DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
7500 Security Boulevard, Mail Stop S2-26-12
Baltimore, Maryland 21244-1850

State Demonstrations Group

October 28, 2024

Carmen Heredia
Director
Arizona Health Care Cost Containment System
801 East Jefferson Street
Phoenix, Arizona 85034

Dear Director Heredia:

The Centers for Medicare & Medicaid Services (CMS) completed its review of the Final Report for the COVID-19 Public Health Emergency (PHE) amendment to the section 1115 demonstration entitled, "Arizona Health Care Cost Containment System (AHCCCS)" (Project No: 11-W-00275/9), approved on January 19, 2021. This report covers the demonstration period from March 1, 2020 through September 30, 2022. CMS determined that the Final Report, submitted on May 10, 2024, is in alignment with the requirements set forth in Attachment M of the Special Terms and Conditions (STCs), and therefore, approves the state's Final Report.

In alignment with STC 81 (Public Access), the approved Final Report may now be posted to the state's Medicaid website within 30 days. CMS will also post the approved Final Report on Medicaid.gov.

We sincerely appreciate the state's commitment to evaluating the COVID-19 PHE amendment under these extraordinary circumstances. We look forward to continuing our partnership on the AHCCCS 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: 2024.10.28 09:00:00 -04'00'

Danielle Daly
Director
Division of Demonstration Monitoring and Evaluation

cc: Brian Zolynas, State Monitoring Lead, CMS Medicaid and CHIP Operations Group

Arizona Health Care Cost Containment System

Arizona Section 1115 Demonstration Waiver—COVID-19 PHE EPSDT Dental Amendment

Evaluation Report

May 2024

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Executive Summary

The Centers for Medicare & Medicaid Services (CMS) gave approval for the coronavirus disease 2019 (COVID-19) public health emergency (PHE) (11-W-00275/9) amendment (the Amendment) to the Arizona Health Care Cost Containment System (AHCCCS) Section 1115 Demonstration Waiver on January 19, 2021.[1] This Amendment allowed Arizona to cover Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) dental services authorized prior to a beneficiary turning age 21 for those beneficiaries who turned 21 on or after March 1, 2020, and through 60 days after the termination of the COVID-19 PHE and who remain Medicaid eligible.

Methodology

A mixed-methods approach was employed to evaluate the Amendment using both qualitative data from key informant interviews with AHCCCS and health plans, and quantitative data consisting of eligibility, enrollment, and claims/encounter data. Table 1 outlines the quantitative metrics examined, whether a comparison group was used (consisting of beneficiaries turning 18 during the COVID-19 PHE), whether pre-COVID-19 PHE baseline data were used, and the analytic method used.

Table 1—Measures and Analytic Methods

Measure	Comparison Group	Baseline Comparison	Analytic Method
EPSDT Dental Utilization	Yes	Yes	DiD
Monthly EPSDT Dental Utilization	No	Yes	Descriptive Time Series
PMPM Dental Costs	Yes	No	Means Comparison

Note: DiD: difference-in-differences; EPSDT: Early and Periodic Screening, Diagnostic, and Treatment; PMPM: per-member per-month

Results

A primary challenge of the Amendment was raising beneficiary awareness of continued coverage of EPSDT dental benefits after turning 21. Key informants reported a multipronged approach to raise awareness and contact beneficiaries, that included updating information on health plans' websites, mailing materials, calling beneficiaries, and contacting beneficiaries' providers to obtain accurate contact information. AHCCCS and the health plans suggested this outreach effort was a success. Indeed, analysis of quantitative data shows that some beneficiaries over the age of 21 continued to receive EPSDT dental services during the COVID-19 PHE, although the rate of utilization was significantly lower than comparison group beneficiaries who turned 18 between March 1, 2020, through September 30, 2022.

From the pre-COVID-19 PHE period through the evaluation period, the rates of preventive and non-preventive EPSDT dental services declined for both the intervention and comparison groups. However, the declines were

[1] Centers for Medicare & Medicaid Services. CMS Approval - COVID-19 PHE Amendment. Available at: https://www.medicaid.gov/sites/default/files/2022-02/az-hccc-cms-approval-covid-19-phe-amendment-01192021.pdf. Accessed on: Feb 29, 2024.

significantly greater among the intervention group. Preventive EPSDT dental visits declined from 19.9 percent to 1.5 percent (a decrease of 18.5 percentage points) for the intervention group while preventive dental visits declined from 38 percent to 24.7 percent (13.3 percentage point decrease) for the comparison group. Non-preventive EPSDT dental services declined by a similar degree for both groups.

Analysis of per-member per-month (PMPM) costs showed that while the cost among all intervention beneficiaries was significantly lower than the comparison group ($5.95 compared to $11.41), the cost among utilizing beneficiaries was higher than the comparison group ($272.34 compared to $221.21). This suggests fewer beneficiaries over the age of 21 utilized EPSDT dental services, but among those who did, the dental services were potentially more complex and costly.

Conclusions

Key informants from AHCCCS and the health plans described efforts to reach out to beneficiaries regarding continued coverage of EPSDT dental services after turning 21. Although they encountered issues with contacting some beneficiaries due to inaccurate contact information, AHCCCS and health plans described robust outreach strategies to mitigate these challenges, such as directly contacting beneficiaries' providers to obtain contact information and using alternative data sources.

Despite these efforts, analysis of quantitative data did not indicate that beneficiaries turning 21 continued to utilize dental services offered by the Amendment at the same rate as prior to the COVID-19 PHE. The rate of preventive EPSDT dental visits for beneficiaries turning 21 declined from 18.5 percent to only 1.5 percent after the COVID-19 PHE. By comparison, beneficiaries close in age who maintained standard coverage throughout the COVID-19 PHE also exhibited a substantial decline, but not to the same degree, and maintained a significantly higher rate during the COVID-19 PHE period at 24.7 percent. Moreover, analysis of PMPM costs determined that beneficiaries turning 21 who did utilize dental services tended to have higher costs, potentially indicative of more complex and higher-need dental services.

Finally, there was no clear evidence of pent-up demand after the gradual reopening of dental services beginning approximately in June 2020. Examination of monthly rates of EPSDT dental services before and after the COVID-19 PHE began showed a consistent downward trend. The fact that beneficiaries 21 years of age resumed this downward trend after the reopening suggests that some beneficiaries may have been aware that their coverage continued and were able to access necessary dental services, albeit not at the same rate as prior to the COVID-19 PHE.

Lessons Learned and Best Practices

The primary challenge identified was contacting beneficiaries turning 21 and encouraging them to complete their dental care after the COVID-19 PHE. Not only did this population experience life transitions at this age, such as moving out of families' homes, but the significant socioeconomic impact of the COVID-19 PHE and associated stay-at-home orders exacerbated these disruptions, resulting in some beneficiaries being unconcerned about maintaining care or the possibility of losing coverage.

AHCCCS and its health plans used several approaches to communicate the coverage offered through the Amendment to beneficiaries. One health plan utilized existing connections through beneficiaries' dental homes. For beneficiaries with incorrect contact information, one health plan utilized claims data to identify providers that

beneficiaries had seen to reach out to them for updated information. Another health plan utilized alternative data sources to update its records.

Another best practice that one health plan engaged in was contacting beneficiaries without an appointment to actively schedule an appointment for them. This meant beneficiaries had to actively decline scheduling an appointment rather than actively engage in scheduling an appointment. This type of "opt-out" approach has been well documented in behavioral economics to encourage a preferred behavior as the default option and is a best practice that can be replicated in similar situations. [2]

[2] See, e.g., Cho & Bates (2018) "Behavioral Economics Interventions in Clinical Decision Support Systems," *Yearb Med Inform,* 27(1), 114-121.

1. Introduction

The Section 1115 of the Social Security Act provides states an opportunity to design and test methods for providing and funding healthcare services that meet the objectives of the federal Medicaid program and Children's Health Insurance Program (CHIP) but differ from services required by federal statute through Section 1115 Demonstration Waivers. Section 1115 Demonstration Waivers allow states flexibility in how healthcare is provided within the state, within federal guidelines. The Centers for Medicare & Medicaid Services (CMS) has designed a national evaluation strategy to ensure that demonstrations meet program objectives and to inform Medicaid policy in the future.

On April 17, 2020, Arizona submitted a request to CMS for an amendment to the Arizona Health Care Cost Containment System (AHCCCS) Section 1115 demonstration (11-W-00275/9) in order to address the coronavirus disease 2019 (COVID-19) public health emergency (PHE) (the Amendment). The Amendment allowed Arizona to cover Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) dental services that were authorized prior to a beneficiary turning 21 years of age on or after March 1, 2020, through July 10, 2023. CMS approved the COVID-19 PHE amendment to the AHCCCS Section 1115 Waiver Demonstration on January 19, 2021. The Amendment was retroactive from March 1, 2020, through 60 days after the end of the COVID-19 PHE, which expired May 11, 2023.[1-1]

Amendment Background and Goals

The COVID-19 PHE profoundly altered the environment for delivering Medicaid-funded dental services, as many dental offices in Arizona either closed or operated at limited capacity during the COVID-19 PHE. Since AHCCCS does not provide adult comprehensive dental benefits, beneficiaries lose coverage for many dental services upon turning 21. However, they are eligible for EPSDT dental services until their 21st birthday, including the completion of treatment plans initiated prior to that date. When the COVID-19 PHE began, AHCCCS was concerned that this population might not be able to obtain these important dental services due to COVID-19 PHE mitigation strategies (e.g., stay-at-home orders, quarantine mandates), and might subsequently age out (turned 21) on or after March 1, 2020, without obtaining these dental services. CMS granted the requested expenditure authority, which was designed to enable such beneficiaries to obtain dental care they may have forgone during the COVID-19 PHE. This Amendment assisted the State in delivering the most effective care to its beneficiaries in light of the COVID-19 PHE, while supporting the key objective of furnishing medical assistance in a manner that was intended to protect, to the greatest extent possible, the health, safety, and welfare of individuals and providers who were affected by the COVID-19 PHE.

