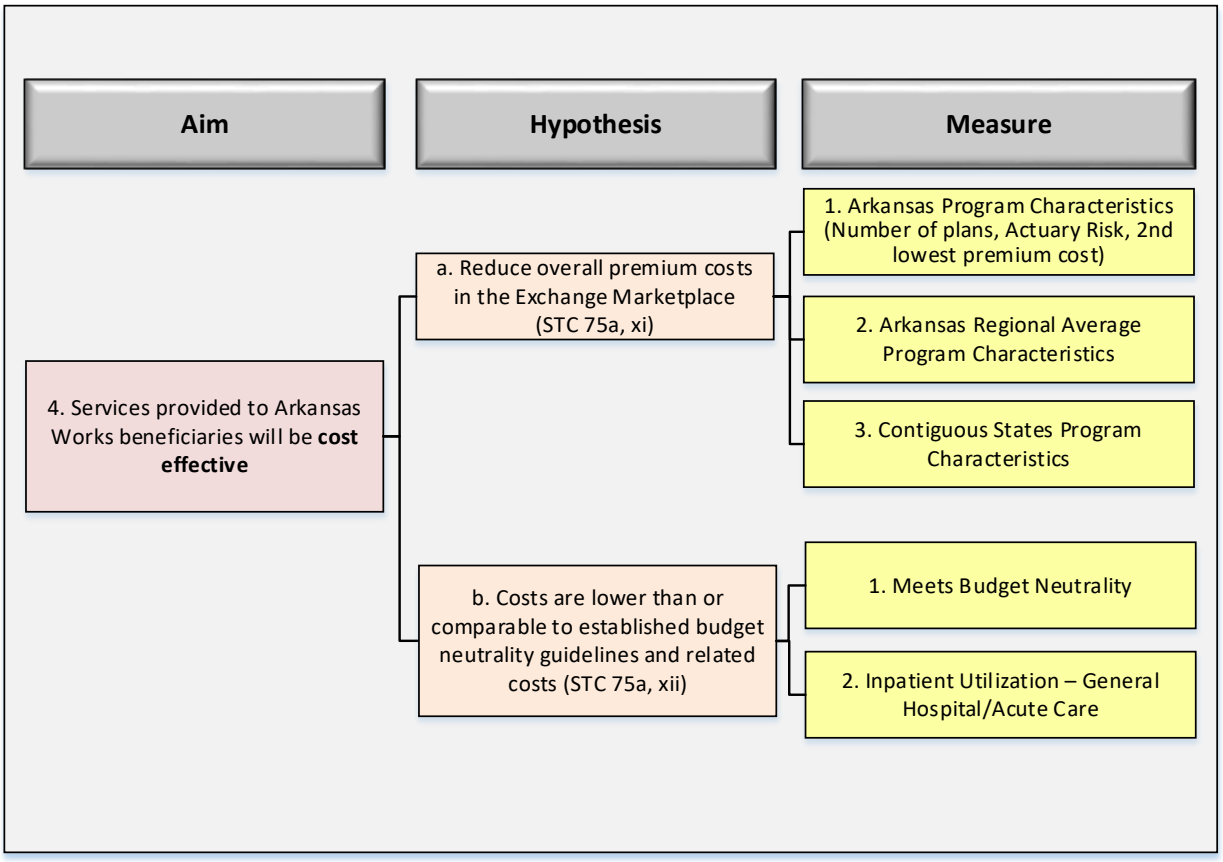

Figure 5: Measure Diagram Aim 4

3 METHODOLOGY

3.1 EVALUATION DESIGN

The evaluation will test hypotheses of continuity, access, care and outcomes, and cost-effectiveness using data from eligibility, claims, surveys, commercial insurance, and cost reporting. Eligibility data will address continuity of care in Aim 1, and claims-based measures will address Aims 1–4. All measures will be evaluated for each calendar year of the demonstration.

Survey data will be used in Aims 2 and 3. To assess client experiences of health care, a Client Engagement Satisfaction survey will be administered to clients in Arkansas Works and fee-for-service Medicaid. The Behavioral Risk Factor Surveillance System (BRFSS) survey data will be used to compare Arkansas with out-of-state comparison groups on health care access and immunization.

Additionally for Aim 2, provider networks for Arkansas Works plans will be compared with Arkansas Medicaid provider networks to assess network adequacy and accessibility, a pre-post comparison will be performed for clients eligible for Medicaid Early and Periodic Screening, Diagnostic and Treatment (EPSDT) services, and access to non-emergency transportation will be assessed. To assess cost-effectiveness for Aim 4, program characteristics will be compared at the regional and state levels and with the budget neutrality cap.

Two measures of access to health care (Aim 2) will also be used to evaluate Arkansas Works' policy of required premium contributions for clients with income >100% FPL. Two measures of continuity (Aim 1) will be used to evaluate the effect of premium contributions as well as Arkansas Works' waiver of retroactive eligibility (see Sections 3.6.7, 3.7). For these measures, years 2014–2019 will be analyzed in an interrupted time series design to compare trends before and after policy implementation. When available, expansion population adults in Arkansas who were subject to the policies will be compared with those who were not.
The Arkansas Works evaluation will utilize client-level weighting for the eligibility and claims-based measures to achieve comparable target and comparison groups for analyses. For each measure, the eligible clients will be weighted to achieve balance across groups on baseline covariates. Measure results at the aggregate level will be compared using weighted group means as well as with client-level models that additionally adjust for previous experience in the program and/or risk scores.

Since Arkansas Works is a multi-year program scheduled to run through 2021, there is a possibility of following each calendar-year cohort across years. For example, clients identified in the target and comparison populations for 2017 could be followed in 2018, 2019, 2020, and 2021 in a longitudinal analysis that accounts for serial autocorrelation and attrition. This type of analysis can leverage each client's calendar-year metric results to provide statistically sound longer-term results.

3.2 Target and Comparison Populations

Below is a conceptual diagram of the populations addressed in the Arkansas Works evaluation (Figure 6). The comparison group was determined to be non-disabled adults who would have been eligible for Arkansas Medicaid, pre-expansion. It is composed of clients in the parent/caretaker relative (<17% FPL) and former foster care (no income limit) aid categories.

The target group is composed of clients in the Medicaid expansion population (aid category 06, <133% FPL, 138% FPL with 5% disregard) with a QHP from a private insurance carrier (benefit plan HCIP). Two other benefit plans within the 06-aid category identify the medically frail. The remaining benefit plan in the 06 aid category, IABP (interim alternative benefit plan), defines an interim period in which clients enrolled in Arkansas Works have services paid by Medicaid fee-for-service before a QHP is chosen or assigned.

In Figure 6, dashed lines around pregnancy and medically frail denote that other eligibility categories in the diagram will also be allowed. Identifying the pregnancy and medically frail groups will allow continuity of coverage to be evaluated in these subpopulations, even though comparison groups are not available for them.

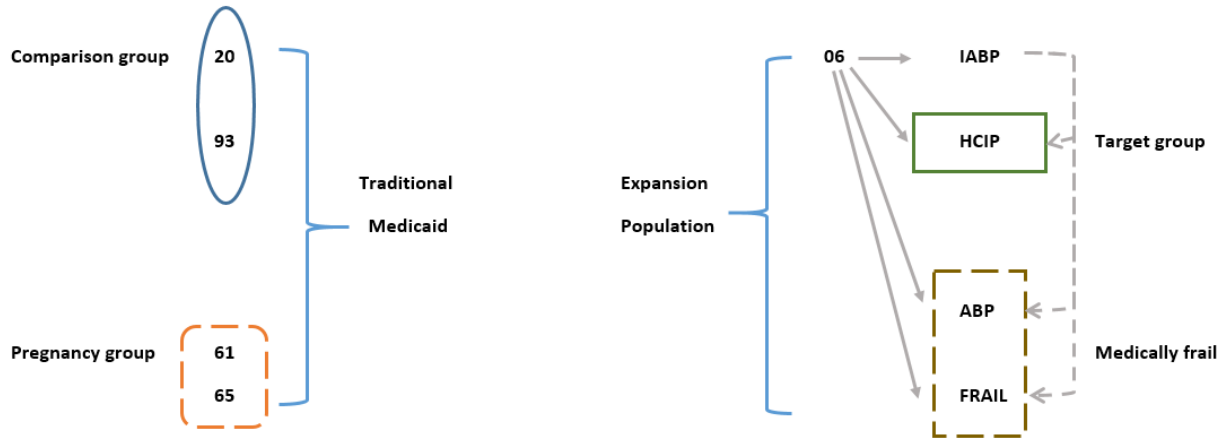

Figure 6: Conceptual Diagram of Evaluation Populations

Operationally, clients will be assigned to the target or comparison population in each analysis year based on having at least 6 months (180 days) of eligibility in segments qualifying for the target or comparison population (Table 2). Clients in the target population cannot have any segments qualifying for the comparison population, and vice versa (no "switchers"). The pregnant and medically frail will be defined as clients having one or more days of coverage in qualifying segments and at least 180 days of total coverage in the measurement year. In all populations except the comparison population, the interim alternative benefit plan (IABP) will be allowed but will not contribute towards the 180-day minimum.

Table 2: Combinations of aid category, Federal Medical Assistance Percentage (FMAP) code and benefit plan qualifying for study populations.

Study Population	Aid Category	FMAP Code	Benefit Plan
Target[1]	06 - adult expansion	Y - newly eligible	HCIP, IABP[3]
		N - oldly eligible	
		P - oldly eligible, parent/caretaker	
Comparison[1]	20 - parent/caretaker relative	N/A	N/A
	93 - former foster care		
Pregnancy[2]	61 – pregnant women, limited benefit plans	N/A	LPW, PWUCH
	65 – pregnant women, full coverage		MCAID
Medically Frail[2]	06 - adult expansion	Y - newly eligible	ABP, FRAIL, IABP[3]
		N - oldly eligible	
		P - oldly eligible, parent/caretaker	

[1] Exclusive of other combinations of aid category, FMAP code, and benefit plan.

[2] Inclusive of other combinations of aid category, FMAP code, and benefit plan.

[3] The interim, fee-for-service plan IABP (Interim Alternative Benefit Plan) is not included in the minimum eligibility period.

The following client exclusions will apply to each measurement year:

- less than 18 years of age on January 1
- 65 years of age or older on December 31
- Medicare or third-party liability claims
- participation in a Provider-led Arkansas Shared Savings Entity (PASSE), an Arkansas created Medicaid managed care program, on or after the implementation date of March 1, 2019
- death during the measurement year
- overlapping eligibility segments

Another subpopulation of interest is composed of clients who were eligible for Medicaid Early and Periodic Screening, Diagnostic and Treatment (EPSDT) services as 17- or 18-year-olds who became eligible for a QHP as 19- or 20-year olds. We will define these clients as the EPSDT population to test the hypothesis that QHP clients had at least as satisfactory access to EPSDT benefits. These clients could also be included in the target population in the year(s) that they were in a QHP.

The target and comparison groups in each measurement year are expected to have approximately a 5:1 or 6:1 ratio, necessitating weighting to construct comparably sized groups for each measure.

Table 3: Preliminary sample sizes for each measurement year to be included in the interim report.

Study Population	2017	2018	2019	2020	2021
Target	219,498	202,812	181,243	TBD	TBD
Comparison	35,534	32,658	34,724	TBD	TBD
Pregnancy	9,219	8,773	9,407	TBD	TBD
Medically frail	19,038	19,962	20,250	TBD	TBD

Because the IABP is considered part of the Arkansas Works program as a separate health plan from the QHPs, it was necessary to specify how to address IABP segments at several levels: populations, measures for gaps in coverage, measure of health plan continuity, and claims-based measures.

Table 4: IABP Measurement Details

Analysis Level	IABP Segment Treatment
Populations	Exclude clients with IABP from the comparison population
Gaps in insurance coverage	Include IABP segments as insurance coverage
Continuous Enrollment in a Health Plan	IABP as a separate health plan from target and pregnancy, included with medically frail
Claims-based measures, measurement period	Include claims during IABP segments
Claims-based measures, prior year diagnoses	Include claims during IABP segments, all populations

The proposed methods of addressing IABP segments are consistent with the rationale that IABP segments occur during a client's eligibility for Arkansas Works but are separate from enrollment into a QHP. Hence, clients with eligibility segments qualifying for the comparison population who also have an IABP segment should be excluded from the comparison population. In the other populations (target, pregnancy, and medically frail), IABP segments will be considered insurance coverage and not as gaps in coverage, and IABP will be considered a separate health plan from traditional Medicaid and QHP segments.

For claims-based measures, the evaluation will include claims from IABP segments in the measurement year(s). This will ensure that diagnoses and medical services from the interim period contribute to a complete picture of client experience in Arkansas Works. Similarly, the evaluation will include claims from IABP segments prior to the measurement year(s) if a claims-

based measure specifies a lookback period for prior diagnoses. Prior-year IABP segments will be included for all populations.

3.2.1 Behavioral Risk Factor Surveillance System

The Behavioral Risk Factor Surveillance System (BRFSS) is an annual survey fielded by states with assistance from the Centers for Disease Control and Prevention (CDC). The core survey includes questions on health care access and immunization; these will be assessed to compare Arkansas with comparison states that expanded traditional Medicaid.

The evaluator will create an analytic sample that represents adults ages 19–64 who were likely to have been eligible for Medicaid after expansion. Each respondent's income will be imputed as the midpoint of their income category in BRFSS. In combination with household size and annual federal poverty guidelines, respondents with income <138% of FPL in each year will be identified.[1]

Current BRFSS weighting methodology provides state-level weights that allow for cross-year comparisons since 2011.[2] The comparison states of Kentucky, Ohio, Pennsylvania, and West Virginia will be used, provided that the demographics of each state in the pre-expansion period were similar to those of Arkansas.