Hypotheses and Research Questions

The core objective of the evaluation of the Amendment was to test whether and how the Amendment and expenditure authorities mitigated any potential negative impacts of the COVID-19 PHE. The hypotheses and research questions listed below in Table 1-1 were tailored to assess this objective.

[1-1] Centers for Medicare & Medicaid Services. Current emergencies. Available at: https://www.cms.gov/about-cms/what-we-do/emergency-response/current-emergencies. Accessed on Feb 14, 2024.

Table 1-1—Hypotheses and Research Questions

Hypotheses	Research Questions
1: The COVID-19 PHE waiver will provide cost-effective care for qualifying beneficiaries.	• 1.1: Is the cost of EPSDT dental care for qualifying beneficiaries less than or equal to the cost of EPSDT dental care among beneficiaries turning 18 during the same time-period?
2: The COVID-19 PHE waiver will give qualifying beneficiaries equal access to EPSDT dental services as beneficiaries turning 18 during the same time-period.	• 2.1: Did beneficiaries who would otherwise have been ineligible to receive EPSDT dental services after their 21st birthday know about the waiver? • 2.2: What were the principal challenges associated with engagement with Medicaid beneficiaries during COVID-19 PHE? – 2.2a: What strategies did the State pursue to address those challenges? • 2.3: What were the unresolved or ongoing challenges related to the implementation of the demonstration flexibilities? • 2.4: Was the rate of EPSDT dental services among qualifying beneficiaries equal to that of beneficiaries turning 18 during the same time period? • 2.5: Is there evidence of pent-up demand in the months following the gradual reopening up of the State and resuming routine EPSDT dental care throughout 2020 and 2021? – 2.5a: If so, does the volume of EPSDT dental services appear to account for a decline in dental services during the peak impact of COVID on the health care system, even though the COVID-19 PHE was still in effect?

Note: Qualifying beneficiaries are defined as beneficiaries who turned 21 on or after March 1, 2020, through September 30, 2022, and who remained Medicaid eligible. These beneficiaries qualified for EPSDT dental services solely due to the Amendment.

2. Methodology

To assess the impact of the coronavirus disease 2019 (COVID-19) public health emergency (PHE) Early and Periodic Screening and Diagnostic Treatment (EPSDT) amendment (the Amendment) to the Arizona Health Care Cost Containment System (AHCCCS) Section 1115 Demonstration Waiver, a comparison of outcomes between the intervention group and a valid counterfactual—the intervention group that had not been exposed to the intervention—must be made. The gold standard for experimental design is a randomized controlled trial which would be implemented by first identifying an intervention population, and then randomly assigning individuals to the intervention and the rest to a comparison group, which would serve as the counterfactual. However, random assignment is rarely feasible or desirable in practice, particularly as it relates to healthcare policies.

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

Table 2-1—Analytic Approaches

Analytic Approach	Baseline Data	Comparison Group	Allows Causal Inference	Notes
Cross-Sectional Analysis		✓		Assessed differences between groups after implementation. Does not account for pre-existing differences.
Descriptive Time Series				Relies on descriptive interpretation; does not involve statistical testing.
Difference-in-Differences	✓	✓	✓	Trends in outcomes should be similar between comparison and intervention groups at baseline.

Evaluation Design Summary

Target and Comparison Populations

Dental utilization and cost patterns among Medicaid beneficiaries turning 21 on or after March 1, 2020, through September 30, 2022 (i.e., "demonstration beneficiaries") were compared to Medicaid beneficiaries turning 18 on or after March 1, 2020, through September 30, 2022 (i.e., "comparison beneficiaries"). This age threshold for the comparison group ensured that no one in the comparison group fell into the demonstration eligible population during the study period. This choice in comparison group was motivated by the concept behind a regression

discontinuity design (RDD), which is often used for impact evaluation of programs that have a continuous eligibility index with a clearly defined cutoff score to determine eligibility. The RDD method exploits the discontinuity around the "cutoff score" for program eligibility (in this case, age) to estimate the counterfactual. For this evaluation, the comparison group was chosen to represent a group of beneficiaries who are similar in age, and thus theoretically have similar characteristics and healthcare utilization patterns, as the intervention group. In other words, beneficiaries who did not receive EPSDT dental services as part of the Amendment during the study period but are as close as possible in age to the cutoff, will be used as a comparison group to estimate the counterfactual.

Evaluation Period

Table 2-2 presents the baseline and evaluation periods.

Table 2-2—Evaluation Periods

Time Period	Dates
Baseline	March 1, 2019–February 29, 2020
Evaluation	March 1, 2020–September 30, 2022

Evaluation Measures

Table 2-3 presents the evaluation measures along with the comparison groups, data sources, and analytic approaches that were used to evaluate the Amendment.

Table 2-3—Evaluation Measures

Research Question	Measure	Intervention Group	Comparison Group	Data Source	Analytic Approach
1.1: Is the cost of EPSDT dental care for qualifying beneficiaries less than or equal to care among beneficiaries turning 18 during the same time-period?	Final paid claims encounter costs	All intervention group beneficiaries	All comparison group beneficiaries	Claims data	Cross-sectional analysis
2.1: Did beneficiaries who would otherwise have been ineligible to receive EPSDT dental services after their 21st birthday know about the waiver?	N/A	N/A	N/A	Key informant interviews	Qualitative synthesis
2.2: What were the principal challenges associated with engagement with Medicaid beneficiaries during the COVID-19 PHE?	N/A	N/A	N/A	Key informant interviews	Qualitative synthesis
2.2a: What strategies did the State pursue to address those challenges?	N/A	N/A	N/A	Key informant interviews	Qualitative synthesis

Research Question	Measure	Intervention Group	Comparison Group	Data Source	Analytic Approach
2.3: What were the unresolved or ongoing challenges related to the implementation of the demonstration flexibilities?	N/A	N/A	N/A	Key informant interviews	Qualitative synthesis
2.4: Was the rate of EPSDT dental services among qualifying beneficiaries equal to that of beneficiaries turning 18 during the same time period?	2021 CMS Child Core Set: PDENT (modified)	Intervention group beneficiaries who did not have a preventive dental visit between March 1, 2020, and their 21st birthday	Comparison group beneficiaries who did not have a preventive dental visit between March 1, 2020, and their 18th birthday	Claims data	DiD
	Non-preventive EPSDT dental services (fillings, sealants, emergency procedures)	All intervention group beneficiaries	All comparison group beneficiaries	Claims data	DiD
2.5: Is there evidence of pent-up demand in the months following the gradual reopening up of the state and resuming routine EPSDT dental care throughout 2020 and 2021?	Utilization of EPSDT dental services including exams, cleanings, X-rays, fluoride application, fillings, sealants, and emergency procedures	All intervention group beneficiaries	N/A	Claims data	Descriptive time series
2.5a: If so, does the volume of EPSDT dental services appear to account for a decline in services during the peak impact of COVID-19 on the health care system, even though COVID-19 PHE is still in effect?	Utilization of EPSDT dental services including exams, cleanings, X-rays, fluoride application, fillings, sealants, and emergency procedures	All intervention group beneficiaries	N/A	Claims data	Descriptive time series

Note: CMS: Centers for Medicare and Medicaid; COVID: coronavirus disease, DiD: difference-in-differences; EPSDT: Early and Periodic Screening, Diagnostic, and Treatment; N/A: Not available; PDENT: Preventive Dental Services, PHE: public health emergency, X-ray: electromagnetic radiation

Data Sources

The data used in the Evaluation Report include administrative data about the program implementation, Medicaid enrollment and eligibility data, demographic data, provider data, claims and encounter data, fee-for-service (FFS) claims, and key informant interviews with AHCCCS staff and health plans.

The data sources used in the Evaluation Report have many strengths making them suitable for the evaluation. The demographics in tandem with enrollment data provide the necessary information to identify the demonstration and comparison beneficiaries. The key informant interviews provided context for how the demonstration implementations evolved over time, drivers of success, areas of concern, and changes to the quality of or access to care during the demonstration.

In sum, examination of multiple data sources of both qualitative and quantitative data permits an integrative, holistic assessment of the Amendment's effects that is more rigorous and robust than analysis of either quantitative or qualitative data alone.

Administrative Data

Administrative data extracted from the Prepaid Medical Management Information System (PMMIS) were used to calculate most measures in this evaluation. These data included administrative claims/encounter data, beneficiary eligibility, enrollment, and demographic data. Provider data were utilized to identify provider type and beneficiary attribution where necessary.

Key Informant Interviews

Key informant interviews with AHCCCS staff administrators and health plans were conducted through semi-structured interview protocols and transcribed and imported into MAXQDA, where the data was coded to permit qualitative analysis. Interviews with two AHCCCS staff members and five health plans took place in February and March 2023. The aims of interviews were to capture qualitative insights about beneficiaries' understanding of the Amendment flexibilities, beneficiary outreach and education strategies, challenges associated with beneficiary engagement, and unresolved challenges related to implementing the Amendment. The transcripts, coding methodologies, and coded data were used to answer three of the research questions associated with Hypothesis 2.

Analytic Methods

Multiple analytic techniques were used depending on the type of data for the measure and the availability of the data.

Cross-Sectional Analysis

To evaluate whether the Amendment is providing cost-effective care to qualifying beneficiaries (Research Question 1.1), the evaluation estimated costs associated with EPSDT dental services among the Amendment beneficiaries in contrast to the comparison beneficiaries using a generalized linear model (GLM) with a log link and a Gaussian distribution. This model is able to account for the costs being positive and allows for a more accurate analysis of costs. This analysis allows for comparison between two groups that have a continuous outcome, such as costs, to determine if there is a significant difference between the means of the two groups.

Descriptive Time Series

Measures in which there are insufficient data points for a robust interrupted time series (ITS) analysis and no viable comparison group for difference in differences (DiD) testing were assessed through a descriptive analysis of trends in the data.

Difference-in-Differences

A DiD analysis was performed on all measures for which baseline and evaluation period data are available for both the intervention and comparison groups. This approach was utilized to evaluate the rate of EPSDT dental services among Amendment beneficiaries compared to that of comparison beneficiaries during the same time-period. This analysis compared the changes in the rates of dental services between the baseline period and the evaluation period. This allowed for expected rates for the intervention group to be calculated by considering expected changes in outcomes had the Amendment not been implemented.

For the DiD analysis to be valid, the comparison group must accurately represent the change in outcomes that would have been experienced by the intervention group in the absence of the program. To construct the most appropriate comparison group, beneficiaries turning 18 during the evaluation period were selected. This ensured no one from the comparison group falls into the demonstration eligible population, while representing a group of beneficiaries who are similar in age to the intervention group.

DiD analysis was conducted with beneficiary-level rates, using a logistic regression model for measures with binary outcomes.

The general form of the DiD model used was:

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

Where Y is the proportion for group *i* in year *t*, X is a binary indicator for the intervention group (i.e., beneficiaries turning 21 on or after March 1, 2020, through September 30, 2022), *R* is a binary indicator for the follow-up period, and u is an error term. The vector **D'** will include observable control variables as necessary, and $\boldsymbol{\gamma}$ is the related coefficient vector. The coefficient, β_1, identifies the average difference between the groups prior to the effective date of the Amendment. The time period dummy coefficient, β_2, captures the change in the outcome between baseline and evaluation time periods. The coefficient of interest, β_3, is the coefficient for the interaction term, $R_t * X$, which is the same as the dummy variable equal to one for those observations in the intervention group in the remeasurement period. This represents the estimated effect of the Amendment on the intervention group, conditional on the included observable covariates.

For the DiD analysis, the baseline period for the intervention and comparison populations was March 1, 2019, to February 29, 2020. The evaluation period was specific to each beneficiary and was defined as the period from their 21st birthday (or 18th birthday for the comparison population) until September 30, 2022. To be included in the analysis, all beneficiaries must have been enrolled in Medicaid or the Children's Health Insurance Program (CHIP) Medicaid Expansion programs for at least 90 continuous days during the baseline and/or evaluation periods.

Two approaches were taken to thoroughly evaluate Research Question 2.4 and are displayed in Table 2-4.

Table 2-4—DiD Models

Model	Eligible Population	Numerator	Measure
Model 1	Intervention and comparison group beneficiaries who did not have a preventive dental visit between March 1, 2020, and their 21st (or 18th) birthday	Number of beneficiaries with preventive dental visits after their 21st birthday	2021 CMS Child Core Set: PDENT
Model 2	Intervention and comparison group beneficiaries	Number of beneficiaries with non-preventive dental visits after their 21st birthday	Non-preventive EPSDT dental services (fillings, sealants, emergency procedures)

Note: CMS: Centers for Medicare & Medicaid Services; EPSDT: Early and Periodic Screening, Diagnostic, and Treatment; PDENT: Preventive Dental Services

Model 1 compared the rate of preventive dental visits between the intervention group and the comparison group. Beneficiaries who had a preventive dental visit between March 2020 and their 21st (or 18th) birthday will be excluded from this measure as we are only interested in the effect of the Amendment (i.e., dental services after the beneficiary's 21st birthday that otherwise would not be covered without the Amendment). Model 1 also included a control variable for the number of months enrolled between the beneficiary's 21st (or 18th) birthday and September 30, 2022. Model 2 examined the rate of non-preventive dental services between the intervention group and the comparison group.

Methodological Limitations

The COVID-19 PHE Amendment Report includes multiple data sources, methods, and metrics, each with strengths that support the validity and reliability of the results. In contrast, each of these elements also has weaknesses that limit the ability of this report to provide a comprehensive evaluation of the Amendment under review. This section elaborates on the strengths and weaknesses of the data sources, methods, and metrics used in this report.

Evaluation Design

The goal of the Amendment is to ensure that beneficiaries who turned age 21 during the period of March 1, 2020, until September 30, 2022, and were no longer eligible for EPSDT dental services, were able to receive any forgone routine dental services that were delayed due to the COVID-19 PHE. Despite the flexibilities offered by the Amendment, the COVID-19 PHE may have had unpredictable impacts that altered the evaluation outcomes in an unknown direction (e.g., cancel out the mitigating flexibilities provided by the Amendment), or there may have been other external factors that further confounded the outcomes of the evaluation.

Simultaneously with the Amendment, there were six other programs underway as a part of the AHCCCS Section 1115 Demonstration Waiver. As such, there was the potential for confounding effects from these other programs when evaluating the impact of the Amendment. Confounding from these other waiver programs is expected to be minimal, as the Amendment targeted such a narrow age range and limited number of beneficiaries.

Data Sources

While each of the data sources used in this Evaluation Report has strengths that are desirable to include in the Evaluation Design, each also has weaknesses that are important to understand within the context of the evaluation. For example, the claims/encounter data used to calculate performance metrics are generated as part of

the billing process for Medicaid and, as a result, may not be as complete or sensitive for identifying specific healthcare processes and outcomes as may be expected from a thorough review of a patient's medical chart. This weakness may be mitigated in part if the lack of sensitivity in the claims/encounter data remains relatively stable over time and if the measures calculated from these data follow trends consistent with the underlying processes and outcomes of interest.

Furthermore, the results of the qualitative analysis did not provide a statistically representative sample of experiences with the Amendment. Rather, the responses obtained through stakeholder interviews were intended to provide the context for the breadth and variety of experiences among key stakeholders. Particularly with respect to provider responses, experiences of other providers may differ from those described in this report.

Methods

For measures that rely on t-tests between groups at only one point in time, or descriptive analyses that do not have a comparison group, causal statements regarding the impact of the Amendment cannot be made. The results give the reader an understanding of whether the measures exhibited statistically significant changes after the implementation of the Amendment. The analysis, however, does not provide a sufficiently strong comparison to definitively conclude whether the Amendment caused changes in the performance measure rates. In order to address this limitation, a DiD approach was used for measures in which a proper comparison group could be identified. The results from this analysis allow the reader to draw stronger conclusions about program impacts because intervention group beneficiaries are compared to similar beneficiaries.

An additional limitation of the methodology was the inability to speak to exactly why specific measures may have improved, worsened, or remain unchanged. The statistical analysis performed in this Evaluation Report characterizes the direction, magnitude, and statistical significance of measure rate changes. In contrast, the qualitative analysis performed focuses on the implementation of the Amendment and challenges or barriers to success that were experienced by relevant stakeholders such as AHCCCS and the health plans. Although some changes in quantitative measures may be reflective of findings from qualitative analysis, these analyses are not fully aligned and do not provide a direct link between findings.

3. Results

The following section details measure results by hypotheses and related research questions for the coronavirus disease 2019 (COVID-19) public health emergency (PHE) Early and Periodic Screening and Diagnostic Treatment (EPSDT) amendment (the Amendment) to the Arizona Health Care Cost Containment System (AHCCCS) Section 1115 Demonstration Waiver. Details on measure definitions and specifications can be found in Appendix C.

Results Summary

Hypothesis 1: The COVID-19 PHE waiver will provide cost-effective care for qualifying beneficiaries.

Research Question 1.1: Is the cost of EPSDT dental care for qualifying beneficiaries less than or equal to care among beneficiaries turning 18 during the same time-period?

Table 3-1 displays estimates of per member, per month (PMPM) costs associated with EPSDT dental care among the intervention and comparison groups. A generalized linear model (GLM) with a log link and a Gaussian distribution was constructed to account for the costs being positive and allowed for a more accurate analysis of costs. Full model results are presented in Appendix B.

Because amounts of zero dollars were included in the analysis of the model, the regression-adjusted estimates for PMPM costs were low. The average PMPM cost among the intervention group was $5.95, which was $5.45 (48.5 percent) lower than the average PMPM cost of $11.41 among comparison group beneficiaries. This difference was found to be statistically significant ($p<0.001$). However, this difference may have been driven by non-utilizers with zero-dollar costs.

Table 3-1—Cost of EPSDT Dental Care, PMPM

Group	Regression Adjusted Estimates, PMPM	Difference (p-value)
Intervention	$5.95 N=2,517,382	-$5.45 (<0.001)
Comparison	$11.41 N=2,972,819	

Note: N represents member months.

Table 3-2 displays rates of service utilizers in the intervention and comparison groups. 97.8 percent of the intervention group were non-utilizers with zero-dollar costs, while 94.8 percent of the comparison group were non-utilizers with zero-dollar costs.

Table 3-2—Number of Service Utilizers and Non-Utilizers

Group	Rate of Service Utilizers	Rate of Service Non-Utilizers
Intervention	2.2% N=2,517,382	97.8% N=2,517,382
Comparison	5.2% N=2,972,819	94.8% N=2,972,819

Note: N represents member months.