3.2.2 Client Engagement Satisfaction Survey

The evaluator will administer a Client Engagement Satisfaction survey using the Consumer Assessment of Healthcare Providers and Systems (CAHPS) Health Plan Survey, Adult Medicaid 5.0, core questions with the addition of three supplemental items and two questions specific to the Arkansas Works evaluation. The evaluator will follow survey guidelines from the Agency for Healthcare Research and Quality (AHRQ) using the National Committee for Quality Assurance (NCQA) CAHPS survey.

There are several components to successfully setting up, implementing and analyzing a survey. Those components are

1. The survey tool (English and Spanish version)
2. The process of a survey administered by mail
3. Survey population defined to be sampled
4. Sample size

[1] Hest, R. Four Methods for Calculating Income as a Percent of the Federal Poverty Guideline (FPG) in the Behavioral Risk Factor Surveillance System (BRFSS). May 2019. State Health Access Data Assistance Center (SHADAC). Accessed at https://www.shadac.org/sites/default/files/publications/Calculating_Income_as_PercentFPG_BRFSS.pdf

[2] BRFSS Complex Sampling Weights and Preparing 2019 BRFSS Module Data for Analysis. July 2020. Accessed at https://www.cdc.gov/brfss/annual_data/2019/pdf/Complex-Smple-Weights-Prep-Module-Data-Analysis-2019-508.pdf

The detailed description of the plan components:

1. Survey material packet: A packet will be mailed to each selected individual. The packet will include a letter, the survey and a prepaid envelope.
    A. Informational box: All survey tools and the introductory letter will contain specific information to assist and ensure the survey respondent in answering their survey:
        i. Arkansas Works (target group) and Arkansas Medicaid (comparison group)
        ii. Survey respondent's name
        iii. Private insurance company's name for the target survey and Arkansas Medicaid for the comparison survey
    B. The survey tool utilized will be the CAHPS Health Plan survey 5.0 CORE questionnaire with supplemental questions. There are 5 additional questions:
        i. In the last 6 months, how many days did you usually have to wait for an appointment for a check-up or routine care?
        ii. In the last 6 months, how often did you have to wait for an appointment because of a provider's lack of hours/availability?
        iii. An interpreter is someone who helps you talk with others who do not speak your language. In the last 6 months, did you need an interpreter at this provider's office?
        iv. In the last 6 months, during visits to this provider's office, how often did you get an interpreter when you needed one?
        v. In the last 6 months, how easy was it to get a referral to a specialist?
    C. Introductory letter. The letter will explain the importance of completing the survey and display a toll-free number for questions and information or to request a Spanish version survey.
    D. Survey letter
    E. Post cards
    F. Envelopes

2. The process of a mail survey has multiple steps that will need to be in place for successful execution:
    A. Confidentiality. The evaluator will create a random number that will be on all of the survey materials which can only be cross-walked within our system. This process ensures their anonymity.
    B. Establishment of a toll-free number. A toll-free number will be on all documents to answer any questions about the survey. The evaluator will also contract with a translation service for Spanish-speaking recipients or to request a Spanish version survey.
    C. Tracking incorrect addresses. All survey materials (introduction letter, survey packets or reminder postcards) will have the ability to track bad addresses. The evaluator will establish a system to correct and re-mail the survey materials.

D. Tracking returned surveys. Each returned survey will be entered into the evaluator's system so that a recipient that has returned a survey will not receive another survey.
E. Mailing protocol. The evaluator will follow AHRQ's mail survey guidelines.
    i. Introduction letter explaining to the recipients why they have been selected for this survey (Day 0)
    ii. Initial survey: The initial survey will be sent to recipients with a correct address (Day 14)
    iii. Initial reminder card (Day 21)
    iv. Second survey: A second survey will be mailed to any recipient that has not returned a survey and has a valid address (Day 42)
    v. Second reminder card (Day 49)
    vi. Third survey: A third survey may be sent only if the response rate is low

3. The definition of the survey population is a key element to a proper analysis. The populations to be surveyed will meet the below requirements.
    A. Arkansas Works (Target Group Survey)
        i. Target population in the six-month timeframe prior to the survey starting. Based on monthly premium payments, a client to be included in the survey population must be enrolled in at least five of the last six months, including the sixth month.
        ii. Complete information on race, gender, and address
        iii. Stratified random sample of 1 client per household, with the sampling rate based on the carrier's proportion of the market share (eg., if insurance company A insures 40% of the eligible Arkansas Works survey population, their sampling rate will be 40%).
    B. Medicaid (Comparison Group Survey)
        i. Fee-for-service Medicaid population with aid categories qualifying for the comparison and pregnancy populations, in the six-month timeframe prior to the survey.
        ii. Complete information on race, gender, and address
        iii. Simple random sample of 1 client per household

4. The evaluator will follow the AHRQ guidelines for sample size calculations using historical response rates and the knowledge that there are issues with bad addresses. AHRQ states that 300 completed surveys are needed to complete an analysis. With the historical response rate of 25% and expected rate of bad addresses, the evaluator will complete a random sample of 1,700 Arkansas Works adult recipients and 1,700–2,900 fee-for-service Medicaid adult recipients.

    A power analysis indicated that at a power of 0.8, the minimum detectable difference in proportions is 0.11, within the range of potential sample sizes of completed surveys (Table 5).

*Table 5: Minimum detectable differences between two independent proportions: two-sided z-test (G*Power 3.1.9.7).*

Inputs					Outputs	
Complete surveys from sample 1	Complete surveys from sample 2	Power (1 - beta)	alpha (type 1 error)	p1 proportion	p2 proportion	Critical z
275	300	0.8	0.05	0.5	0.612	1.96
300	300	0.8	0.05	0.5	0.613	1.96
300	325	0.8	0.05	0.5	0.611	1.96
325	325	0.8	0.05	0.5	0.609	1.96
300	350	0.8	0.05	0.5	0.609	1.96
325	350	0.8	0.05	0.5	0.607	1.96
350	350	0.8	0.05	0.5	0.605	1.96

Complete surveys will be analyzed according to the AHRQ guidelines[3]: "A questionnaire is considered complete if responses are available for at least half of the key survey items and at least one reportable item." Key items include questions confirming survey eligibility, questions about demographic and background information, screener questions for core composite measures, and the primary rating question.

To increase response rate, all introduction letters, survey cover letters, and reminder cards will inform recipients that respondents will be offered a chance to win one of eight $50 gift cards. An option for the survey recipient to add their phone number at the end of the survey will also be included for address verification purposes if needed. Of returned surveys determined to be complete, four winners in the Arkansas Works population and four winners in the fee-for-service population will be selected via SAS procedure "Surveyselect" using simple random selection, and gift cards will be mailed to those selected.

The estimated survey budget follows in Table 6.

[3] Preparing Data from CAHPS Surveys for Analysis. Updated May 15, 2017. Accessed at https://www.ahrq.gov/cahps/surveys-guidance/helpful-resources/analysis/index.html

Table 6: Survey Budget

Client Engagement Satisfaction Survey Budget		
Type	**Description**	**Cost**
Printing	* Advance Letters * Advance Letter Envelopes * Surveys * Survey Envelopes * Survey Return Envelopes * Reminder Cards	$ 24,409.42
Postage	* Advance Letters * Surveys * Survey Return Envelopes * Reminder Cards	$ 9,114.58
Statistical Analysis		$ 7,540.00
Gift Card Raffle	* Four $50 for FFS population * Four $50 for ARWorks population	$400
Total		**$ 41,464.00**

3.3 Evaluation Period

The evaluation period is January 1, 2017 through December 31, 2021. Specific reports associated with this evaluation are outlined below:

1. **Draft Interim Evaluation**
   Per CMS acceptance, this report will be submitted by June 30, 2021 and adhere to all STC inclusion requirements. The time period of data included in this report will be January 1, 2017 through December 31, 2019.
2. **Final Interim Evaluation**
   Per STC 76, this final version of Item 1 above will be submitted within 30 days after receipt of CMS's comments and adhere to all STC inclusion requirements. The time period of data included in this report will remain as stipulated in Item 1 above.
3. **Summative Evaluation**
   Per CMS recommendation, this single summative report will replace all summative reports stipulated in the STCs and will be submitted by June 30, 2023. The time period of data included in this report will be January 1, 2017 through December 31, 2021, and any outstanding assessments due to data lags will be documented. As noted above, this document references time periods specific to the Interim Evaluation. However, for the Summative Evaluation, all data collection and analyses will incorporate the entire demonstration approval period (2017 through 2021).

3.4 Evaluation Measures

Aim 1. Continuity of Coverage and Care

Hypothesis 1.a. Arkansas Works clients will have fewer or the same gaps in coverage compared to Medicaid FFS. (STC 75a, iv)

Measure 1.a.1	Average Length of Gaps in Coverage
Description:	The average length of gaps in coverage, in months, during the measurement period
Numerator:	Duration of gaps in all coverage, in months
Denominator:	Number of gaps in all coverage
Exclusion Criteria:	None
Continuous Enrollment:	Refer to population definition
Data Source(s):	Medicaid Management Information System (MMIS) eligibility and enrollment files
Measure Steward(s):	Division of Medical Services (DMS) Homegrown
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• Inverse probability of treatment weight (IPTW)/coarsened exact matching (CEM) weighting • Client-level weighted model • Interrupted time series
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	None

Measure 1.a.2	Percent of Clients with Less Than 2 Gaps in Coverage
Description:	Percent of clients with less than 2 gaps in coverage during the measurement period
Numerator:	Clients with 0 or 1 gaps in all coverage

Denominator:	Number of clients
Exclusion Criteria:	None
Continuous Enrollment:	Refer to population definition
Data Source(s):	MMIS eligibility and enrollment files
Measure Steward(s):	DMS Homegrown
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model • Interrupted time series
Statistic to Be Tested:	• Difference in group percentages • Coefficient of treatment variable
National Benchmark:	None

Hypothesis 1.b. Maintain continuous access to the same health plans and providers at an equal or better rate as traditional Medicaid (STC 75a, v)

Measure 1.b.1	**Continuous Enrollment in a Health Plan**
Definition:	Average number of months in a row enrolled in a health plan
Numerator:	Number of months enrolled in each health plan by segment
Denominator:	Number of segments per health plan
Exclusion Criteria:	None
Continuous Enrollment:	Refer to population definition
Data Source(s):	MMIS eligibility and QHP enrollment files
Measure Steward(s):	DMS Homegrown

Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	None

Measure 1.b.2	**Continuity of Primary Care Provider (PCP) Care**
Definition:	Consistent use of the same primary care provider over time -- proportion of primary care visits with same PCP
Numerator:	Primary care provider visits with the same primary care provider during the measurement period
Denominator:	Primary care provider visits during the measurement period
Exclusion Criteria:	None
Continuous Enrollment:	No more than 1 gap in continuous enrollment of up to 45 days or 1 month during the measurement year
Data Source(s):	MMIS eligibility and demographic files linked to MMIS and QHP claims
Measure Steward(s):	DMS Homegrown
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group percentages • Coefficient of treatment variable
National Benchmark:	None

Measure 1.b.3	**Continuity of Specialist Care**
Definition:	Consistent use of the same specialist provider over time—proportion of type-specific, same-specialist visits over time

Numerator:	Specialty care provider visits with the same specialty provider, within specialty type during the measurement period
Denominator:	Specialty care provider visits during the measurement period
Exclusion Criteria:	None
Continuous Enrollment:	No more than 1 gap in continuous enrollment of up to 45 days or 1 month during the measurement year
Data Source(s):	MMIS eligibility and demographic files linked to MMIS and QHP claims
Measure Steward(s):	DMS Homegrown
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group percentages • Coefficient of treatment variable
National Benchmark:	None

Aim 2. Access to Health Care

Hypothesis 2.a. Arkansas Works clients will have equal or better access to care including primary care provider (PCP) and specialty physician networks and services (STC 75a, i)

Measure 2.a.1	**PCP Network Adequacy**
Definition:	Adequacy of primary care provider network for enrolled populations—proportion of service area without primary care coverage within 30 miles
Numerator:	Outputs from issuers in geomaps will show ability to meet this standard for sample enrollee population per service area
Denominator:	Outputs from issuers from geomaps will show ability to meet this standard for sample enrollee population per service area
Exclusion Criteria:	N/A
Continuous Enrollment:	N/A

Data Source(s):	Carrier/Medicaid Geomaps/QHP Templates
Measure Steward(s):	DMS Homegrown
Comparison Group:	Arkansas Medicaid PCP provider network
Comparison Method(s):	Geospatial analysis
Statistic to Be Tested:	N/A
National Benchmark:	None

Measure 2.a.2	**PCP Network Accessibility**
Definition:	Accessibility of primary care provider network for enrolled populations—proportion of clients with primary care accessible within 30 miles
Numerator:	Outputs from issuers in geomaps will show ability to meet this standard for sample enrollee population per service area
Denominator:	Outputs from issuers in geomaps will show ability to meet this standard for sample enrollee population per service area
Exclusion Criteria:	N/A
Continuous Enrollment:	N/A
Data Source(s):	Carrier/Medicaid Geomaps/QHP Templates
Measure Steward(s):	DMS Homegrown
Comparison Group:	Arkansas Medicaid PCP provider network
Comparison Method(s):	Geospatial analysis
Statistic to Be Tested:	N/A
National Benchmark:	None