Table 3-3 displays estimates of PMPM costs associated with EPSDT dental care among service utilizers in the intervention and comparison groups (i.e., beneficiaries with non-zero costs). After limiting the analysis to beneficiaries with non-zero costs, the conclusions were reversed compared to the analysis conducted with the full sample of member months with zero-dollar amounts. The average PMPM cost among intervention group beneficiaries was $272.34, which was $51.13 (23.1 percent) higher than the average PMPM cost of $221.21 among comparison group beneficiaries. This difference was found to be statistically significant ($p<0.001$). Furthermore, 153,290 comparison group member months were found to have a cost greater than zero dollars associated with it, compared to 55,015 of intervention group member months.

Table 3-3—Cost of EPSDT Dental Care Among Utilizers, PMPM

Group	Regression Adjusted Estimates, PMPM	Difference (p-value)
Intervention	$272.34 N=55,015	$51.13 (<0.001)
Comparison	$221.21 N=153,290	

Note: N represents member months.

Although the cost of EPSDT dental care for intervention group beneficiaries was less than the cost for comparison group beneficiaries when all member months were included in the analysis, the relationship was reversed when only including member months with an associated EPSDT dental visit.

To investigate this relationship further, Table 3-4 displays average cost per EPSDT dental service in the intervention and comparison groups. The average cost per EPSDT dental service received amongst intervention group beneficiaries was $53.08, compared to $42.77 amongst comparison group beneficiaries. This suggests that although there were fewer intervention group beneficiaries who utilized EPSDT dental services, amongst those who did, those dental services were more costly on average and potentially more complex.

Table 3-4—Average Cost Per EPSDT Dental Service

Group	Average Cost Per Dental Service
Intervention	$53.08 N=24,532
Comparison	$42.77 N=52,741

Note: N represents the number of beneficiaries

Conclusion: Fails to support the hypothesis

Hypothesis 2: The COVID-19 PHE waiver will give qualifying beneficiaries equal access to EPSDT dental services as beneficiaries turning 18 during the same time-period.

Hypothesis 2 was designed to identify whether the Amendment provided qualifying beneficiaries equal access to EPSDT dental services as beneficiaries turning 18 in the same time period. Of the five research questions associated with Hypothesis 2, three utilized key informant interviews to obtain qualitative data:

- Did beneficiaries who would otherwise have been ineligible to receive EPSDT dental services after their 21st birthday know about the waiver?

- What were the principal challenges associated with engagement with Medicaid beneficiaries during this COVID-19 PHE?
- What were the unresolved or ongoing challenges related to the implementation of the demonstration flexibilities?

Qualitative interviews with health plan informants and State administrators were conducted in February and March 2023 to capture insights about beneficiaries' understanding of the Amendment flexibilities, beneficiary outreach and education strategies, challenges associated with beneficiary engagement, and unresolved challenges related to implementing the Amendment. The following sections summarize key informants' description of the drivers of success or barriers in implementing and executing the Amendment.

Drivers of Success

Key informants identified numerous successes related to implementing and executing the Amendment. Health plans and State administrators cited the following drivers of successes:

- AHCCCS designed a streamlined implementation plan with minimal negative impact to providers or beneficiaries.
- AHCCCS collaborated with dental vendors to identify beneficiaries and outreach to providers.
- AHCCCS communicated openly with health plans.
  - AHCCCS met with the dental directors of health plans quarterly and aided with implementation strategies.
  - AHCCCS provided health plans with memos containing directives.
  - AHCCCS shared information and updates regularly on its website.
- AHCCCS suspended deliverables.
  - This provided health plans the ability to concentrate limited resources to successfully manage the COVID-19 PHE and associated changes.

One health plan described how it believed its care coordination strategy contributed to the success of the Amendment. Every beneficiary under 21 in the health plan was assigned to a dental home, allowing beneficiaries to develop ongoing relationships with providers through their dental homes. The health plan then used providers and dental homes to communicate with beneficiaries throughout the COVID-19 PHE. This strategy of promoting direct provider/beneficiary communication aligned with the Centers for Disease Control and Prevention (CDC) COVID-19 public messaging campaigns and guidelines.

Several health plans highlighted tele-dentistry and off-site dentistry as successful initiatives. Health plans utilized tele-dentistry services throughout the COVID-19 PHE to determine the scope and severity of beneficiaries' dental problems without requiring an in-person visit. Additionally, health plans conducted dental fairs throughout the State, allowing providers to screen beneficiaries and refer them to traditional brick and mortar treatment. Fully equipped mobile dentistry vehicles also supplied care directly to beneficiaries during the COVID-19 PHE.

Challenges and Barriers

Health plans and State administrators experienced several challenges providing care through the Amendment. Health plans with a commercial line of business offered dental personal protective equipment (PPE) reimbursement to providers through their commercial product line. The health plans requested that AHCCCS similarly reimburse dental PPE used for treating Medicaid beneficiaries. At that time during the COVID-19 PHE, PPE cost approximately four times its normal value. AHCCCS ultimately denied the health plans' request to reimburse dental PPE because they would have had to reimburse medical PPE in addition to dental PPE at the increased cost. As a result, some dental providers experienced a lack of PPE during the initial stages of the COVID-19 PHE.

Individual health plans discussed other general challenges:

- Difficulties aligning with the frequently changing COVID-19 PHE guidelines and recommendations.
- Fears of the impact of pending eligibility changes and disenrollment on beneficiaries upon the termination of the COVID-19 PHE declaration.

Additionally, at the time of the interviews, State administrators questioned whether the Amendment captured as many eligible beneficiaries as possible.

Research Question 2.1: Did beneficiaries who would otherwise have been ineligible to receive EPSDT dental services after their 21st birthday know about the waiver?

Prior to the implementation of the Amendment, health plans employed efficient methods to contact beneficiaries turning 21 to inform them of their impending ineligibility to receive EPSDT dental services. Health plans distributed a beneficiary handbook when a beneficiary joined the health plan that contained information about beneficiaries' eligibility. In addition, health plans displayed this information on their website for beneficiaries to access. As a result, health plans and State administrators felt confident that beneficiaries were aware of the standard termination of their eligibility. Following the implementation of the Amendment, health plans used similar methods to contact beneficiaries about the extended eligibility granted by the Amendment. Beginning in January 2021, health plans dispersed the information about the extended eligibility by:

- Providing updates on their websites
- Mailing newsletters and other informational materials to beneficiaries
  - These letters informed beneficiaries about the end of their service eligibility, supplied details about EPSDT dental services, and notified beneficiaries about the Amendment.
- Calling beneficiaries
  - One health plan informant called beneficiaries without an appointment to receive EPSDT dental services to educate them about the dental benefits and help them schedule care.
  - A second health plan called individuals who filed an appeal requesting dental services after they turned 21. The health plan contacted these beneficiaries and assisted them with scheduling covered dental services.
- Requesting providers personally alert beneficiaries about their benefits
- Faxing providers to educate them about the Amendment

Health plans' strategies to determine which beneficiaries to contact about their extended eligibility varied. One health plan decided not to change the standard letter sent to 20-year-old beneficiaries losing their eligibility because the health plan was unsure how long the extended eligibility would be available. Instead, the health plan reached out to beneficiaries covered by the Amendment individually. A second health plan collaborated with its dental vendor to identify beneficiaries with open prior authorizations and worked with these beneficiaries to get them into dental services.

> *We wanted the dentists to know they could work with [the health plan] individually on a case-by-case basis for these eligible members. – Health Plan Staff*

Most health plans reported encountering difficulties reaching beneficiaries due to inaccurate contact information. Throughout the Amendment, AHCCCS maintained beneficiaries' contact information within its internal system and provided contact information to health plans. In many cases, beneficiaries were unreachable at the phone number or address provided by AHCCCS by the time health plans performed outreach. As a result, health plans were unable to engage with certain beneficiaries. To circumvent this barrier, many health plans utilized claims data to identify the beneficiaries' provider. The health plans then reached out to the provider to obtain up-to-date contact information for that beneficiary. One health plan utilized the Arizona State Immunization Information System (ASIIS) to find up-to-date contact information.

State administrators stated that issues with correct contact information were not unique to the expanded dental eligibility population and were common to the entire Medicaid population. However, some health plans noted that challenges contacting beneficiaries turning 21 were intensified by life transitions this population often experiences, such as moving out of families' homes and becoming independent. Additionally, beneficiaries were unconcerned about being disenrolled during the course of the COVID-19 PHE and may have been less likely to update their contact information with AHCCCS, further exacerbating difficulties reaching beneficiaries.

State administrators believed that beneficiaries were aware of the eligibility extension due to outreach efforts. In addition to health plan efforts, State administrators updated the beneficiary newsletter and the AHCCCS website with Amendment information.

Research Question 2.2: What were the principal challenges associated with engagement with Medicaid beneficiaries during this COVID-19 PHE?

Sub Research Question 2.2a: What strategies did the State pursue to address those challenges?

The COVID-19 PHE increased complications to providing dental services to beneficiaries. Informants noted beneficiaries were fearful of visiting the dentist during the initial months of the COVID-19 PHE because they did not want to contract the virus. AHCCCS took measures to provide COVID-19 vaccines to beneficiaries to encourage them to go back to doctors and dentists. AHCCCS partnered with outside stakeholders and organizations to help facilitate the vaccination efforts. In addition, AHCCCS increased the administration fee for reimbursement of the vaccine to incentivize providers to administer the vaccine.

> *There was still probably some tremendous chilling effect about going to the dentist in the early part of the public health emergency when we didn't have vaccines available…Some members [thought] I missed that appointment, but I'm not going to risk going to the dental office and contracting the virus. — State Administrator*

In the first weeks and months of the COVID-19 PHE, many dental offices were forced to close. When dental offices reopened, their staff levels were impacted by the virus as well as the lack of PPE, delaying their ability to provide dental services. Health plans noted that some dental offices and ancillary dental services did not reopen at all, or only reopened for limited hours, which restricted beneficiaries' access to needed dental services. Health plans monitored their provider networks to track closures. By early 2023, staff shortages were improving but continued to impact rural areas and providers' abilities to engage with beneficiaries promptly. In an attempt to alleviate the burden on providers, one health plan began performing outreach calls and scheduling patients for appointments. The same health plan collaborated with dental schools to recruit dentists to work in rural areas of the State.

Inaccurate contact information for beneficiaries, as discussed in detail for Research Question 2.1, significantly hindered health plans' ability to engage with beneficiaries.

Informants varied in their views of whether telehealth was appropriate for dental care. One health plan shared its belief that tele-dentistry was not a suitable replacement for in-person dental care, but several other health plans discussed positive impacts of tele-dentistry, such as the opportunity to assess emergent needs and identify the scope and severity of the issue before the beneficiary could be seen in-person.

Research Question 2.3: What were the unresolved or ongoing challenges related to the implementation of the demonstration flexibilities?

At the time of the interviews, State administrators and health plans shared limited unresolved or ongoing challenges related to the implementation of the Amendment. Two years after the Centers for Medicare & Medicaid Services' (CMS') approval of the Amendment in January 2021, implementation-related challenges were largely resolved, and informants instead grappled with challenges related primarily to outreach, education, and ensuring dental services were received.

One area with unresolved challenges was the delay between the beginning of the COVID-19 PHE in March 2020 and CMS' approval of the Amendment in January 2021. One State administrator noted this delay may have resulted in some beneficiaries not receiving or utilizing extended coverage. Claims for beneficiaries who turned 21 during this 10-month gap were originally denied, requiring an override approval from health plans. One health plan did not realize beneficiaries were retroactively covered from March 1, 2020, which further resulted in some beneficiaries turning 21 around the retroactive date not receiving covered EPSDT dental services. One State administrator expressed that the delay in implementing the Amendment and its flexibilities was a learning exercise; AHCCCS can reflect on this experience to identify actions that might have increased the speed at which the flexibility was approved and therefore implemented.

Once the flexibility was granted then we could push out the information to the health plan…because there was this delay in CMS approval for the flexibility by that very nature, then we probably didn't capture as many eligibles as we should have. — State Administrator

Monetary resources remained an ongoing challenge. Rates for dental services had not increased for several years to keep pace with the rising costs of goods and dental services. As a result, funding salaries, renting space for offices, and paying for dental supplies posed a challenge for organizations with limited financial resources. One health plan shared that some providers in their network stopped caring for beneficiaries under 21, reduced staff, and decreased operating hours to save money. Another health plan expressed its desire to create a position dedicated to coordinating oral health; however, the funding for such a position was not available.

Research Question 2.4: Was the rate of EPSDT dental services among qualifying beneficiaries equal to that of beneficiaries turning 18 during the same time period?

Two measures, *CMS Child Core Set: PDENT (modified)* and *Non-preventive EPSDT dental services (fillings, sealants, emergency procedures)*, were used to compare rates of EPSDT dental services amongst beneficiaries qualifying for the intervention and beneficiaries turning 18 years of age during the same time-period.

Table 3-5 shows the results of the difference-in-differences (DiD) analysis that was conducted to evaluate the rate of preventive EPSDT dental services among demonstration beneficiaries and a comparison group. The baseline period was defined as March 1, 2019, to February 29, 2020. The evaluation period was defined for each beneficiary as the period from their 21st birthday (or 18th) birthday for the comparison population) through September 30, 2022. Beneficiaries who had a preventive dental visit between March 2020 and their 21st (or 18th) birthday were excluded from this measure as only the effect of the Amendment (i.e., dental services after the beneficiary's 21st birthday that otherwise would not be covered without the Amendment) is of interest. Full model results are presented in Appendix B.

Rates of visits for preventive EPSDT dental services declined for both the intervention and comparison groups between the baseline and evaluation periods with greater declines observed in the intervention group. The percentage of beneficiaries using preventive dental services fell between the baseline and evaluation period by 18.5 percentage points for the intervention group, and 13.3 percentage points for the comparison group. This was a statistically significant difference of 5.1 percentage points ($p<0.001$).

Table 3-5—Preventive Dental Services

	Regression Adjusted Rates			
	Time Period			DiD Estimate
Group	Baseline Period	Evaluation Period	Change	(p-value)
Intervention	19.9% N=80,898	1.5% N=80,898	-18.5pp	-5.1pp (<0.001)
Comparison	38.0% N=98,096	24.7% N=98,096	-13.3pp	

Note: N represents member months, pp=percentage point. Baseline Period: March 1, 2019, to February 29, 2020. Evaluation Period: March 1, 2020, to July 10, 2023. Note that some numbers presented may not tie out due to rounding.

Table 3-6 shows the results of the DiD analysis evaluating the rate of visits for non-preventive EPSDT dental services among Amendment beneficiaries and a comparison group before and after the demonstration. The baseline period is defined as March 1, 2019, to February 29, 2020. The evaluation period is defined for each beneficiary as the period from their 21st birthday (or 18th birthday for the comparison population) through September 30, 2022. Full model results are presented in Appendix B.

The decline in the percentage of beneficiaries using non-preventive dental services from the baseline period to evaluation period was 7.0 percentage points greater for the intervention group than the comparison group, a statistically significant difference ($p<0.001$).

Rates of non-preventive dental services were also observed to be greater than rates of preventive dental services across all groups and time periods. However, similar to the results for preventive dental services, rates of visits for non-preventive EPSDT dental services also declined for both the intervention and comparison groups between the baseline and evaluation periods with greater declines observed in the intervention group.

Due to the statistically significant differences in the change in rates between the intervention group and the comparison group from the baseline period to the evaluation period, the evidence does not support the hypothesis that the rate of EPSDT dental services among qualifying beneficiaries was equal to that of beneficiaries turning 18 during the same time-period. As a result, these findings do not support the hypothesis that beneficiaries covered under the waiver had equal access to preventive or non-preventive EPSDT dental services as comparison group beneficiaries.

Table 3-6—Non-Preventive EPSDT Dental Services

Group	Regression Adjusted Rates Time Period Baseline Period	Evaluation Period	Change	DiD Estimate (p-value)
Intervention	25.3% N=94,105	6.7% N=94,105	-18.6pp	-7.0pp (<0.001)
Comparison	41.8% N=109,651	30.2% N=109,651	-11.6pp	

Note: N represents member months, pp=percentage point. Baseline Period: March 1, 2019, to February 29, 2020. Evaluation Period: March 1, 2020, to July 10, 2023.

Preventive Conclusion: Fails to support the hypothesis

Non-Preventive Conclusion: Fails to support the hypothesis

Research *Question 2.5: Is there evidence of pent-up demand in the months following the gradual reopening up of the State and resuming routine EPSDT dental care throughout 2020 and 2021?*

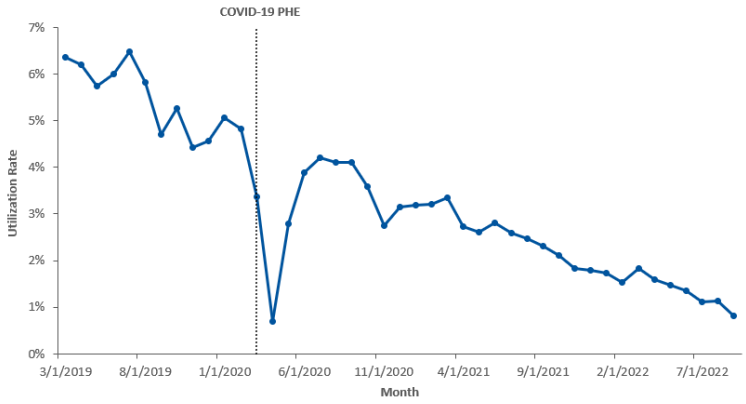
Sub Research Question 2.5a: If so, does the volume of EPSDT dental services appear to account for a decline in dental services during the peak impact of COVID on the health care system, even though the COVID-19 PHE was still in effect?

Figure 3-1 displays monthly rates of utilization of EPSDT dental services among intervention group beneficiaries between March 2019 and September 2022. Monthly utilization was at its peak in March 2019 through July 2019, peaking at approximately seven percent. The rate began to decrease in the period afterwards beginning in August 2019 and declined sharply in March 2020 and April 2020 due to stay-at-home orders at the start of the COVID-19 PHE. The rate of monthly utilization of EPSDT dental services rose in the summer of 2020 once dental offices began to reopen for dental services, signifying potential pent-up demand. However, in October 2020 rates

continued to follow the decreasing trend observed before the COVID-19 PHE and did not return to pre-COVID-19 PHE levels.

Though there was an observed increase in utilization in June 2020, this was consistent with the decreasing trend observed prior to the COVID-19 PHE. Outside of the sharp dip at the start of the COVID-19 PHE, monthly utilization of EPSDT dental services declined consistently from March 2019 through September 2022. This could possibly be due to an age-out effect, as beneficiaries approached the age of 21 and prepared to transition off EPSDT dental services. Although there is no clear evidence of an abnormally higher rate shortly following the gradual reopening that would indicate pent-up demand, the rate of utilization among beneficiaries over the age of 21 resumed its pre-COVID-19 PHE downward trend. This suggests that some beneficiaries were able to obtain EPSDT dental services covered under the Amendment to complete their treatment plans.