Measure 2.a.3	Specialist Network Adequacy
Definition:	Adequacy of specialist provider network for enrolled populations—proportion of service area without specialist coverage within 60 miles
Numerator:	Outputs from Arkansas Specialty Access Template and AR Provider/Enrollee Ratio Template
Denominator:	Outputs from AR Specialty Access Template and Arkansas Provider/Enrollee Ratio Template
Exclusion Criteria:	N/A
Continuous Enrollment:	N/A
Data Source(s):	Carrier/Medicaid Geomaps/QHP Templates
Measure Steward(s):	DMS Homegrown
Comparison Group:	Arkansas Medicaid specialist provider network
Comparison Method(s):	Geospatial analysis
Statistic to Be Tested:	N/A
National Benchmark:	None

Measure 2.a.4	Specialist Network Accessibility
Definition:	Accessibility of specialist network for enrolled populations—proportion of clients with specialist accessible within 60 miles
Numerator:	Outputs from AR Specialty Access Template and Provider/Enrollee Ratio Template
Denominator:	Outputs from AR Specialty Access Template and Provider/Enrollee Ratio Template

Exclusion Criteria:	N/A
Continuous Enrollment:	N/A
Data Source(s):	Carrier/Medicaid Geomaps/QHP Templates
Measure Steward(s):	DMS Homegrown
Comparison Group:	Arkansas Medicaid specialist provider network
Comparison Method(s):	Geospatial analysis
Statistic to Be Tested:	N/A
National Benchmark:	None

Measure 2.a.5	**Essential Community Providers (ECP) Network Adequacy (NA)**
Definition:	Adequacy of essential community providers
Numerator:	Outputs from federal NA/ECP template
Denominator:	Outputs from federal NA/ECP template
Exclusion Criteria:	N/A
Continuous Enrollment:	N/A
Data Source(s):	Carrier/Medicaid Geomaps/QHP Templates
Measure Steward(s):	DMS Homegrown
Comparison Group:	Arkansas Medicaid ECP provider network
Comparison Method(s):	Geospatial analysis

Statistic to Be Tested:	N/A
National Benchmark:	None

Measure 2.a.6	**Essential Community Providers Network Accessibility**
Definition:	Accessibility of ECPs
Numerator:	Outputs from federal NA/ECP template
Denominator:	Outputs from federal NA/ECP template
Exclusion Criteria:	None
Continuous Enrollment:	N/A
Data Source(s):	Carrier/Medicaid Geomaps/QHP Templates
Measure Steward(s):	DMS Homegrown
Comparison Group:	Arkansas Medicaid ECP provider network
Comparison Method(s):	Geospatial analysis
Statistic to Be Tested:	N/A
National Benchmark:	None

Measure 2.a.7.a	**Ease of Getting Necessary Care: Got care for illness/injury as soon as needed**
Definition:	Got care for illness/injury as soon as needed
Numerator:	Survey respondents who usually or always received the needed care right away in the last 6 months
Denominator:	Survey respondents who had an illness, injury, or condition that needed care right away in a clinic, emergency department or doctor's office in the last 6 months

Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	CAHPS Health Plan Survey v5.0, Q4; Arkansas Works survey Q4
Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey
Comparison Method(s):	Comparison of answer frequencies, case-mix adjustment
Statistic to Be Tested:	Chi-squared test
National Benchmark:	CAHPS Health Plan Survey Database Chartbook: Adult Medicaid 2020

Measure 2.a.7.b	**Ease of Getting Necessary Care: Got non-urgent appointment as soon as needed**
Definition:	Got non-urgent appointment as soon as needed
Numerator:	Survey respondents who usually or always received an appointment for a check-up or routine care at a doctor's office or clinic, as soon as needed in the last 6 months
Denominator:	Survey respondents who made an appointment for a check-up or routine care at a doctor's office or clinic in the last 6 months
Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	CAHPS Health Plan Survey v5.0, Q6; Arkansas Works survey Q6
Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey

Comparison Method(s):	Comparison of answer frequencies, case-mix adjustment
Statistic to Be Tested:	Chi-squared test
National Benchmark:	CAHPS Health Plan Survey Database Chartbook: Adult Medicaid 2020

Measure 2.a.7.c	**Ease of Getting Necessary Care: How often it was easy to get necessary care, tests, or treatment**
Definition:	How often it was easy to get necessary care, tests, or treatment
Numerator:	Survey respondents who usually or always received care, tests, or treatment needed in the last 6 months
Denominator:	Survey respondents who visited a doctor's office or clinic at least once in the last 6 months
Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of enrollee experiences
Measure Steward(s):	CAHPS Health Plan Survey v5.0, Q9; Arkansas Works survey Q11
Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey
Comparison Method(s):	Comparison of answer frequencies, case-mix adjustment
Statistic to Be Tested:	Chi-squared test
National Benchmark:	CAHPS Health Plan Survey Database Chartbook: Adult Medicaid 2020

Measure 2.a.7.d	**Ease of Getting Necessary Care: Have a personal doctor**
Definition:	Have a personal doctor

Numerator:	Survey respondents who indicated they have a personal doctor
Denominator:	Survey respondents who completed the survey
Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	CAHPS Health Plan Survey v5.0, Q10; AR Works survey Q12
Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey
Comparison Method(s):	Comparison of answer frequencies, case-mix adjustment
Statistic to Be Tested:	Chi-squared test
National Benchmark:	None

Measure 2.a.7.e	**Ease of Getting Necessary Care: Got appointment with specialists as soon as needed**
Definition:	Got appointment with specialists as soon as needed
Numerator:	Survey respondents who usually or always received an appointment to see a specialist as soon as needed in the last 6 months
Denominator:	Survey respondents who made an appointment to see a specialist in the last 6 months
Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	CAHPS Health Plan Survey v5.0, Q18; Arkansas Works survey Q22

Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey
Comparison Method(s):	Comparison of answer frequencies, case-mix adjustment
Statistic to Be Tested:	Chi-squared test
National Benchmark:	CAHPS Health Plan Survey Database Chartbook: Adult Medicaid 2020

Measure 2.a.7.f	**Ease of Getting Necessary Care: Needed interpreter to help speak with doctors or other health providers**
Definition:	Needed interpreter to help speak with doctors or other health providers
Numerator:	Survey respondents who needed an interpreter at a provider's office in the last 6 months
Denominator:	Survey respondents who completed the survey
Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	CAHPS Supplemental Item P-IN1; Arkansas Works survey Q18
Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey
Comparison Method(s):	Comparison of answer frequencies
Statistic to Be Tested:	Chi-squared test
National Benchmark:	None

Measure 2.a.7.g	**Ease of Getting Necessary Care: How often got an interpreter when needed one**
Definition:	How often got an interpreter when needed one

Numerator:	Survey respondents who usually or always received an interpreter at a provider's office in the last 6 months
Denominator:	Survey respondents who needed an interpreter at a provider's office in the last 6 months
Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	CAHPS Supplemental Item P-IN2; Arkansas Works survey Q19
Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey
Comparison Method(s):	Comparison of answer frequencies
Statistic to Be Tested:	Chi-squared test
National Benchmark:	None

Measure 2.a.7.h	**Ease of Getting Necessary Care: Days wait time between making appointment and seeing provider**
Definition:	Days wait time between making appointment and seeing provider
Numerator:	Survey respondents who received an appointment within 7 days
Denominator:	Survey respondents who made an appointment for a checkup or routine care at a doctor's office or clinic in the last 6 months
Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	CAHPS Clinician and Group Survey 3.0 Supplemental Item AC2; Arkansas Works survey Q7

Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey
Comparison Method(s):	Comparison of answer frequencies, case-mix adjustment
Statistic to Be Tested:	Chi-squared test
National Benchmark:	None

Measure 2.a.7.i	**Ease of Getting Necessary Care: How often had to wait for appointment because of provider's lack of hours/availability**
Definition:	How often had to wait for appointment because of provider's lack of hours/availability
Numerator:	Survey respondents who never or sometimes had to wait for an appointment for a checkup or routine care in the last 6 months
Denominator:	Survey respondents who made an appointment for a checkup or routine care at a doctor's office or clinic in the last 6 months
Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	Arkansas Works survey Q8
Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey
Comparison Method(s):	Comparison of answer frequencies, case-mix adjustment
Statistic to Be Tested:	Chi-squared test
National Benchmark:	None

Measure 2.a.7.j	Ease of Getting Necessary Care: Easy to get a referral to a specialist
Definition:	Easy to get a referral to a specialist
Numerator:	Survey respondents who usually or always easily got a referral in the last 6 months to see a specialist
Denominator:	Survey respondents who made an appointment to see a specialist in the last 6 months
Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	Arkansas Works survey Q21
Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey
Comparison Method(s):	Comparison of answer frequencies, case-mix adjustment
Statistic to Be Tested:	Chi-squared test
National Benchmark:	None

Measure 2.a.8.a	Access to Care and Immunizations: Have Health Care Coverage
Definition:	Have any kind of health care coverage
Numerator:	Survey respondents who responded yes to any kind of health care coverage
Denominator:	Survey respondents to HLTHPLN1 question
Exclusion Criteria:	N/A
Continuous Enrollment:	N/A
Data Source(s):	Behavioral Risk Factor Surveillance System (BRFSS)

Measure Steward(s):	Centers for Disease Control and Prevention (CDC), BRFSS
Comparison Group:	Adults age 19-64 with income <138% FPL in comparison states
Comparison Method(s):	Differences-in-differences (DiD)
Statistic to Be Tested:	DiD estimator
National Benchmark:	N/A

Measure 2.a.8.b	**Access to Care and Immunizations: Have a Personal Doctor**
Definition:	Have a personal doctor or health care provider
Numerator:	Survey respondents with one or more personal health care providers
Denominator:	Survey respondents to PERSDOC2 question
Exclusion Criteria:	N/A
Continuous Enrollment:	N/A
Data Source(s):	BRFSS
Measure Steward(s):	CDC-BRFSS
Comparison Group:	Adults age 19-64 with income <138% FPL in comparison states
Comparison Method(s):	Differences-in-differences
Statistic to Be Tested:	DiD estimator
National Benchmark:	N/A

Measure 2.a.8.c	Access to Care and Immunizations: Last Routine Checkup
Definition:	Last routine checkup within 12 months
Numerator:	Survey respondents who had their last routine checkup within the past 12 months
Denominator:	Survey respondents to CHECKUP1 question
Exclusion Criteria:	N/A
Continuous Enrollment:	N/A
Data Source(s):	BRFSS
Measure Steward(s):	CDC-BRFSS
Comparison Group:	Adults age 19-64 with income <138% FPL in comparison states
Comparison Method(s):	Differences-in-differences
Statistic to Be Tested:	DiD estimator
National Benchmark:	N/A

Measure 2.a.8.d	Access to Care and Immunizations: Avoided Care Due to Cost
Definition:	Avoided care in the last 12 months due to cost
Numerator:	Survey respondents who needed but could not see a doctor because of cost within the past 12 months
Denominator:	Survey respondents to MEDCOST question
Exclusion Criteria:	N/A
Continuous Enrollment:	N/A
Data Source(s):	BRFSS

Measure Steward(s):	CDC-BRFSS
Comparison Group:	Adults age 19-64 with income <138% FPL in comparison states
Comparison Method(s):	Differences-in-differences
Statistic to Be Tested:	DiD estimator
National Benchmark:	N/A

Measure 2.a.8.e	**Access to Care and Immunizations: Flu Vaccine**
Definition:	Received a flu vaccine in the past 12 months
Numerator:	Survey respondents who received a flu vaccine within the past 12 months
Denominator:	Survey respondents to questions FLUSHOT6 (2013-2018) and FLUSHOT5 (2011-2012)
Exclusion Criteria:	N/A
Continuous Enrollment:	N/A
Data Source(s):	BRFSS
Measure Steward(s):	CDC-BRFSS
Comparison Group:	Adults age 19-64 with income <138% FPL in comparison states
Comparison Method(s):	Differences-in-differences
Statistic to Be Tested:	DiD estimators
National Benchmark:	N/A

Hypothesis 2.b. Arkansas Works clients will have equal or better access to preventive care services (STC 75a, ii)

Measure 2.b.1	Breast Cancer Screening (BCS)
Definition:	The percentage of women 50–64 years of age who had a mammogram to screen for breast cancer
Numerator:	Numerator includes number of women with one or more mammograms during the measurement year or the 15 months prior to the measurement year
Denominator:	Denominator includes number of women 50–64 years of age on the anchor (last) date of the measurement year
Exclusion Criteria:	Clients with hospice care
Continuous Enrollment:	October 1 two years prior to the measurement year through December 31 of the measurement year. No more than 45 days or a 1-month gap of coverage during each full calendar year of continuous enrollment. No gaps in enrollment are allowed from October 1 through December 31, two years prior to the measurement year. Anchor date: December 31 of the measurement year.
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NCQA – BCS-AD (Adult) in Medicaid Adult Core Set
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	Medicaid Adult Core Set FFY 2018–2020, measurement years 2017–2019
Deviation(s):	Maximum age truncated from 75 to 64. Paid claims only

Measure 2.b.2	Cervical Cancer Screening (CCS)
Definition:	The percentage of women ages 21–64 who were screened for cervical cancer

Numerator:	The number of women who were screened for cervical cancer, as defined by -cervical cytology performed during the measurement year or the two years prior to the measurement year -or cervical cytology/human papillomavirus (HPV) co-testing performed during the measurement year or the four years prior to the measurement year, for women who were at least 30 years old on the date of both tests
Denominator:	Women ages 24–64 as of December 31 of the measurement year
Exclusion Criteria:	Clients with hospice care. Implement optional exclusion: Hysterectomy with no residual cervix, cervical agenesis, or acquired absence of cervix any time during the client's history through December 31 of the measurement year
Continuous Enrollment:	No more than one gap in enrollment of up to 45 days or 1 month during each year of continuous enrollment. Anchor date: December 31 of the measurement year.
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NCQA – CCS-AD in Medicaid Adult Core Set
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	Medicaid Adult Core Set FFY 2018–2020, measurement years 2017–2019
Deviation(s):	Paid claims only

Measure 2.b.3	**Statin Therapy for Patients With Diabetes (SPD)**
Definition:	The percentage of clients 40–64 years of age during the measurement year with diabetes who do not have clinical atherosclerotic cardiovascular disease (ASCVD) who were dispensed at least one statin medication of any intensity during the measurement year.

Numerator:	Clients who were dispensed at least one statin medication of any intensity during the measurement year
Denominator:	Clients 40–64 years of age during the measurement year with diabetes who do not have clinical atherosclerotic cardiovascular disease (ASCVD)
Exclusion Criteria:	Clients with hospice care. Clients with cardiovascular disease identified by event or diagnosis; diagnosis of pregnancy; in vitro fertilization; dispensed clomiphene; ESRD without telehealth; cirrhosis; or myalgia, myositis, myopathy or rhabdomyolysis
Continuous Enrollment:	The measurement year and the year prior to the measurement year. No more than one gap in enrollment of up to 45 days or 1 month during each year of continuous enrollment. Anchor date: December 31 of the measurement year.
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NCQA – Healthcare Effectiveness Data and Information Set (HEDIS) SPD
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	HEDIS Medicaid 2017–2019 national rates
Deviation(s):	Upper end of age range truncated from 75 to 64. Paid claims only

Measure 2.b.4	**Comprehensive Diabetes Care: Hemoglobin A1c Testing**
Definition:	The percentage of clients 18–64 years of age with diabetes (type 1 and type 2) who had Hemoglobin A1c (HbA1c) testing performed
Numerator:	Clients with an HbA1c test performed during the measurement year
Denominator:	Clients identified as having diabetes during the measurement year or the year prior to the measurement year

Exclusion Criteria:	Clients with hospice care
Continuous Enrollment:	No more than 1 gap in continuous enrollment of up to 45 days or 1 month during the measurement year. Anchor date: December 31 of the measurement year.
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NCQA – HA1C-AD in Medicaid Adult Core Set
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	Medicaid Adult Core Set FFY 2018–2019, measurement years 2017–2018. HEDIS Medicaid 2019 national rate
Deviation(s):	Upper end of age range truncated from 75 to 64. Paid claims only

Measure 2.b.5	**Adults' Access to Preventive/Ambulatory Services (AAP)**
Definition:	The percentage of clients 20 years and older who had an ambulatory or preventive care visit during the measurement year
Numerator:	One or more ambulatory or preventive care visits during the measurement year
Denominator:	The eligible population: age 20 years and older as of December 31 of the measurement year
Exclusion Criteria:	Clients with hospice care
Continuous Enrollment:	No more than 1 gap in continuous enrollment of up to 45 days or 1 month during the measurement year. Anchor date: December 31 of the measurement year.
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NCQA - HEDIS AAP

Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model • Interrupted time series
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	None
Deviation(s):	Upper end of age range truncated to 64. Paid claims only

Hypothesis 2.c. Arkansas Works clients will have equal or lower use of non-emergent services (STC 75a, iii)

Measure 2.c.1	**Non-Emergent Emergency Department (ED) Visits**
Definition:	Non-Emergent ED visits as a percentage of all classified ED visits using the New York University (NYU) ED algorithm
Numerator:	Non-emergent ED visits
Denominator:	Total ED visits classified by the NYU algorithm
Exclusion Criteria:	Injury, mental health, alcohol, and drug-related diagnoses
Continuous Enrollment:	Refer to population definition
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NYU ED algorithm
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model • Interrupted time series
Statistic to Be Tested:	Difference in group means
National Benchmark:	None

Measure 2.c.2	Emergent Emergency Department (ED) Visits
Definition:	Emergent ED Visits as a percentage of all classified ED visits using the NYU ED algorithm
Numerator:	Emergent ED visits
Denominator:	Total ED visits classified by the NYU algorithm
Exclusion Criteria:	Injury, mental health, alcohol, and drug-related diagnoses
Continuous Enrollment:	Refer to population definition
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NYU ED algorithm
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model • Interrupted time series
Statistic to Be Tested:	Difference in group means
National Benchmark:	None

Hypothesis 2.d. Arkansas Works clients will have equal or better access to required Early Periodic Screening, Diagnosis, and Treatment (EPSDT) services (STC 75a, ix)

Measure 2.d.1	Adolescent Well-Care Visits (AWC)
Definition:	Clients 19–20 years of age who had at least one comprehensive well-care visit with a PCP or an obstetrician/gynecologist practitioner during the measurement year
Numerator:	Clients who received a well-care visit during the measurement year
Denominator:	Clients enrolled in Medicaid FFS and eligible for EPSDT services at ages 17–18 who enrolled in Arkansas Works at ages 19–20
Exclusion Criteria:	Clients with hospice care

Continuous Enrollment:	No more than 1 gap in continuous enrollment of up to 45 days or 1 month during the measurement year. Anchor date: December 31 of the measurement year.
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	DMS Homegrown based on NCQA – HEDIS AWC
Comparison Group:	Clients in the treatment group, during the 1–2 years prior to enrolling in Arkansas Works
Comparison Method(s):	Pre-post comparison
Statistic to Be Tested:	Paired t-test
National Benchmark:	None
Deviation(s):	Ages limited to 19–20 on December 31 of the measurement year, to 18–19 on December 31 in the year prior to the measurement year, and to 17–18 on December 31 two years prior to the measurement year. Clients not eligible for EPSDT services during their Medicaid FFS eligibility are not eligible for the denominator. Paid claims only. Measure calculations will be run on multiple years for the same eligible clients

Measure 2.d.2	**EPSDT Screening – Preventive Dental Visits**
Definition:	Percent of eligible clients who received at least one preventive dental service
Numerator:	Clients who received a preventive dental service
Denominator:	Clients enrolled in Medicaid FFS and eligible for EPSDT services at ages 17–18 who enrolled in Arkansas Works at ages 19–20
Exclusion Criteria:	None
Continuous Enrollment:	Refer to EPSDT population definition
Data Source(s):	MMIS claims and dental encounter data
Measure Steward(s):	DMS Homegrown based on Medicaid Child Core Set CMS Pediatric Dental-Child, Form CMS-416 (EPSDT)
Comparison Group:	Clients in the treatment group, during the 1–2 years prior to enrolling in Arkansas Works

Comparison Method(s):	Pre-post comparison
Statistic to Be Tested:	Paired t-test
National Benchmark:	None
Deviation(s):	Minimum age on January 1 of the previous year increased from 1 to 17. Measure calculations will be run on multiple years for eligible clients

Measure 2.d.3	**EPSDT Screening – Preventive Vision**
Definition:	Percent of eligible clients who received at least one preventive vision screen
Numerator:	Clients who received a preventive vision screen
Denominator:	Clients enrolled in Medicaid FFS and eligible for EPSDT services at ages 17–18 who enrolled in Arkansas Works at ages 19–20
Exclusion Criteria:	None
Continuous Enrollment:	Refer to EPSDT population definition
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	DMS Homegrown based on Medicaid Child Core Set CMS PDENT-CH with vision codes
Comparison Group:	Clients in the treatment group, during the 1–2 years prior to enrolling in Arkansas Works
Comparison Method(s):	Pre-post comparison
Statistic to Be Tested:	Paired t-test
National Benchmark:	None
Deviation(s):	Minimum age on January 1 of the previous year increased from 1 to 17. Measure calculations will be run on multiple years for eligible clients

Measure 2.e.1	Any Utilization of Non-Emergency Transportation Services
Definition:	The percentage of clients with 1 or more NEMT claims during the measurement year
Numerator:	Clients with an NEMT claim during the measurement year
Denominator:	The eligible population
Exclusion Criteria:	None
Continuous Enrollment:	No more than 1 gap in continuous enrollment of up to 45 days or 1 month during the measurement year. Anchor date: December 31 of the measurement year.
Data Source(s):	NEMT encounter claims
Measure Steward(s):	DMS Homegrown
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	Descriptive analysis of percentages with stratification; logistic regression controlling for demographics, risk score, and service region
Statistic to Be Tested:	Average marginal effect
National Benchmark:	None

Measure 2.e.2	Utilization Counts of Non-Emergency Transportation Services
Definition:	The count of NEMT service utilization during the measurement year
Numerator:	NEMT service counts per client during the measurement year
Denominator:	The eligible population
Exclusion Criteria:	None
Continuous Enrollment:	No more than 1 gap in continuous enrollment of up to 45 days or 1 month during the measurement year. Anchor date: December 31 of the measurement year.

Data Source(s):	NEMT encounter claims
Measure Steward(s):	DMS Homegrown
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	Descriptive analysis of means and standard deviations with stratification; count model regression controlling for demographics, risk score, and service region
Statistic to Be Tested:	Average marginal effect
National Benchmark:	None

Aim 3. Care and Outcomes

Hypothesis 3.a. Arkansas Works clients will have equal or better satisfaction in the care provided (*STC 75a, viii)*

Measure 3.a.1	**Average Rating of Health Plan**
Definition:	Average Rating of Health Plan
Numerator:	The percentage of responses with ratings of 8, 9, or 10 (i.e. favorably) for best health plan
Denominator:	Survey respondents who answered the survey question
Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	CAHPS Health Plan Survey v5.0, Q26; Arkansas Works survey Q30
Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey
Comparison Method(s):	Comparison of answer frequency categories (low is a response of 0–7 and high is a response of 8–10), case-mix adjustment

Statistic to Be Tested:	Chi-squared test
National Benchmark:	CAHPS Health Plan Survey Database Chartbook: Adult Medicaid 2020

Measure 3.a.2	**Average Rating of Health Care**
Definition:	Average Rating of Health Care
Numerator:	The percentage of responses with ratings of 8, 9, or 10 (i.e. favorably) for overall health care received in the last 6 months
Denominator:	Survey respondents who answered the survey question
Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	CAHPS Health Plan Survey v5.0, Q8; Arkansas Works survey Q10
Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey
Comparison Method(s):	Comparison of answer frequency categories (low is a response of 0–7 and high is a response of 8–10), case-mix adjustment
Statistic to Be Tested:	Chi-squared test
National Benchmark:	CAHPS Health Plan Survey Database Chartbook: Adult Medicaid 2020

Measure 3.a.3	**Average Rating of Primary Care Provider (PCP)**
Definition:	Average Rating of Primary Care Provider (PCP)
Numerator:	The percentage of survey responses marked ratings of 8, 9, or 10 (i.e. favorably) for best personal doctor seen in the last 6 months
Denominator:	Survey respondents who answered the survey question and indicated they have a personal doctor

Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	CAHPS Health Plan Survey v5.0, Q16; Arkansas Works survey Q17
Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey
Comparison Method(s):	Comparison of answer frequency categories (low is a response of 0–7 and high is a response of 8–10), case-mix adjustment
Statistic to Be Tested:	Chi-squared test
National Benchmark:	CAHPS Health Plan Survey Database Chartbook: Adult Medicaid 2020

Measure 3.a.4	**Average Rating of Specialist**
Definition:	Average Rating of Specialist
Numerator:	The percentage of survey responses marked ratings of 8, 9, or 10 (i.e. favorably) for best specialist in the last 6 months the client saw the most
Denominator:	Survey respondents who answered the survey question and indicated they have seen at least one specialist
Exclusion Criteria:	None
Continuous Enrollment:	Refer to survey population definition
Data Source(s):	Survey-based assessment of client experiences
Measure Steward(s):	CAHPS Health Plan Survey v5.0, Q20; Arkansas Works survey Q24
Comparison Group:	Arkansas Medicaid client survey respondents who completed the survey

Comparison Method(s):	Comparison of answer frequency categories (low is a response of 0–7 and high is a response of 8–10), case-mix adjustment
Statistic to Be Tested:	Chi-squared test
National Benchmark:	CAHPS Health Plan Survey Database Chartbook: Adult Medicaid 2020

Hypothesis 3.b. Arkansas Works clients will have lower potentially preventable emergency department services and hospital admissions (STC 75a, vii)

Measure 3.b.1	**Preventable Emergency Department (ED) Visits**
Definition:	Percentage of emergency visits classified as preventable by the NYU ED algorithm
Numerator:	Emergency department visits classified as preventable/avoidable
Denominator:	Sum of emergency department visits classified as preventable/avoidable and not preventable/avoidable (equals all visits that are emergent, ED care needed)
Exclusion Criteria:	Injury, mental health, alcohol, and drug-related diagnoses
Continuous Enrollment:	Refer to population definition
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NYU ED algorithm
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	Difference in group means
National Benchmark:	None

Measure 3.b.2	Plan All-Cause Readmissions (PCR)
Definition:	For clients 18 to 64, the number of acute inpatient stays during the measurement year that were followed by an unplanned acute readmission for any diagnosis within 30 days and the predicted probability of an acute readmission. The PCR measure is risk adjusted and reported as a ratio of observed-to-expected (O/E) hospital readmissions.
Numerator:	Acute readmissions for any diagnosis within 30 days of the Index Discharge Date. Exclude admissions with a principle diagnosis of pregnancy, a condition originating in the perinatal period, or planned admissions
Denominator:	All acute inpatient discharges for clients who had one or more discharges on or between January 1 and December 1 of the measurement year
Exclusion Criteria:	Hospital stays where the Index Admission Date is the same as the Index Discharge Date, where the client died during the stay, or with a principle diagnosis of pregnancy or a condition originating in the perinatal period
Continuous Enrollment:	365 days prior to the Index Discharge Date through 30 days after the Index Discharge Date. No more than 1 gap of 45 days or 1 month
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NCQA – PCR-AD in Medicaid Adult Core Set
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Risk adjustment at client level
Statistic to Be Tested:	Group-level ratios of observed-to-expected (O/E) readmissions
National Benchmark:	Medicaid Adult Core Set FFY 2018–2020 for measurement years 2017–2019
Deviation(s):	Paid claims only