Figure 3-1—Monthly Utilization of EPSDT Dental Services



Conclusion: Fails to support the hypothesis

Conclusions

Key informants from AHCCCS and the health plans described efforts to reach out to beneficiaries regarding continued coverage of EPSDT dental services after turning 21. Although they encountered issues with contacting some beneficiaries with inaccurate contact information, plans and AHCCCS described robust outreach strategies to mitigate these challenges, such as reaching out to providers the beneficiary had seen or using alternative data sources.

Despite these efforts, analysis of quantitative data does not indicate that beneficiaries turning 21 continued to utilize dental services offered by the Amendment at the same rate as prior to the COVID-19 PHE. The rate of preventive EPSDT dental visits declined from 19.9 percent prior to the COVID-19 PHE to only 1.5 percent after the COVID-19 PHE for beneficiaries turning 21, a decline of 18.5 percentage points. By comparison, beneficiaries close in age who maintained standard coverage throughout COVID-19 PHE also exhibited a substantial decline, but not to the same degree (falling 13.3 percentage points) and maintained a significantly higher rate during the COVID-19 PHE period at 24.7 percent. Moreover, analysis of per-member per-month cost illustrates that beneficiaries turning 21 who did utilize dental services tended to have higher costs, potentially indicative of more complex and higher-need dental services.

Finally, there was no clear evidence of pent-up demand after the gradual reopening began in approximately June 2020. However, examination of monthly rates of EPSDT dental services before and after the COVID-19 PHE began showed a consistent downward trend. The fact that beneficiaries 21 years of age resumed this downward trend after the reopening suggests that some beneficiaries may have been aware that their coverage continued and were able to access necessary dental services, albeit not at the same rate as prior to the COVID-19 PHE.

4. Lessons Learned and Best Practices

The coronavirus disease 2019 (COVID-19) public health emergency (PHE) Early and Periodic Screening and Diagnostic Treatment (EPSDT) amendment (Amendment) to the Arizona Health Care Cost Containment System (AHCCCS) Section 1115 Demonstration Waiver was designed to provide continued coverage for beneficiaries who were unable to obtain dental care during the COVID-19 PHE shutdown and would have otherwise aged out of coverage by the time dental offices reopened. A critical component to the success of the Amendment was ensuring beneficiaries knew that dental care was still covered even after turning 21. There were several challenges that AHCCCS and its health plans faced, which provide lessons learned for similar situations in the future. The primary challenge related to contacting beneficiaries turning 21 and encouraging them to complete their dental care after the COVID-19 PHE. Not only was this population experiencing life transitions at this age, such as moving out of families' homes, but the significant socioeconomic impact of the COVID-19 PHE and associated stay-at-home orders exacerbated these disruptions, resulting in some beneficiaries being unconcerned about maintaining care or the possibility of losing coverage.

AHCCCS, its health plans, and providers engaged in a multi-pronged approach to raise awareness and encourage beneficiaries to maintain dental care. One health plan indicated utilizing a beneficiary's dental home as a successful strategy to communicate with them throughout the COVID-19 PHE. Health plans also provided updates on their websites, mailed materials to beneficiaries, called beneficiaries to inform them about the coverage of EPSDT dental services, and communicated with providers to ensure they were aware of the Amendment. To account for changes in beneficiary contact information, several health plans used claims data to identify providers that beneficiaries had seen to contact them for updated information while another health plan utilized alternative data sources to find up-to-date information.

Notably, one health plan described identifying beneficiaries without an appointment and calling them to provide education about dental benefits and schedule appointments to receive care. This opt-out approach to maintaining dental care (i.e., health plans attempt to schedule appointments and the beneficiary must "opt-out") maximized the likelihood for beneficiaries to obtain care. Opt-out approaches have been well documented in behavioral economics to encourage a preferred behavior as the default option and is a best practice that can be replicated in similar situations.[4-1]

[4-1] See, e.g., Cho & Bates (2018) "Behavioral Economics Interventions in Clinical Decision Support Systems," *Yearb Med Inform,* 27(1), 114-121.

Appendix A. Evaluation Design

Appendix A contains the Centers for Medicare & Medicaid Services (CMS)-approved evaluation design for the coronavirus disease 2019 (COVID-19) public health emergency (PHE) Early and Periodic Screening and Diagnostic Treatment (EPSDT) amendment (the Amendment) to the Arizona Health Care Cost Containment System (AHCCCS) Section 1115 Demonstration Waiver.

Arizona Health Care Cost Containment System

Arizona's Section 1115 Medicaid Waiver – COVID-19 Amendment

Evaluation Design Plan

November 2020

HSAG HEALTH SERVICES ADVISORY GROUP

Table of Contents

1. Background

The Centers for Medicare & Medicaid Services (CMS) gave approval for the coronavirus disease 2019 (COVID-19) public health emergency (PHE) (11-W-00275/9) amendment to the Arizona Health Care Cost Containment System (AHCCCS) Section 1115 demonstration on January 19, 2021. The demonstration amendment is retroactive from March 1, 2020, through 60 days after the end of the PHE (including any renewal of the PHE). The determination that a PHE still exists was last renewed effective October 18, 2021.[1-1] This waiver allows Arizona to cover Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) dental services authorized prior to a beneficiary turning age 21 for those beneficiaries who turned 21 on or after March 1, 2020, and through 60 days after the termination of the COVID-19 PHE and who remain Medicaid eligible.

The COVID-19 pandemic has profoundly altered the environment for delivering Medicaid-funded dental services, as many dental offices in Arizona have been either closed or operating at limited capacity during the pandemic. Beneficiaries are eligible for EPSDT dental services up until their 21st birthday. However, when the pandemic began, this population of beneficiaries may have forgone routine dental care or dental care authorized prior to turning 21 due to pandemic mitigation strategies (e.g., stay-at-home orders, quarantine mandates.), and subsequently aged out (turned 21) on or after March 1, 2020. As a result, they would no longer remain eligible for EPSDT services absent the waiver. As AHCCCS does not provide adult comprehensive dental benefits, it was important for these members aging out of EPSDT services to complete their dental coverage, both preventive services as well as any treatment plans. As such, CMS has granted the current expenditure authority, which will enable such beneficiaries to receive this foregone dental care. This demonstration will assist the state in delivering the most effective care to its beneficiaries in light of the COVID-19 PHE, as well as support the key objective of furnishing medical assistance in a manner that is intended to protect, to the greatest extent possible, the health, safety, and welfare of individuals and providers who may be affected by COVID-19.

As requested in the demonstration approval letter, AHCCCS is required to track demonstration expenditures and to evaluate the connection between those expenditures, the State's response to the PHE, as well as the cost-effectiveness of those expenditures. AHCCCS is required to submit a final report, which will consolidate the monitoring and evaluation reporting requirements associated with the expenditure authority. The Evaluation Design Plan identifies research questions developed by AHCCCS that pertain to the approved expenditure authority and outline how the state will test whether and how the approved waiver and expenditure authorities have affected the State's response to the PHE.

[1-1] U.S. Department of Health & Human Services. Renewal of Determination That A Public Health Emergency Exists. Oct 15, 2021. Available at: https://www.phe.gov/emergency/news/healthactions/phe/Pages/COVDI-15Oct21.aspx Accessed on: Nov 2, 2021.

2. Evaluation Questions and Hypotheses

The evaluation of the waiver demonstration will test whether and how the waiver and expenditure authorities mitigated any potential negative impacts of the coronavirus disease 2019 (COVID-19) public health emergency (PHE). Evaluation hypotheses are tailored to this core objective, and will be assessed via the following research questions:

Hypothesis 1: The PHE waiver will provide cost-effective care for qualifying beneficiaries.

- Research Question 1.1: Is the cost of Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) care for qualifying beneficiaries less than or equal to care among beneficiaries turning 19 during the same time-period?

Hypothesis 2: The PHE waiver will give qualifying beneficiaries equal access to EPSDT services as beneficiaries turning 19 during the same time-period.

- Research Question 2.1: Did beneficiaries who would otherwise have been ineligible to receive services after their 21st birthday know about the waiver?
  - Key informant interviews: Did most members know they would be ineligible upon turning 21 in the first place? Was any outreach/education provided among members to inform them about the waiver?
- Research Question 2.2: What were the principal challenges associated with engagement with Medicaid beneficiaries during this public health emergency?
  - Sub Research Question 2.2a: What strategies did the State pursue to address those challenges?
- Research Question 2.3: What were the unresolved or ongoing challenges related to the implementation of the demonstration flexibilities?
- Research Question 2.4: Was the rate of EPSDT services among qualifying beneficiaries equal to that of beneficiaries turning 19 during the same time period?
- Research Question 2.5: Is there evidence of pent-up demand in the months following the gradual opening up of the state and resuming routine care throughout 2020 and 2021?
  - Sub Research Question 2.5a: If so, does the volume of services appear to account for a decline in services during the peak impact of COVID on the health care system, even though PHE is still in effect?

3. Methodology

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

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

Table 3-1—Sampling of Analytic Approaches

Analytic Approach	Baseline Data	Comparison Group	Allows Causal Inference	Notes
Randomized Controlled Trial		✓	✓	Requires full randomization of intervention and comparison group.
Difference-in-Differences	✓	✓	✓	Trends in outcomes should be similar between comparison and intervention groups at baseline.
Panel Data Analysis	✓		✓	Requires sufficient data points both prior to and after implementation.
Regression Discontinuity		✓	✓	Program eligibility must be determined by a threshold
Interrupted Time Series	✓		✓	Requires sufficient data points prior to and after implementation.
Pre-test/post-test	✓			Assesses whether a change was observed after implementation without a comparison group.
Cross-Sectional Analysis		✓		Assesses differences between groups after implementation. Does not account for pre-existing differences.