Measure 3.b.3.a	Diabetes Short-Term Complications Admission Rate

Definition:	Number of inpatient hospital admissions for diabetes short-term complications (ketoacidosis, hyperosmolarity, or coma) per 100,000 client months for clients age 18 and older
Numerator:	All inpatient hospital admissions with ICD-10-CM principal diagnosis code for short-term complications of diabetes (ketoacidosis, hyperosmolarity, or coma)
Denominator:	Total number of months of enrollment for clients age 18 and older during the measurement period
Exclusion Criteria:	Transfers; admissions with missing age, year or principal diagnosis; obstetric admissions
Continuous Enrollment:	Refer to population definition
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	AHRQ – Prevention Quality Indicators (PQI)01-AD in Medicaid Adult Core Set
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group rates • Coefficient of treatment variable
National Benchmark:	Medicaid Adult Core Set 2018–2020 for measurement years 2017–2019
Deviation(s):	Upper end of age range truncated to 64. Paid claims only

Measure 3.b.3.b	**Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate**
Definition:	Number of inpatient hospital admissions for chronic obstructive pulmonary disease (COPD) or asthma per 100,000 client months for clients age 40 and older
Numerator:	All inpatient hospital admissions with an ICD-10-CM principal diagnosis code for COPD or asthma
Denominator:	Total number of months of enrollment for clients age 40 and older during the measurement period

Exclusion Criteria:	Transfers; admissions with missing age, year or principal diagnosis; obstetric admissions; diagnosis codes for cystic fibrosis and anomalies of the respiratory system
Continuous Enrollment:	Refer to population definition
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	AHRQ – PQI05-AD in Medicaid Adult Core Set
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group rates • Coefficient of treatment variable
National Benchmark:	Medicaid Adult Core Set FFY 2018–2020 for measurement years 2017–2019
Deviation(s):	Upper age limit truncated to 64. Paid claims only.

Measure 3.b.3.c	**Heart Failure Admission Rate**
Definition:	Number of inpatient hospital admissions for heart failure per 100,000 client months for clients age 18 and older
Numerator:	All inpatient hospital admissions with ICD-10-CM principal diagnosis code for heart failure
Denominator:	Total number of months of Medicaid enrollment for clients age 18 and older during the measurement period
Exclusion Criteria:	Transfers; admissions with missing age, year or principal diagnosis; obstetric admissions; admissions with any listed ICD-10-PCS procedure codes for cardiac procedure
Continuous Enrollment:	Refer to population definition

Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	AHRQ – PQI08-AD in Medicaid Adult Core Set
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group rates • Coefficient of treatment variable
National Benchmark:	Medicaid Adult Core Set FFY 2018–2020 for measurement years 2017–2019
Deviations(s):	Upper age limit truncated to 64. Paid claims only.

Measure 3.b.3.d	**Asthma in Younger Adults Admission Rate**
Definition:	Number of inpatient hospital admissions for asthma per 100,000 client months for clients ages 18 to 39
Numerator:	All inpatient hospital admissions for clients ages 18 to 39 with an ICD-10-CM principal diagnosis code of asthma
Denominator:	Total number of months of Medicaid enrollment for clients ages 18 to 39 during the measurement period
Exclusion Criteria:	Transfers; admissions with missing age, year or principal diagnosis; obstetric admissions; diagnosis codes for cystic fibrosis and anomalies of the respiratory system
Continuous Enrollment:	Refer to population definition
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	AHRQ – PQI15-AD in Medicaid Adult Core Set
Comparison Group:	Medicaid FFS comparison group

Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group rates • Coefficient of treatment variable
National Benchmark:	Medicaid Adult Core Set FFY 2018–2020 for measurement years 2017–2019
Deviations(s):	Paid claims only

Hypothesis 3.c. Arkansas Works clients will have equal or better quality of care provided (STC 75a, xi)

Measure 3.c.1	**Follow-Up After Hospitalization (FUH) for Mental Illness**
Definition:	The percentage of discharges for clients 18 years of age and older who were hospitalized for treatment of selected mental illness diagnoses or intentional self-harm and who had a follow-up visit with a mental health practitioner. Two rates are reported: • Percentage of discharges for which the client received follow-up within 30 days of discharge • Percentage of discharges for which the client received follow-up within 7 days of discharge
Numerator:	A follow-up visit with a mental health practitioner within (30 or 7) days after discharge. Do not include visits that occur on the date of discharge.
Denominator:	An acute inpatient discharge with a principal diagnosis of mental illness or intentional self-harm on or between January 1 and December 1 of the measurement year
Exclusion Criteria:	Clients with hospice care. Discharges followed by readmission or direct transfer to a non-acute inpatient care setting within the 30-day follow-up period, regardless of principal diagnosis for the readmission.
Continuous Enrollment:	Date of discharge through 30 days after discharge. No allowable gaps
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NCQA – FUH-AD in Medicaid Adult Core Set
Comparison Group:	Medicaid FFS comparison group

Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	Medicaid Adult Core Set FFY 2018–2020 for measurement years 2017–2019
Deviation(s):	Age range upper limit truncated to 64. Paid claims only.

Measure 3.c.2	**Adherence to Antipsychotic Medications for Individuals With Schizophrenia (SAA)**
Definition:	The percentage of clients ages 19–64 with schizophrenia or schizoaffective disorder who were dispensed and remained on an antipsychotic medication for at least 80% of their treatment period during the measurement year
Numerator:	The number of clients who achieved a proportion of days covered (PDC) of at least 80% for their antipsychotic medications during the measurement year
Denominator:	Clients with at least one acute inpatient encounter with any diagnosis of schizophrenia or schizoaffective disorder, or at least two visits in an outpatient, intensive outpatient, partial hospitalization, ED or non-acute inpatient setting, on different dates of service, with any diagnosis of schizophrenia or schizoaffective disorder
Exclusion Criteria:	Clients with hospice care. Clients with a diagnosis of dementia, or who did not have at least two antipsychotic medication dispensing events, during the measurement year
Continuous Enrollment:	The measurement year. No more than one gap in enrollment of up to 45 days or 1 month during each year of continuous enrollment. Anchor date: December 31 of the measurement year
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NCQA – SAA-AD in Medicaid Adult Core Set
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable

National Benchmark:	Medicaid Adult Core Set FFY 2018–2019 for measurement years 2017–2018. HEDIS Medicaid 2019 national rate
Deviation(s):	Paid claims only

Measure 3.c.3	**Persistence of Beta-Blocker Treatment After a Heart Attack (PBH)**
Definition:	The percentage of clients 18 years of age and older during the measurement year who were hospitalized and discharged from July 1 of the year prior to the measurement year to June 30 of the measurement year with a diagnosis of acute myocardial infarction (AMI) and who received persistent beta-blocker treatment for six months after discharge
Numerator:	At least 135 days of treatment with beta-blockers during the 180-day measurement interval. This allows gaps in medication treatment of up to a total of 45 days during the 180-day measurement interval
Denominator:	Clients with an acute inpatient discharge with any diagnosis of AMI from July 1 of the year prior to the measurement year through June 30 of the measurement year. If a client has more than one episode of AMI that meets the event/ diagnosis criteria, include only the first discharge
Exclusion Criteria:	Clients with hospice care. Hospitalizations in which the client had a direct transfer to a non-acute inpatient care setting for any diagnosis
Continuous Enrollment:	Discharge date through 179 days after discharge. No more than one gap in enrollment of up to 45 days or 1 month within the 180 days of the event. Anchor date is discharge date
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NCQA – HEDIS PBH
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	HEDIS Medicaid 2017–2019 national rates

Deviation(s):	Age range upper limit truncated to 64. Paid claims only

Measure 3.c.4	**Annual Monitoring for Patients on Persistent Medications (MPM)**
Definition:	The percentage of clients 18 years of age and older who received at least 180 treatment days of ambulatory medication therapy for a select therapeutic agent during the measurement year and at least one therapeutic monitoring event for the therapeutic agent in the measurement year. Each of the two rates reported separately and as a total rate. • Annual monitoring for clients on angiotensin converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARB) • Annual monitoring for clients on diuretics • Total rate
Numerator:	Clients with at least one serum potassium and a serum creatinine therapeutic monitoring test in the measurement year
Denominator:	Clients on persistent medications (i.e., clients who received at least 180 treatment days of ambulatory medication in the measurement year)
Exclusion Criteria:	Clients with hospice care
Continuous Enrollment:	No more than 1 gap in continuous enrollment of up to 45 days or 1 month during each measurement year. Anchor date: December 31 of the measurement year.
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NCQA – MPM-AD in Medicaid Adult Core Set
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	Medicaid Adult Core Set FFY 2018–2019 for measurement years 2017–2018. HEDIS Medicaid 2019 national rate
Deviation(s):	Age range upper limit truncated to 64. Paid claims only.

Measure 3.c.5	Annual HIV/AIDS Viral Load Test
Definition:	Percentage of clients with a diagnosis of HIV with at least one HIV viral load test during the measurement year
Numerator:	The number of clients in the denominator with an HIV viral load test during the measurement year
Denominator:	Clients who had a primary or secondary diagnosis of HIV during the measurement year
Exclusion Criteria:	Clients with hospice care
Continuous Enrollment:	No more than one gap in enrollment of up to 45 days or 1 month during the measurement year. Anchor date: December 31 of the measurement year.
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	DMS Homegrown
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	None

Measure 3.c.6	C-Section Rate
Definition:	Percentage of clients with a delivery who delivered via C-section
Numerator:	Clients who delivered via C-section
Denominator:	Clients with a single live delivery
Exclusion Criteria:	None

Continuous Enrollment:	None
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	DMS Homegrown
Comparison Group:	Medicaid FFS pregnancy group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	None

Aim 4. Cost Effectiveness

Hypothesis 4.a. Reduce overall premium costs in the Exchange Marketplace (STC 75a, xi)

Measure 4.a.1	**Arkansas Program Characteristics**
Definition:	Arkansas-specific health insurance exchange program characteristics: number of plans, actuarial risk, average 2nd lowest premium cost
Numerator:	N/A
Denominator:	N/A
Exclusion Criteria:	N/A
Continuous Enrollment:	N/A
Data Source(s):	Arkansas Insurance Department
Measure Steward(s):	DMS Homegrown
Comparison Group:	N/A
Comparison Method(s):	Annual tables
Statistic to Be Tested:	Descriptive analyses

National Benchmark:	None

Measure 4.a.2	**Arkansas Regional Average Program Characteristics**
Definition:	Arkansas-specific health insurance exchange program characteristics: number of plans, actuarial risk, average 2nd lowest premium cost by Arkansas region
Numerator:	N/A
Denominator:	N/A
Exclusion Criteria:	N/A
Continuous Enrollment:	N/A
Data Source(s):	Arkansas Insurance Department
Measure Steward(s):	DMS Homegrown
Comparison Group:	N/A
Comparison Method(s):	Annual tables
Statistic to Be Tested:	Descriptive analyses
National Benchmark:	None

Measure 4.a.3	**Contiguous States' Program Characteristics**
Definition:	Contiguous states' health insurance exchange program characteristics: number of plans, actuary risk, 2nd lowest premium cost by contiguous state
Numerator:	N/A
Denominator:	N/A
Exclusion Criteria:	N/A

Continuous Enrollment:	N/A
Data Source(s):	Arkansas Insurance Department
Measure Steward(s):	DMS Homegrown
Comparison Group:	N/A
Comparison Method(s):	Annual tables
Statistic to Be Tested:	Descriptive analyses
National Benchmark:	None

Hypothesis 4.b. Costs are lower than or comparable to established budget neutrality guidelines and related costs (STC 75a, xii)

Measure 4.b.1	**Meets Budget Neutrality**
Definition:	Arkansas Works program coverage costs through QHPs remained below the budget neutrality cap
Numerator:	Total payments per individual with a paid premium
Denominator:	Budget Neutrality Cap
Exclusion Criteria:	N/A
Continuous Enrollment:	N/A
Data Source(s):	DMS Financial Data, Form CMS-64, Program Annual Reports
Measure Steward(s):	CMS
Comparison Group:	N/A
Comparison Method(s):	N/A
Statistic to Be Tested:	N/A

National Benchmark:	None

Measure 4.b.2	**Inpatient Utilization (IPU) – General Hospital/Acute Care**
Definition:	Discharges per 1,000 client months. This measure summarizes utilization of acute inpatient care and services in the following categories: • Maternity • Surgery • Medicine • Total inpatient (the sum of Maternity, Surgery and Medicine)
Numerator:	Total inpatient discharges identified after exclusions
Denominator:	All client months for the measurement year
Exclusion Criteria:	Clients with hospice care. Discharges with a principal diagnosis of mental health or chemical dependency. Newborn care rendered from birth to discharge home from delivery
Continuous Enrollment:	None
Data Source(s):	MMIS and QHP claims data
Measure Steward(s):	NCQA – HEDIS IPU
Comparison Group:	Medicaid FFS comparison group
Comparison Method(s):	• IPTW/CEM weighting • Client-level weighted model
Statistic to Be Tested:	• Difference in group means • Coefficient of treatment variable
National Benchmark:	None
Deviation(s):	Age range limited to 18–64. Paid claims only.

3.5 DATA SOURCES

The Arkansas Division of Medical Services (DMS) and its contractor will use multiple sources of data to assess the research hypotheses. The evaluation design will leverage claims-based administrative data, enrollment data and survey-based scores, as applicable. Administrative data sources include information extracted from DMS' Medicaid Management Information System (MMIS). Whenever possible, the contractor will use its own Arkansas Medicaid Data Warehouse, DMS approved priority warehouse system for the Medicaid comparison groups. Data analytics will be performed without direct engagement from the State, as to avoid biased opinion or skewed results. The data evaluator will run the analytics and provide data as necessary for the analysis. Data from administrative claims will be used and will not alter input data or the output of results. The administrative QHP claims data to evaluate the Arkansas Works clients will be transmitted quarterly to DMS from the carriers to the Arkansas Decision Support System (DSS). The Arkansas DSS will provide the evaluation contractor with a uniform file quarterly of the QHP claims data. The figure below depicts the data source flow for the evaluation.

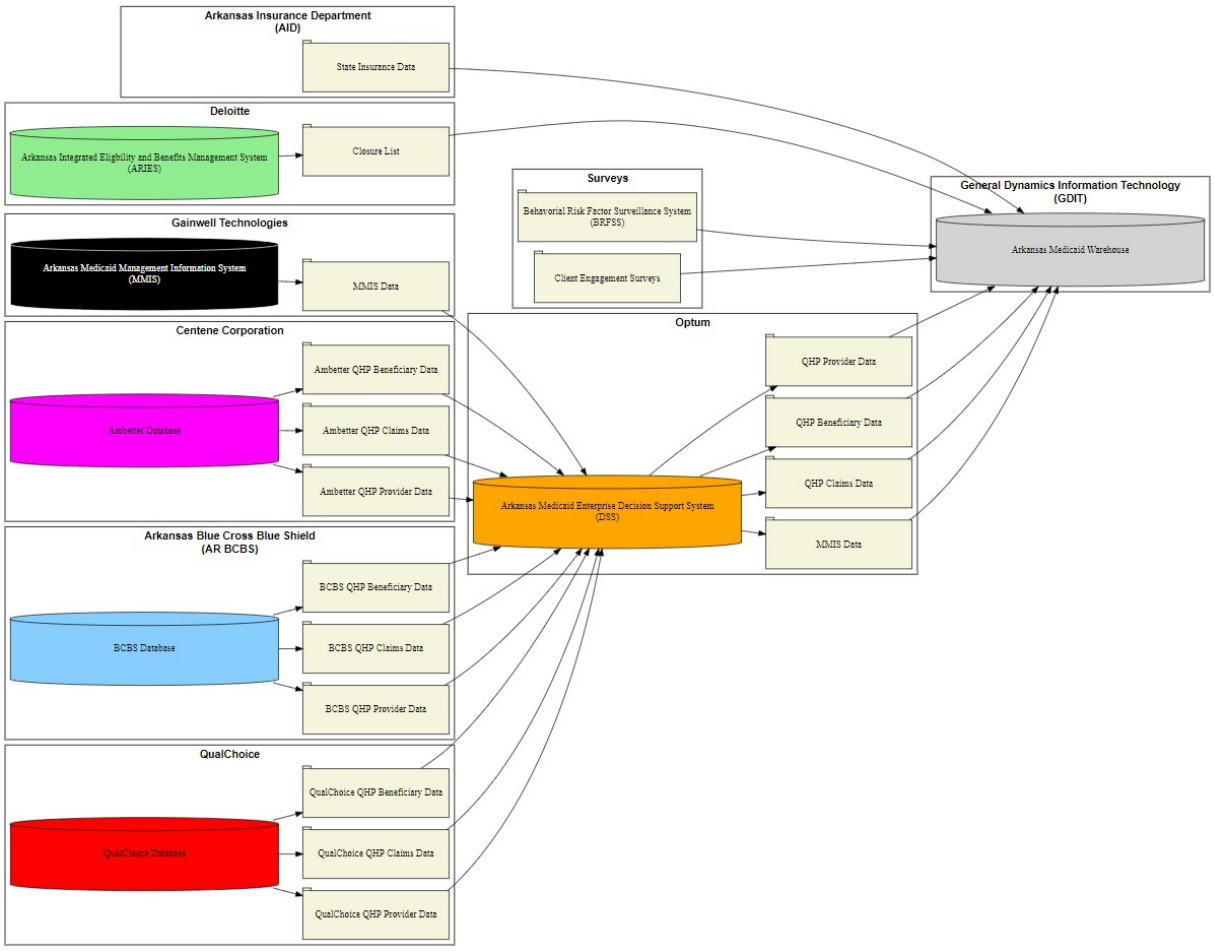

Figure 7: Data Source Flow

3.5.1 Administrative and Claims Data

The MMIS data source is used to collect, manage, and maintain Medicaid client files (i.e., eligibility, enrollment, and demographics) and fee-for-service (FFS) claims. Use of FFS claims will be limited to final, paid status claims. The contractor will use raw, full sets of Medicaid data, which is provided on a weekly basis consisting of claims, provider, client, and pharmacy data subject areas. To ensure accurate and complete data, the contractor's Arkansas Medicaid Data Warehouse will utilize the pre-snapshot data claims process and will require a minimum three-month lag to allow time for the majority of claims to be processed through the MMIS. The contractor will use fee-for-service claims and follow Healthcare Effectiveness Data and Information Set (HEDIS®) or CMS Core Set national specifications for national metrics. Applicable claim types, such as institutional, professional, and pharmacy claims will be used to calculate the various evaluation design metrics while client demographic files will be used to assess client age, gender, and other demographic information. Eligibility files will be used to verify a client's enrollment in the State's Medicaid programs.

3.5.2 Survey Data – Arkansas Works Client Engagement Satisfaction Survey

The Arkansas Works Client Engagement Satisfaction Survey is based on the CAHPS® Adult Medicaid Health Plan Survey 5.0 and covers topics such as getting care quickly, how well doctors communicate, and access to care, among others. The evaluation contractor will field the survey and follow the NCQA CAHPS protocol. The Arkansas Works client survey will follow a traditional NCQA sampling strategy (1,500 plus oversampling for bad addresses or nonresponse)—1,700 to 2,900 clients will be randomly selected from the MMIS. To be eligible for the study, clients must be enrolled in the program for at least six months, with no more than one 30-day gap in enrollment and enrolled in the last month prior to the survey.

The survey will be administered during the calendar 2020 and questions clients about their experiences over the prior six months. The evaluation contractor will mail an explanatory letter, initial survey, reminder postcard, and a second survey for non-responses. If no response is received after the second mailing, a third survey will be mailed. A unique survey identification number will be generated to track bad addresses and responses.

3.5.3 Survey Data – Arkansas Medicaid Client Engagement Satisfaction Survey

The evaluation contractor will also field a Medicaid Client Engagement Satisfaction Survey to survey fee-for-service Medicaid clients. The evaluation contractor will follow the same time frame and survey protocols as outlined for the Arkansas Works survey. The aid categories for this sampling frame will be 20 (parent/caretaker/relative), 61 (limited pregnant women), 65 (pregnant women no grant), and 93 (former foster care).

3.5.4 Survey Data – Behavioral Risk Factor Surveillance System

The Behavioral Risk Factor Surveillance System (BRFSS) is a system of health-related telephone surveys fielded at the state level, with guidance from the CDC. The core questions are fielded annually and include topics on health-related risk behaviors, chronic health conditions, and

preventive services. The current BRFSS weighting methodology allows for comparisons since 2011 using survey weights provided with the data. The weights incorporate design weighting to adjust for non-response and non-coverage, and raking to adjust for demographic differences between the persons sampled within each state.[4]

BRFSS questions on health care access and immunization will be used from 2011–2019 public files to evaluate the population of adults likely to have been eligible for Medicaid expansion in Arkansas, compared to states with traditional Medicaid expansions. Demographic data including household size and income will be used to identify the analytic sample, i.e., adults under age 65 with household income <=138% of federal poverty level.

3.6 Analytic Methods

As noted in Section 3.3, this document references time periods specific to the Interim Evaluation. However, for the Summative Evaluation, all analyses will incorporate the entire demonstration approval period (2017 through 2021).

The statistical analysis will ensure that the comparison and target populations in each measure are comparable and will adjust each measure's results for relevant pre- and post-treatment effects. For example, the survey measures will compare randomly sampled clients from the Medicaid FFS and Arkansas Works populations as well as the analysis will include case-mix adjustment for gender, age, race/ethnicity, and education.

Most claims-based measures have a continuous enrollment requirement during the measurement year that is stricter than that used to identify the populations, ensuring that there is enough time for events, diagnoses, or procedures to appear in the claims record. All eligibility and claims-based measures will weight clients so that the target and comparison groups are comparable in their baseline sociodemographic characteristics. The weighted client-level results can then be adjusted for post-treatment variables including prior experience in the program. We will consider risk score a post-treatment effect because the information will come from claims during the measurement year.

The EPSDT population will serve as their own control group, pre- and post-enrollment in Arkansas Works, and it will not require further adjustment. Measures addressing provider networks, program characteristics, or cost will not require adjustment to compare plans and programs.

The steps of the analytic process are listed below. These will apply in general to the claims-based measures. Please refer to Section 3.7 to verify whether each step will apply to a specific measure.

[4] Weighting the BRFSS Data. 2020. Center for Disease Control and Prevention. Accessed at https://www.cdc.gov/brfss/annual_data/2019/pdf/weighting-2019-508.pdf

3.6.1 Determine clients eligible for each measure

We will follow each metric's specifications to determine which clients are eligible for the denominator. These will be a subset of the target and comparison populations that meet additional metric requirements, such as a longer period of continuous enrollment.

3.6.2 Adjust for selection

We will weight clients in the treatment and comparison groups who are eligible for each metric, with the goal of creating two groups that do not differ in the distribution of their baseline characteristics. Baseline covariates will include age, gender, race/ethnicity, county of residence or enrollment region, and income category. Covariates at the zip-code tabulation area (ZCTA) will also be considered: demographics, education, income, and poverty from the American Community Survey (ACS); health status and access to care from the Behavioral Risk Factor Surveillance System (BRFSS); and urban-rural classification from the Federal Office of Rural Health Policy (FORHP). We will explore the use of weights from 1) propensity-score modeling and 2) Coarsened Exact Matching.

1) A propensity score is the predicted probability of a client being assigned to the treatment group, given their observed baseline characteristics. Usually a logistic regression is performed to arrive at each client's predicted probability. Nonparametric machine-learning models could also be explored as a sensitivity analysis. The propensity score can be used to calculate the inverse probability of treatment weight (IPTW).[5]

2) Coarsened Exact Matching (CEM) is a nonparametric method that creates strata using pre-specified variables and their binned values.[6] All clients within the treatment or comparison group in each unique stratum are assigned the same weight. The advantages of CEM are n-to-n matching, transparency, and ease of explanation.[7]

3.6.3 Check for covariate balance across groups

The goal of adjusting for selection is to make the clients in the treatment and comparison groups comparable at least for the variables we can observe. After reweighting, we will assess covariate balance by looking at the standardized difference of each variable across the groups. The standardized difference is the difference in group means, expressed in units of standard deviation so that group size doesn't matter. We will be looking for standardized differences of less than or equal to 0.10 for all baseline covariates. Usually this is done for group means and

[5] Austin, P.C. and E.A. Stuart. 2015. Moving towards best practice when using inverse probability of treatment weighting (IPTW) using the propensity score to estimate causal treatment effects in observational studies. *Statistics in Medicine* 34(28):3661–79. DOI: 10.1002/sim.6607

[6] King, G. and R. Nielsen. 2019. Why propensity scores should not be used for matching. *Political Analysis* 27(4). Copy at http://j.mp/2ovYGsW

[7] Canes, A. 2017. Two roads diverged in a narrow dataset... when coarsened exact matching is more appropriate than propensity score matching. PharmaSUG paper HA-04.

variances, and prevalence for binary covariates.[8] Graphical methods include comparing side-by-side boxplots and empirical CDFs.[9] For weights constructed using CEM, a global balance assessment based on multivariate histograms can also be done.[10] If covariate balance cannot be achieved, the propensity model may need to be revisited, the bin widths varied, and more variables or their interactions added.

3.6.4 Report measure outcomes, adjusted for selection

Each metric will be calculated to determine the outcome (numerator) for each eligible client. Most metrics at the client level have a binary outcome or a count for utilization measures; weights will be applied to the to the client-level outcomes. If the outcomes are reweighted using IPTW, the average treatment effect on the treated (ATT) can be directly calculated.[11] That is, the average effect of being in a QHP for clients in Arkansas Works, compared with if they had been on Medicaid fee-for-service. The ATT is simply the difference in weighted means of the outcome between the treatment and comparison groups. For measures with a client-level outcome of 0 or 1, the weighted group mean is equal to the effective percentage of the group meeting the measure.[12] If CEM weights are used, a client-level model for the measure results with treatment as the explanatory variable will be performed and the coefficient of the treatment variable will be tested for statistical significance.

3.6.5 Adjust measures for post-treatment effects

Because the waiver evaluation period begins in the fourth year of Arkansas's 1115 waiver implementation, measure results may need to be adjusted for each enrollee's time in the program since 2014. We will consider this a post-treatment variable, since most clients in Arkansas Works were not eligible for Medicaid prior to 2014.