Evaluation Period

This evaluation will cover the period from March 1, 2020, through 60 days after the end of the public health emergency (PHE) or September 30, 2022[3-1], whichever is earlier. The September 30, 2022, date is chosen as it is the end of the Arizona Health Care Cost Containment System (AHCCCS) Section 1115 waiver demonstration period and is expected to be a sufficient amount of time to determine any impacts of the waiver demonstration as it overlaps with the height of the pandemic.

Intervention and Comparison Populations

In accordance with the Centers for Medicare & Medicaid Services (CMS) guidance for coronavirus disease 2019 (COVID-19) Section 1115(a) demonstrations, the State proposes comparing utilization and cost patterns among Medicaid beneficiaries turning 21 on or after March 1, 2020, through 60-days following the end of the PHE or September 30, 2022, whichever is earlier (i.e., "demonstration beneficiaries") to Medicaid beneficiaries turning 19 on or after March 1, 2020, through 60-days following the end of the PHE or September 30, 2022, whichever is earlier (i.e., "comparison beneficiaries"). This age threshold for the comparison group ensures that no one in the comparison group falls into the demonstration eligible population during the study period. This choice in comparison group is motivated by the concept behind a regression discontinuity design (RDD), which is often used for impact evaluation of programs that have a continuous eligibility index with a clearly defined cutoff score to determine eligibility. The RDD method exploits the discontinuity around the "cutoff score" for program eligibility (in this case, age) to estimate the counterfactual. For this evaluation, the comparison group is chosen to represent a group of beneficiaries who are similar in age and thus theoretically have similar characteristics and health care utilization patterns as the intervention group. In other words, beneficiaries who did not receive any Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) services as part of the PHE waiver during the study period but are as close as possible in age to the cutoff will be used as a comparison group to estimate the counterfactual.

Analytic Methods

Cross-Sectional Analysis

To evaluate whether the PHE waiver is providing cost-effective care to qualifying beneficiaries (Research Question 1.1), the independent evaluation will estimate costs associated with EPSDT services among the demonstration beneficiaries in contrast to the comparison beneficiaries using a t-test. A t-test allows for comparison between two groups that have a continuous outcome, such as costs, to determine if there is a significant difference between the means of the two groups.

Difference-in-Differences

A difference-in-differences (DiD) analysis will be performed on all measures for which baseline and evaluation period data are available for both the intervention and comparison groups. Because this is the preferred analytic approach, the DiD will be utilized to evaluate the rate of EPSDT services among demonstration beneficiaries

[3-1] CMS approved a one-year extension of the AHCCCS section 1115 demonstration until September 30, 2022. Centers for Medicare & Medicaid Services. Letter of Temporary Extension of Section 1115 Demonstration. Sept 30, 2021. Available at: https://www.medicaid.gov/medicaid/section-1115-demonstrations/downloads/az-hccc-ca.pdf. Accessed on: Nov 4, 2021.

compared to that of comparison beneficiaries during the same time-period This analysis will compare the changes in the rates of dental services between the baseline period and the evaluation period. This allows for expected rates for the intervention group to be calculated by considering expected changes in outcomes had the PHE waiver not been implemented. This is done by subtracting the average change in the comparison group from the average change in the intervention group, thus removing biases from the evaluation period comparisons due to permanent differences between the two groups. In other words, any changes in the outcomes caused by factors external to the policy would apply to both groups equally and the DiD methodology will remove the potential bias. The result is a clearer picture of the actual effect of the program on the evaluated outcomes.

The generic DiD model is:

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

Where Y is the proportion for group *i* in year *t*, X is a binary indicator for the intervention group (i.e., beneficiaries turning 21 on or after March 1, 2020, through 60 days following the end of the PHE or September 30, 2022, whichever is earlier), *R* is a binary indicator for the follow-up period, and u is an error term. The vector **D'** will include observable covariates, where available, to ensure comparability of the groups for any measure-specific subgrouping (e.g., to address non-response bias) and $\boldsymbol{\gamma}$ is the related coefficient vector. The coefficient, β_1, identifies the average difference between the groups prior to the effective date of the PHE waiver. The time period dummy coefficient, β_2, captures the change in the outcome between baseline and evaluation time periods. The coefficient of interest, β_3, is the coefficient for the interaction term, $R_t * X$, which is the same as the dummy variable equal to one for those observations in the intervention group in the remeasurement period. This represents the estimated effect of the PHE waiver on the intervention group, conditional on the included observable covariates.

The generic DiD calculation is:

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

Assuming trends in the outcome between the comparison and intervention groups are approximately parallel during the baseline period, the estimate will provide the expected rates without intervention. As the goal of the PHE waiver amendment is that utilization and costs are maintained for the intervention group, a non-significant β_3 coefficient would be consistent with a successful waiver amendment, and a significant negative β_3 coefficient would be consistent with the intervention group not experiencing outcomes at the same level as the comparison group. In addition to assessing the degree of statistical significance for the result, as represented by the p-value associated with β_3, the results will be interpreted in a broader context of clinical and practical significance.[3-2]

For the DiD analysis, the baseline period for the intervention and comparison populations will be March 1, 2019, to February 29, 2020. The evaluation period will be specific to each beneficiary and will be defined as the period from their 21st birthday (or 19th birthday for the comparison population) until 60 days after the end of the PHE, or September 30, 2022, whichever is earlier. To be included in the analysis, all beneficiaries must be enrolled in Medicaid or the Children's Health Insurance Program (CHIP) Medicaid Expansion programs for at least 90 continuous days during the baseline and/or evaluation periods.

[1-2] Results from statistical analyses will be presented and interpreted in a manner that is consistent with the spirit of recent guidance put forth in *The American Statistician.* Ronald L. Wasserstein, Allen L. Schirm & Nicole A. Lazar (2019) Moving to a World Beyond "p < 0.05", The American Statistician, 73:sup1, 1-19, DOI: 10.1080/00031305.2019.1583913.

To thoroughly evaluate Research Question 2.4, the independent evaluator will take two approaches to the DiD analysis (Table 3-2).

Table 3-2—DiD models

Model	Eligible Population	Numerator	Measure
Model 1	Intervention and comparison group beneficiaries who did not have a preventive dental visit between March 1, 2020 and their 21st (19th) birthday	Number of beneficiaries with preventive dental visits after their 21st birthday	CMS Child Core Set: PDENT
Model 2	Intervention and comparison group beneficiaries	Number of beneficiaries with non-preventive dental visits after their 21st birthday	Non-preventive EPSDT dental services (fillings, sealants, emergency procedures)

Model 1 will compare the rate of preventive dental visits between the intervention group and the comparison group. Beneficiaries who had a preventive dental visit between March 2020 and their 21st or 19th birthday will be excluded from this measure as we are only interested in the effect of the PHE waiver (i.e., dental services after the beneficiary's 21st birthday that otherwise would not be covered without the PHE waiver). Model 1 will also include a control variable for the number of months enrolled between the beneficiary's 21st or 19th birthday and September 30, 2022. Model 2 will examine the rate of non-preventive dental services between the intervention group and the comparison group.

Descriptive Time Series

To answer Research Question 2.5 and determine if there is evidence of pent-up demand in the months following the gradual opening up of the State and resuming routine care throughout 2020 and 2021, a descriptive time series analysis will be conducted. Per member per month healthcare utilization trends for the intervention population will be studied to determine whether the PHE waiver may have mitigated some of the impact to beneficiaries who had forgone dental services due to the pandemic and have subsequently aged out.

Qualitative Synthesis

To better understand the challenges presented by the COVID-19 PHE to the Medicaid program, how flexibilities of the PHE demonstration assisted in meeting those challenges, and any lessons learned for responding to similar PHEs in the future (Research Questions 2.1 – 2.3), a series of key informant interviews with AHCCCS and representatives from the health plans will be conducted. Key informant interviewees will be recruited from nominees identified by the health plans and AHCCCS. Interviews will invite input from health plan representatives and appropriate individuals identified by AHCCCS as having experience and subject matter expertise regarding the development and implementation of the PHE waiver.

The information obtained from these interviews will be synthesized with the results from other quantitative data analyses providing an in-depth discussion of each of the domains/objectives to be considered. As the key informant interviews are being conducted, the independent evaluator will perform ongoing and iterative review of the interview responses and notes to identify overall themes and common response patterns. Unique responses that are substantively interesting and informative will also be noted and may be used to develop probing questions for future interviews. The results of these preliminary analyses will be used to document the emergent and overarching themes related to this research question.

Following the completion of the key informant interviews, the interview notes and transcripts will be reviewed using standard qualitative analysis techniques. The data will first be examined through open coding to identify key concepts and themes that may not have been captured as emergent themes during previous analyses. After

identifying key concepts, axial coding techniques will be used to develop a more complete understanding of the relationships among categories identified by respondents in the data. The open and axial coding will be performed with a focus on identifying the dimensionality and breadth of responses to the research questions posed for the overall project.

Measures

Table 3-3 details the proposed measures, populations, data sources and proposed analytic methods that will be used to evaluate the PHE waiver. While AHCCCS covers a preventive visit every six months, the modified annual CMS Child Core Set measure PDENT is appropriate for capturing whether the PHE waiver ensured members received services otherwise forgone, rather than the number of services received.