For outcome measures, adjustment for clinical severity may also be needed if it is expected to affect measure results. Since QHP claims are only available after assignment to the treatment group, diagnosis information is considered post-treatment. Beneficiary-level risk scores will be calculated from claims diagnosis fields using the Department of Health and Human Services Hierarchical Condition Category (HHS-HCC) risk adjustment models.

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[8] Austin, P.C. 2009. Using the standardized difference to compare the prevalence of a binary variable between two groups in observational research. Communications in Statistics - Simulation and Computation 38(6):1228–1234. DOI: 10.1080/03610910902859574

[9] Austin, P.C. and E.A. Stuart. 2015. Moving towards best practice when using inverse probability of treatment weighting (IPTW) using the propensity score to estimate causal treatment effects in observational studies. *Statistics in Medicine* 34(28):3661–79. DOI: 10.1002/sim.6607

[10] Berta, P., M. Bossi and S. Verzillo. 2017. %CEM: a SAS macro to perform coarsened exact matching. *Journal of Statistical Computation and Simulation* 87(2): 227–238. DOI: 10.1080/00949655.2016.1203433

[11] 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

[12] Austin, P.C. 2010. The performance of different propensity-score methods for estimating differences in proportions (risk differences or absolute risk reductions) in observational studies. *Statistics in Medicine* 29(20):2137–2148. DOI:10.1002/sim.3854

We will run a weighted regression on the client-level measure outcomes using post-treatment covariates. The outcome variable will depend on the measure being analyzed; for example, whether a screening test was performed would be modeled using logistic regression, and the number of visits could be modeled with Poisson or negative binomial regression.

Post-treatment covariates for consideration:
Total time enrolled in Arkansas Works or HCIP (up to 3 years prior to analysis year)
Total time enrolled in Medicaid FFS (up to 3 years prior to analysis year)
Risk score calculated from HHS-HCC risk adjustment models

The post-treatment model may include baseline covariates that are confounders; that is, variables that affect both treatment assignment and the measure outcome.

Sensitivity analysis will be conducted to determine whether the results change when different sets of covariates are included in the outcome model. Comparisons of outcome models with different subsets of covariates (confounders, post-treatment covariates), in addition to none and all covariates, will be performed. Additionally, doubly-robust estimators will be calculated to determine the sensitivity of results to misspecification of either the treatment model or the outcome model.

3.6.6 Adjustments for multi-year analysis

If a longitudinal analysis is performed, the sample size will be expected to change from year to year. Existing weights from each measure's yearly results could be adjusted for attrition and new enrollees. In this way, mixed models that take into account serial correlation within clients can be used to analyze intermediate and longer-term measure outcomes. A longer timeframe may be more relevant for evaluating the entirety of the Arkansas Works program, which is scheduled to run for five years after the original three-year implementation of Arkansas's 1115 waiver demonstration.

3.6.7 Interrupted time series analyses

To assess the Arkansas Works' policy of required premium contributions for clients with income >100% FPL, multiple/comparative interrupted time series will be analyzed for clients above and below the income threshold. Claims-based measures of primary care and emergency department utilization, along with two continuity of coverage measures, will be analyzed from 2014 through 2019. To assess the effects of Arkansas Works' retroactive eligibility waiver on continuity, the above two continuity of coverage measures will be analyzed using a single interrupted time series from 2014 through 2019. [13]

[13] Baicker, K. and T. Svoronos. 2019. Testing the Validity of the Single Interrupted Time Series Design. National Bureau of Economic Research working paper 26080.

3.6.8 Differences-in-differences analyses

Core questions from the BRFSS on Health Care Access (any coverage, personal doctor, routine checkup, medical cost) and Immunization (flu shot/spray) will be analyzed for Arkansas and comparison states pre- and post- Medicaid expansion, from 2011 to 2019.[14] Differences-in-differences estimators will be the interactions of time period with target group.

In Arkansas, baseline years will be 2011–2013, early expansion 2014–2016, and late expansion 2017–2019. Coding baseline as the reference period will allow comparisons of early expansion with baseline, and late expansion with baseline. Recoding early expansion as the reference period will allow comparison of the late and early expansion periods.

Survey responses will be dichotomized and analyzed with survey weights. Linear probability models will be used for ease of interpretation. Demographic covariates will be included for adjustment across states.

3.6.9 Non-emergency transportation

To compare access to non-emergency transportation (NEMT) services in the target and comparison groups during the measurement year, any NEMT service utilization and counts of NEMT service utilization will be assessed with descriptive analysis and cross-sectional logistic and count regression models.[15] The descriptive analyses will present the percent of clients with any NEMT utilization and the mean and standard deviation of NEMT services, stratified by age, gender, risk score, and NEMT service region. Regression analyses will estimate the average marginal effect of treatment, controlling for age, gender, risk score, and NEMT service region.

3.6.10 Qualitative analysis

To gain further insight into clients' participation and understanding of Arkansas Works, the state will conduct key informant interviews for respondents to the Arkansas Works Client Engagement Satisfaction Survey who provided phone numbers. A semi-structured interview guide will address specific themes, including impacts of the NEMT waiver policy on clients' access to care. Data will be collected and a directed content analysis will be used to identify emergent themes from the data.

3.6.11 Impacts of COVID-19

Arkansas sees value in analyzing the impacts of COVID-19 during the Arkansas Works implementation, especially concerning telehealth. Many HEDIS and Medicaid Adult Core metrics already include telehealth and online assessment value sets (eg., AAP, CDC, FUH, SPD). Arkansas could assess the impact of telehealth and online assessments on measure results in measurement years 2020 and 2021, to estimate the effect of COVID-19 on telehealth uptake in

[14] As shown in https://chronicdata.cdc.gov/Behavioral-Risk-Factors/Behavioral-Risk-Factor-Surveillance-System-BRFSS-H/iuq5-y9ct/data

[15] Modeled on NEMT measures in Tables G.1., G.2., G.6 of the National Cross-State Evaluation Appendix. January 17, 2020. Downloaded from https://www.medicaid.gov/medicaid/section-1115-demonstrations/downloads/alt-medicaid-exp-summ-eval-append.pdf

the target and comparison groups. Other, wider-ranging impacts of COVID-19 could be assessed using longitudinal, multi-year analyses of existing measures.

3.7 Other Additions

Table 7: Summary of proposed analysis methods by hypothesis, driver, and metric.

Goal. Hypothesis	Driver	Indicator	Metric Name	Comparison Group	Analytic Method to Construct Comparable Groups	Comparison Method	Statistical Test	Comparison Method Adjusting for Post-treatment Effects	Statistical Test
1.a.	1	AR Medicaid Eval 1.a.1.	Average length of gaps in coverage, in months*	Medicaid FFS comparison group	IPTW/CEM weighting	Client-level model	Difference in group means	Client-level model with prior experience	Coefficient of treatment variable
	2	AR Medicaid Eval 1.a.2.	Percent of clients with < 2 gaps in coverage*				Difference in group percentages		
1.b.	1	AR Medicaid Eval 1.b.1.	Continuous Enrollment in a Health Plan				Difference in group means		
	2	AR Medicaid Eval 1.b.2.	Continuity of PCP care				Difference in group percentages		
	3	AR Medicaid Eval 1.b.3.	Continuity of specialist care						

* 1.a.1 and 1.a.2 will also be used in interrupted time series analysis to assess effects of the premium contribution requirement and waiver of retroactive eligibility. The comparison groups will be Medicaid expansion adults not affected by the policy because of implementation time or income requirements.

Goal. Hypothesis	Driver	Indicator	Metric Name	Comparison Group	Analytic Method to Construct Comparable Groups	Comparison Method	Statistical Test	Comparison Method Adjusting for Post-treatment Effects	Statistical Test
2.a.	1	AR Medicaid Eval 2.a.1.	PCP Network Adequacy	Medicaid PCP provider network	N/A	Geospatial analysis	N/A	N/A	N/A
	2	AR Medicaid Eval 2.a.2.	PCP Network Accessibility						
	3	AR Medicaid Eval 2.a.3.	Specialist Network Adequacy	Medicaid specialist provider network					
	4	AR Medicaid Eval 2.a.4.	Specialist Network Accessibility						
	5	AR Medicaid Eval 2.a.5.	Essential Community Providers Network Adequacy	Medicaid ECP provider network					
	6	AR Medicaid Eval 2.a.6.	Essential Community Providers Network Accessibility						

Goal. Hypothesis	Driver	Indicator	Metric Name	Comparison Group	Analytic Method to Construct Comparable Groups	Comparison Method	Statistical Test	Comparison Method Adjusting for Post-treatment Effects	Statistical Test
2.a.	7.a.	CAHPS-4, survey Q4	Got care for illness/injury as soon as needed	Arkansas Medicaid client survey respondents	Survey sampling	Comparison of answer frequencies, case-mix adjustment	Chi-squared test	None	N/A
	7.b.	CAHPS-6, survey Q6	Got non-urgent appointment as soon as needed						
	7.c.	CAHPS-9, survey Q11	How often it was easy to get necessary care, tests, or treatment						
	7.d.	CAHPS-10, survey Q12	Have a personal doctor						
	7.e.	CAHPS-18, survey Q22	Got appointment with specialists as soon as needed						
	7.f.	CAHPS P-IN1, survey Q18	Needed interpreter to help speak with doctors or other health providers						
	7.g.	CAHPS P-IN2, survey Q19	How often got an interpreter when needed one						
	7.h.	CAHPS AC2; survey Q7	Days wait time between making appointment and seeing provider						
	7.i.	survey Q8	How often had to wait for appointment because of provider's lack of hours/availability						
	7.j.	survey Q21	Easy to get a referral to a specialist						

Goal. Hypothesis	Driver	Indicator	Metric Name	Comparison Group	Analytic Method to Construct Comparable Groups	Comparison Method	Statistical Test	Comparison Method Adjusting for Post-treatment Effects	Statistical Test
2.a.	8.a.	BRFSS HLTHPLN1	Have Health Care Coverage	BRFSS comparison group	Subset of states, age, income	Differences-in-differences	DiD estimator	N/A	N/A
	8.b.	BRFSS PERSDOC2	Have a Personal Doctor						
	8.c.	BRFSS CHECKUP1	Last Routine Checkup						
	8.d.	BRFSS MEDCOST	Avoided Care Due to Cost						
	8.e.	BRFSS FLUSHOT6, FLUSHOT5	Flu Vaccine						
2.b.	1	NCQA BCS-AD	Breast Cancer Screening	Medicaid FFS comparison group	IPTW/CEM weighting	Client-level model	Difference in group means	Client-level model with prior experience	Coefficient of treatment variable
	2	NCQA CCS-AD	Cervical Cancer Screening						
	3	NCQA HEDIS SPD	Statin Therapy for Patients With Diabetes						
	4	NCQA HA1C-AD	Comprehensive Diabetes Care: Hemoglobin A1c Testing						
	5	NCQA HEDIS AAP	Adults' Access to Preventive/Ambulatory Health Services**						

** AAP and ED visit utilization will also be used for interrupted time series analysis to assess effects of the premium contribution requirement. The comparison group will be Medicaid expansion adults not affected by the policy because of implementation time or income requirements.

Goal. Hypothesis	Driver	Indicator	Metric Name	Comparison Group	Analytic Method to Construct Comparable Groups	Comparison Method	Statistical Test	Comparison Method Adjusting for Post-treatment Effects	Statistical Test
2.c.	1	AR Medicaid Eval 2.c.1.	Non-emergent ED visits**	Medicaid FFS comparison group	IPTW/CEM weighting	Client-level model	Difference in group means	None	N/A
	2	AR Medicaid Eval 2.c.2.	Emergent ED visits**						
2.d.	1	AR Medicaid Eval 2.d.1.	Adolescent Well-Care Visits	1–2 years prior to Arkansas Works enrollment	N/A	Repeated-measures ANOVA	Coefficient of year variable	None	N/A
	2	AR Medicaid Eval 2.d.2.	EPSDT screening - Preventive Dental Visits						
	3	AR Medicaid Eval 2.d.3.	EPSDT screening - Preventive Vision						
2.e.	1	TBD	Any utilization of non-emergency transportation services	Medicaid FFS comparison group	Adjust for demographics, risk score, service region	Logistic regression	Average marginal effect	N/A	N/A
	2	TBD	Utilization counts of non-emergency transportation services	Medicaid FFS comparison group	Adjust for demographics, risk score, service region	Count model regression	Average marginal effect	N/A	N/A

** AAP and ED visit utilization will also be used for interrupted time series analysis to assess effects of the premium contribution requirement. The comparison group will be Medicaid expansion adults not affected by the policy because of implementation time or income requirements.

Goal. Hypothesis	Driver	Indicator	Metric Name	Comparison Group	Analytic Method to Construct Comparable Groups	Comparison Method	Statistical Test	Comparison Method Adjusting for Post-treatment Effects	Statistical Test
3.a.	1	CAHPS-26, survey Q30	Rating of health plan	Arkansas Medicaid client survey respondents	Survey sampling	Comparison of answer frequency categories, case-mix adjustment	Chi-squared test	None	N/A
	2	CAHPS-8, survey Q10	Rating of all health care						
	3	CAHPS-16, survey Q17	Rating of personal doctor						
	4	CAHPS-20, survey Q24	Rating of specialist						
3.b.	1	AR Medicaid Eval 3.b.1.	Preventable ED visits	Medicaid FFS comparison group	IPTW/CEM weighting	Client-level model	Difference in group means	None	N/A
	2	NCQA PCR-AD	Plan All-Cause Readmissions			N/A	N/A	Risk adjustment at client level for diagnosis groups	Group-level ratios of observed-to-expected (O/E) readmissions

Goal. Hypothesis	Driver	Indicator	Metric Name	Comparison Group	Analytic Method to Construct Comparable Groups	Comparison Method	Statistical Test	Comparison Method Adjusting for Post-treatment Effects	Statistical Test
3.b.	3.a.	AHRQ PQI01-AD	Diabetes Short-Term Complications Admission Rate	Medicaid FFS comparison group	IPTW/CEM weighting	Client-level model	Difference in group rates	Client-level model with prior experience	Coefficient of treatment variable
	3.b.	AHRQ PQI05-AD	Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate						
	3.c.	AHRQ PQI08-AD	Heart Failure Admission Rate						
	3.d.	AHRQ PQI15-AD	Asthma in Younger Adults Admission Rate						
3.c.	1	NCQA FUH-AD	Follow-Up After Hospitalization for Mental Illness	Medicaid FFS comparison group	IPTW/CEM weighting	Client-level model	Difference in group means	Client-level model with prior experience	Coefficient of treatment variable
	2	NCQA SAA-AD	Adherence to Antipsychotic Medications for Individuals With Schizophrenia						
	3	NCQA HEDIS PBH	Persistence of Beta-Blocker Treatment After a Heart Attack						
	4	NCQA MPM-AD	Annual Monitoring for Patients on Persistent Medications						
	5	AR Medicaid Eval 3.c.5.	Annual HIV/AIDS Viral Load Test						
	6	AR Medicaid Eval 3.c.6	C-Section Rate	Medicaid FFS pregnancy group					

Goal. Hypothesis	Driver	Indicator	Metric Name	Comparison Group	Analytic Method to Construct Comparable Groups	Comparison Method	Statistical Test	Comparison Method Adjusting for Post-treatment Effects	Statistical Test
4.a.	1	AR Medicaid Eval 4.a.1.	Arkansas Program Characteristics	N/A	N/A	Annual tables	N/A	N/A	N/A
	2	AR Medicaid Eval 4.a.2.	Arkansas Regional Average Program Characteristics						
	3	AR Medicaid Eval 4.a.3.	Contiguous States Program Characteristics						
4.b.	1	AR Medicaid Eval 4.b.1.	Meets Budget Neutrality	N/A	N/A	Budget neutrality cap	N/A	N/A	N/A
	2	NCQA HEDIS IPU	Inpatient Utilization - General Hospital/Acute Care	Medicaid FFS comparison group	IPTW/CEM weighting	Client-level model	Difference in group rates	Client-level models with prior experience, diagnosis groups in analysis year	Coefficient of treatment variable

4 METHODOLOGICAL LIMITATIONS

The main limitation of this evaluation is that before Arkansas' 1115 waiver period began in 2014, there were very few ways in which adults were eligible for traditional Medicaid. Therefore, a large majority of the population enrolled in Arkansas Works or its predecessor, the Healthcare Independence Program, does not have a truly comparable population in traditional Medicaid. Our constructed target and comparison groups will be adjusted for differences in sociodemographic factors, but differences in income level may persist.

Information used for client weights will come from the eligibility determination process. Causal analysis requires that the baseline variables are known before assignment to the treatment or comparison group, and that they are not affected by the assignment. Therefore, we assume the baseline covariates for each client did not change during the calendar year.

One exception would be when the work requirement was in effect, June 2018 through March 2019. Income level and coverage for Arkansas Works clients may have changed because of the work requirement. However, this evaluation will not directly address impacts of the community engagement requirements.

Because only paid claims will be available from QHPs, the claims-based measures will be restricted to paid claims only for both target and comparison groups. Services billed on claims that were suspended or denied will not be included.

Prior to implementation of the managed-care program PASSE on March 1, 2019, beneficiaries were assigned to PASSE based on behavioral health assessments. Some of the assignments were made for beneficiaries in the Medicaid expansion population, who never enrolled in the PASSE, and other assignments were made for beneficiaries in traditional Medicaid but were never implemented. Therefore, for the purposes of the Arkansas Works evaluation beneficiaries with a PASSE eligibility segment on or after the implementation date of March 1, 2019 were excluded, but those with a PASSE segment before implementation were included.

5 SPECIAL METHODOLOGICAL CONSIDERATIONS

6 *APPENDIX*

6.1 INDEPENDENT EVALUATOR

Based on State protocols, DMS did follow established policies and procedures to acquire an independent entity or entities to conduct the Arkansas Works demonstration evaluation. The State undertook a competitive procurement for the evaluator. An assessment of potential contractors' experience, knowledge of State programs and populations, and resource requirements was determined during selection of the final candidate, including steps to identify and/or mitigate any conflicts of interest. At the time of proposal submission, every bidder had to certify no conflicts of interest concerning State of Arkansas, Department of Human Services, Division of Medical Services.

The contractor and subcontractor evaluators hired to conduct the analyses and write the evaluation report has ensured to have no actual or potential conflicts of interests. The state hires a contractor independent from DHS and Arkansas Medicaid. The evaluation design includes a "No Conflict of Interest" signed confirmation statement from the independent evaluators signed at the time of the bid submission. The federal approval of the Arkansas Works demonstration is prepared upon compliance with a set of Special Terms and Conditions. Specific to the program evaluation, the Special Terms and Conditions outline four goals that the State must investigate. DMS and the evaluator develop multiple hypotheses and research questions around these terms and conditions. The evaluation design includes a discussion of the goals, objectives, hypotheses, and research questions, including those that focus specifically on target and comparison populations, and more generally on clients and client's experience of services. The evaluator will continue to maintain separation throughout the demonstration evaluation to avoid potential conflicts of interest.

GENERAL DYNAMICS
Information Technology

Section 2 C. Conflict of Interest/Independence.

General Dynamics Information Technology, Inc. (GDIT) hereby certifies that it has read the Organizational or Personal Conflict of Interest Clause (Attachment F), and that, without limitation or qualification, has no actual, apparent, or potential conflicts of interest with, and is independent from:

1. DHS and Arkansas Medicaid.
2. Qualified Health Providers (QHP) under the ARWorks program, including the following:
    a. Ambetter from Arkansas Health & Wellness (Centene Corporation).
    b. QualChoice (QCA Health Plan, Inc./QualChoice Life and Health Insurance Company, Inc.
    c. Arkansas Blue Cross & Blue Shield.
3. Providers serving Medicaid and ARWorks beneficiaries under any Arkansas Medicaid or ARWorks program.

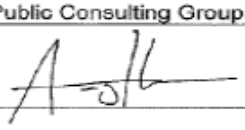
[Bidder or Subcontractor] Name:	General Dynamics Information Technology, Inc.	Date:	May 7, 2019
Signature:	Dorothy E. Piroha	Title:	Contracts Administrator, Senior
Printed Name:	Dorothy E. Piroha		

PUBLIC CONSULTING GROUP
Public Focus. Proven Results.™

Section 2 C. Conflict of Interest / Independence.

Public Consulting Group (PCG), subcontractor to General Dynamics Information Technology, Inc. (GDIT), hereby certifies that it has read the Organizational or Personal Conflict of Interest Clause (Attachment F), and that, without limitation or qualification, has no actual, apparent, or potential conflicts of interest with, and is independent from:

1. DHS and Arkansas Medicaid.
2. Qualified Health Providers (QHP) under the ARWorks program, including the following:
    a. Ambetter from Arkansas Health & Wellness (Centene Corporation).
    b. QualChoice (QCA Health Plan, Inc./QualChoice Life and Health Insurance Company, Inc.
    c. Arkansas Blue Cross & Blue Shield.
3. Providers serving Medicaid and ARWorks beneficiaries under any Arkansas Medicaid or ARWorks program.

Subcontractor Name:	Public Consulting Group	Date:	5/7/2019
Signature:		Title:	Associate Manager
Printed Name:	Aaron Holman		

6.2 EVALUATION BUDGET

An estimated total cost for the development and production of the Arkansas Works evaluation design and the resulting Arkansas Works evaluation reports are hereby included for an annual budget. This includes a breakdown of the estimated cost for staff and administration work, an approximation of cost and overall price to complete the Arkansas Works evaluation. Cost includes data cleaning, analyses and the actual production of the evaluation design and evaluation report deliverables. For the complete evaluation time frame reporting time frames the total cost would be $3,547,323.80.

GDIT Labor Category	Hours	Cost
Program Management	1,048	$207,733.57
Admin Support	472	$49,900.71
Business Requirements/ Data Infrastructure	868	$102,277.86
Statistical Analysis	1,074	$107,934.57
Subject Matter Experts	330	$57,186.29
	3,792	**$525,033.00**

PCG Labor Category	Hours	Cost
Program Management	832	$268,242.62
Business Requirements	416	$64,589.13
	1,248	**$332,831.75**
Computing Costs		$28,966.20
Total	**5,040**	**$886,830.95**

6.3 Acronym List

AAP: Adults' Access to Preventive/Ambulatory Health Services
ABP: Alternative Benefit Plan
ACA: Affordable Care Act
ACE: Angiotensin converting enzyme
ACS: American Community Survey
AD: Adult
AHCPII: Arkansas Health Care Payment Improvement Initiative
AHRQ: Agency for Healthcare Research and Quality
AID: Arkansas Insurance Department
AIDS: Acquired immunodeficiency syndrome
AMB: Ambulatory
AMI: Acute Myocardial Infarction
APCD: All Payer Claims Database
ARB: Angiotensin receptor blockers
ASCVD: Atherosclerotic cardiovascular disease
ATT: Average effect on the treat
AWC: Adolescent Well-Care
BCS: Breast Cancer Screening
BH: Behavioral Health
BIA: Budget impact analyses
BRFSS: Behavioral Risk Factor Surveillance System
CABG: Coronary Artery Bypass Graft
CAD: Coronary Artery Disease
CAHPS: Consumer Assessment of Health Plan Survey
CCIIO: Center for Consumer Information and Insurance Oversight
CCS: Cervical Cancer Screening
CDC: Centers for Disease Control and Prevention
CEA: Cost Effectiveness Analysis
CEM: Coarsened Exact Matching
CHF: Congestive heart failure
CHIP: Children's Health Insurance Program
CMS: Centers for Medicare & Medicaid Services
COPD: Chronic obstructive pulmonary disease
CPT: Current Procedural Technology
CSR: Cost-sharing reduction
DHHS: Department of Health and Human Services
DHS: Department of Human Services
DMS: Division of Medical Services
DO: Doctor of Osteopathy

DQTR: Discharge Quarter
DSH: Disproportionate Share Hospitals
DSS: Decision Support System
DY: Demonstration year
ECP: Essential Community Providers
ED: Emergency Department
EPSDT: Early and Periodic Screening, Diagnosis, and Treatment
ER: Emergency Room
ESI: Employer Sponsored Insurance
ESRD: End Stage Renal Disease
FFM: Federally-Facilitated Marketplace
FFS: Fee-for-service
FMAP: Federal Medical Assistance Percentage
FORHP: Federal Office of Rural Health Policy
FPL: Federal poverty level
FQHC: Federal Qualified Health Center
FUH: Follow-up After Hospitalization
FSP: Frequency of Selected Procedures
GDIT: General Dynamics Information Technology
HbA1c: Hemoglobin A1c
HCIP: Health Care Independence Program
HCPCS: Health care Common Procedure Coding System
HEDIS: Healthcare Effectiveness Data and Information Set
HHS-HCC: Department of Health and Human Services Hierarchical Condition Category
HIV: Human Immunodeficiency Virus
IABP: Interim Alternative Benefit Plan
ICER: Incremental cost-effectiveness ratio
ICF: Intermediate Care Facility
IESD: Index Episode Start Date
IHS: Index Hospital Stay
IPSD: Index Prescription Start Date
IPTW: Inverse Probability of Treatment Weight
IPU: Inpatient Utilization
LPW: Limited Pregnant Women
LDL-C: Low Density Lipoprotein Cholesterol
MCAID: Medicaid
MD: Doctor of Medicine
MH: Mental Health
MMIS: Medicaid Management Information System
MPM: Monitoring for Patients on Persistent Medications

NA: Network Adequacy
NAC: National Advisory Committee
NAIC: National Association of Insurance Commissioners
NCQA: The National Committee for Quality Assurance
NDC: Number days covered
NEMT: Non-Emergency Transportation
NYU: New York University
OB/GYN: Obstetrics and gynecology
O/E: Observed-to-expected
PA: Premium Assistance
PASSE: Provider-led Arkansas Shared Savings Entity
PBH: Persistence of Beta Blocker Treatment after a heart attack
PBM: Pharmacy Benefit Management
PCCM: Primary Care Case Management
PCG: Public Consulting Group
PCI: Percutaneous Coronary Intervention
PCP: Primary Care Physician
PCR: Plan All-Cause Readmission
PDC: Proportion of days covered
PMPM: Per Member per Month
POS: Place of service
PPACA: Patient Protection and Affordable Care Act
PQI: Prevention Quality Indicators
PSTCO: Patient county
QC: QualChoice
QHPs: Qualified Health Plans
RD: Regression discontinuity
RHC: Rural Health Clinic
SA: Substance Abuse
SAA: Schizophrenia
SAD: Stand Alone Dental
SERFF: System for Electronic Rate and Form Filing
SIPTW: Stabilized inverse probability of treatment weighting
SNF: Skilled Nursing Facility
SSI: Supplemental Security Income
STC: Special terms and conditions
STD: Sexually Transmitted Disease
TB: Tuberculosis
UB revenue: Uniform Billing Revenue Code
USP: U.S. Pharmacopeia Convention

ZCTA: Zip-Code Tabulation Area