Table 3-3—Evaluation Design Measures

Research Question	Measure	Intervention Group	Comparison Group	Data Source	Analytic Approach
Research Question 1.1: Is the cost of EPSDT care for qualifying beneficiaries less than or equal to care among beneficiaries turning 19 during the same time-period?	Final paid claims encounter costs	All intervention group beneficiaries	All comparison group beneficiaries	Claims data	Cross-sectional analysis
Research Question 2.1: Did beneficiaries who would otherwise have been ineligible to receive services after their 21st birthday know about the waiver?	N/A	N/A	N/A	Key informant interviews	Qualitative synthesis
Research Question 2.2: What were the principal challenges associated with engagement with Medicaid beneficiaries during this public health emergency?	N/A	N/A	N/A	Key informant interviews	Qualitative synthesis
Research Question 2.3: What were the unresolved or ongoing challenges related to the implementation of the demonstration flexibilities?	N/A	N/A	N/A	Key informant interviews	Qualitative synthesis

Research Question	Measure	Intervention Group	Comparison Group	Data Source	Analytic Approach
Research question 2.4: Was the rate of EPSDT services among qualifying beneficiaries equal to that of beneficiaries turning 19 during the same time-period?	CMS Child Core Set: PDENT (modified)	Intervention group beneficiaries who did not have a preventive dental visit between March 1, 2020 and their 21st birthday	Comparison group beneficiaries who did not have a preventive dental visit between March 1, 2020 and their 19th birthday	Claims data	DiD
	Non-preventive EPSDT dental services (fillings, sealants, emergency procedures)	All intervention group beneficiaries	All comparison group beneficiaries	Claims data	DiD
Research Question 2.5: Is there evidence of pent-up demand in the months following the gradual opening up of the state and resuming routine care throughout 2020 and 2021?	Utilization of EPSDT dental services including exams, cleanings, X-rays, fluoride application, fillings, sealants, and emergency procedures	All intervention group beneficiaries	N/A	Claims data	Descriptive time series

Data Sources

Administrative Data

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

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

Key Informant Interviews

Key informant interviews with AHCCCS staff and health plans will be conducted through semi-structured interview protocols and transcribed and imported into MAXQDA where the data will be coded to permit qualitative analysis. The transcripts, coding methodologies and coded data will be used to answer the appropriate research questions.

4. Methodology Limitations

The goal of the demonstration is to ensure that beneficiaries who turned age 21 during the period of March 1, 2020, until 60 days after the end of the public health emergency (PHE), and are no longer eligible for Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) services, are able to receive any forgone routine dental services that were delayed due to the PHE. Despite the flexibilities offered by the PHE demonstration, the coronavirus disease 2019 (COVID-19) pandemic may have unpredictable impacts that alter the evaluation outcomes in an unknown direction (e.g., cancel out the mitigating flexibilities provided by the PHE demonstration), or there may be external factors that further confounds the outcomes of the evaluation.

Simultaneously with the PHE waiver demonstration, there are six other programs currently underway as a part of the Arizona Health Care Cost Containment System (AHCCCS) Section 1115 waiver demonstration project. As such, there is the potential for confounding effects from these other programs when evaluating the impact of the PHE demonstration. Confounding from these other waiver programs is expected to be minimal, as the PHE demonstration targets such a narrow age range and limited number of beneficiaries.

For measures that rely on t-tests between groups at only one point in time, or descriptive analyses that do not have a comparison group, causal statements regarding the impact of the PHE waiver cannot be made. Additionally, the difference-in-differences (DiD) method described above relies on the assumption that outcomes trends in both the intervention and comparison groups follow parallel trends during the pre-period. Visually inspection of pre-period trends will be undertaken, as violation of the parallel trends assumption may lead to biased estimation of the treatment effect.

5. Reporting

Results from this evaluation will be reported separately from the final summative report for the evaluation of the Arizona Health Care Cost Containment System's (AHCCCS') broader Section 1115 waiver demonstration approved from October 1, 2016, through September 31, 2022 (Project Number l l-W-00275/09).

A. Timeline and Milestones

The following project timeline has been prepared for Arizona's 1115 waiver demonstration evaluation outline in the preceding sections. This timeline should be considered preliminary and subject to change based upon approval of the Evaluation Design and implementations of the waiver amendment. Table A-1 outlines the proposed timeline for conducting the evaluation.

Table A-1—Project Timeline

Due Date	Milestone/Deliverable
March 1, 2020	Official start date of COVID-19 PHE waiver
January 19, 2021	CMS approval for COVID-19 PHE demonstration amendment to AHCCCS Section 1115 demonstration
July 31, 2021	COVID-19 PHE evaluation design due
May–August 2022	Conduct key informant interviews
60-days after end of PHE	Official end of COVID-19 PHE demonstration
6–9 months after the end of the PHE demonstration	Conduct analysis
9–11 months after the end of the PHE demonstration	Produce draft COVID-19 PHE demonstration report
12 months after end of the PHE demonstration authority	Final COVID-19 PHE demonstration report due
September 30, 2022	AHCCCS Section 1115 demonstration ends

AHCCCS: Arizona Health Care Cost Containment System; COVID-19: Coronavirus Disease 2019; PHE: Public Health Emergency

Appendix B. Supplemental Results

Appendix B contains additional results and methodologies used for the coronavirus disease 2019 (COVID-19) public health emergency (PHE) Early and Periodic Screening and Diagnostic Treatment (EPSDT) amendment (the Amendment) to the Arizona Health Care Cost Containment System (AHCCCS) Section 1115 Demonstration Waiver.

Full Measure Calculation Results

Table B-1 provides full measure calculations for the Amendment.

Table B-1—Full Measure Calculations

Measure Description	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
Non-Preventive EPSDT Dental Services				
Intercept	-0.330	0.006	2,899.973	<0.001
Intervention Indicator	-0.754	0.010	6,069.725	<0.001
Post Implementation Indicator	-0.507	0.009	3,184.934	<0.001
Intervention * Post Implementation Interaction	-1.050	0.018	3,580.381	<0.001
Preventive EPSDT Dental Services				
Intercept	-0.488	0.009	2,960.330	<0.001
Intervention Indicator	-0.903	0.010	7,421.308	<0.001
Post Implementation Indicator	-0.627	0.010	4,317.624	<0.001
Intervention * Post Implementation Interaction	-2.198	0.029	5,734.720	<0.001
Months enrolled between 21st/19th birthday and September 30, 2022, Control Variable	0.018	0.000	1,461.618	<0.001

Note: EPSDT: Early and Periodic Screening and Diagnostic Treatment; Pr: p-value.

Full Financial Results

Table B-2 provides full financial results for the Amendment.

Table B-2—Full Financial Results

Measure Description	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
Cost of EPSDT Dental Care				
Intercept	2.434	0.004	416,159.353	<0.001
Intervention Indicator	-0.650	0.009	5,568.085	<0.001
Cost of EPSDT Dental Care, Zeros Removed				
Intercept	5.399	0.003	2,381,148.807	<0.001
Intervention Indicator	0.208	0.006	1,244.620	<0.001

Note: EPSDT: Early and Periodic Screening and Diagnostic Treatment; Pr: p-value.

Appendix C. Measure Specifications

Appendix C contains the measure specifications for the four measures evaluated for the coronavirus disease 2019 (COVID-19) public health emergency (PHE) Early and Periodic Screening and Diagnostic Treatment (EPSDT) amendment (the Amendment) to the Arizona Health Care Cost Containment System (AHCCCS) Section 1115 Demonstration Waiver.

Hypothesis 1: The COVID-19 PHE waiver will provide cost-effective care for qualifying beneficiaries.

Research Question 1.1: Is the cost of Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) dental care for qualifying beneficiaries less than or equal to care among beneficiaries turning 19 during the same time-period?

Final paid claims encounter costs	
Numerator	The total cost of EPSDT dental services incurred amongst beneficiaries
Denominator	The total number of member-months among intervention group beneficiaries
Comparison Population	The total number of member-months among comparison group beneficiaries
Measure Steward	N/A
Data Source	Claims
Measurement Period	N/A
Desired Direction	Lower is better
Analytic Approach	Cross-sectional analysis
Notes for measure calculation	Analysis was done with amounts of zero dollars included in the model, and subsequently with costs only among service utilizers included in the model.

Hypothesis 2: The COVID-19 PHE waiver will give qualifying beneficiaries equal access to EPSDT dental services as beneficiaries turning 19 during the same time-period.

Research question 2.4: Was the rate of EPSDT dental services among qualifying beneficiaries equal to that of beneficiaries turning 19 during the same time-period?

Preventive EPSDT dental services	
Numerator	Number of beneficiaries with preventive dental visits after their 21st birthday
Denominator	Intervention group beneficiaries who did not have a preventive dental visit between March 1, 2020, and their 21st birthday
Comparison Population	Comparison group beneficiaries who did not have a preventive dental visit between March 1, 2020, and their 18th birthday
Measure Steward	N/A
Data Source	Claims
Measurement Period	Baseline period, evaluation period
Desired Direction	Higher than or equal to is better
Analytic Approach	Difference-in-differences (DiD)
Notes for measure calculation	Measure specifications rely on a modified 2020 Centers for Medicare and Medicaid Services (CMS) Child Core Set PDENT-CH measure.

Non-preventive EPSDT dental services	
Numerator	Number of beneficiaries with non-preventive dental visits after their 21st birthday
Denominator	All intervention group beneficiaries
Comparison Population	All comparison group beneficiaries
Measure Steward	N/A
Data Source	Claims
Measurement Period	Baseline period, evaluation period
Desired Direction	Higher than or equal to is better
Analytic Approach	DiD
Notes for measure calculation	—

Research Question 2.5: Is there evidence of pent-up demand in the months following the gradual reopening up of the state and resuming routine care throughout 2020 and 2021?

Utilization of EPSDT dental services	
Numerator	The total number of intervention group beneficiaries who utilize at least one EPSDT dental service
Denominator	All intervention group beneficiaries
Comparison Population	All comparison group beneficiaries
Measure Steward	N/A
Data Source	Claims
Measurement Period	Monthly
Desired Direction	N/A
Analytic Approach	Descriptive time series
Notes for measure calculation	—