



Fiscal & Economic Impacts of Adult Preventative Dental Medicaid Benefit

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About This Paper

Adults in Arizona who receive Medicaid do not receive financial assistance when seeking preventative dental care. Because only emergency dental procedures are covered, Medicaid recipients who are experiencing poor oral health must often wait until their condition deteriorates to merit an emergency procedure. The costs associated with these procedures are significant, and the consequences of not encouraging preventative dental procedures include increased visits to the emergency room for dental reasons, productivity decline, and a reduction in general life satisfaction for those with poor oral health. Specifically, poor oral health impairs economic and social mobility, making it harder to find a job, reducing participation in social activities, and causing others to perceive those with oral health problems more negatively.

This paper explores the trends associated with oral health and estimates the various costs associated with dental emergencies. The fiscal and economic impacts of two different designs of adult preventative medicaid benefits are analyzed: a limited benefit level, which provides a restricted set of procedures, and an extensive benefit level, which allows most procedures but places a \$1,000 annual cap on preventative and emergency care combined.

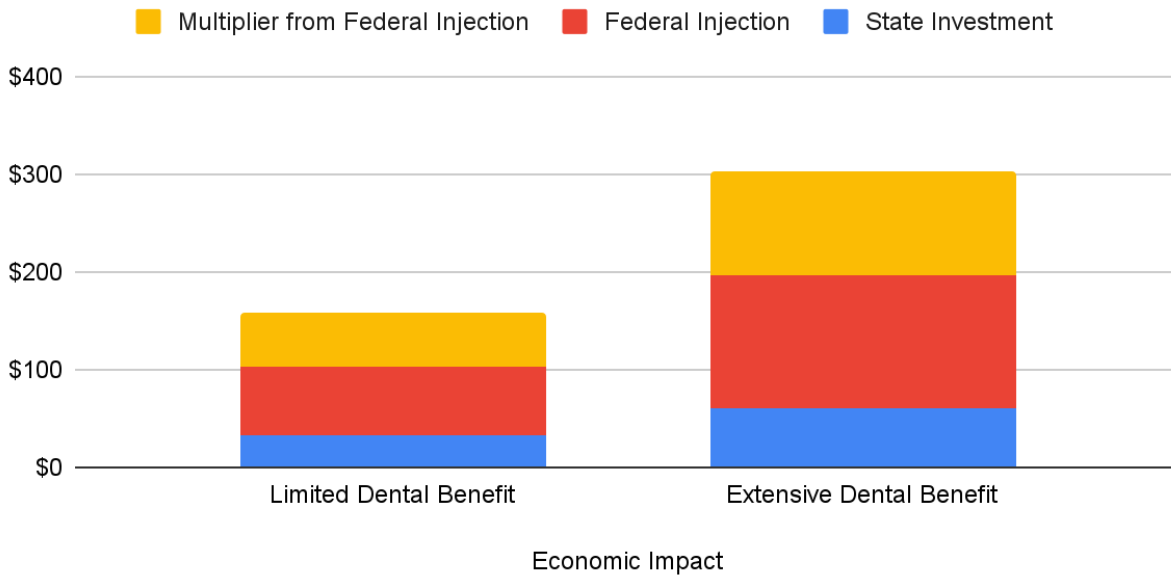
This report finds that a limited adult medical dental benefit would cost the state \$32 million annually and after 10 years in a steady-state in constant dollars cost \$35 million. The extensive benefit would cost \$61 million immediately and \$65 million after ten years. Table 1 provides a summary of these findings.

The dental benefit will also eventually pull in new federal dollars, \$71 million for the limited benefit and \$135 million for the extensive benefit, which with a [1.8 multiplier](#) brings an additional \$57 million and \$108 million respectively in Arizona economic activity. **Consequently, for each**

dollar invested by the state in improved dental health yields \$4 more in additional economic activity (see Figure 1). This will result in additional state revenue of \$4 million from a limited expansion and \$8 million from an extensive expansion.¹

Figure 1: Macroeconomic Impact

Economic Impact of Preventative Adult Medicaid Dental Benefit (millions of dollars)



Labor market productivity would improve by \$16 million by year 10 due to the drop in unplanned emergency dental visits or not being able to work due to dental-related pain. Dental health in the state should be substantially improved, which also means improvements especially for those with diabetes, heart disease and pregnant women who have oral health problems.

Table 1: Net State Annual Cost

Timeframe	Limited Benefit Level	Extensive Benefit Level
Immediate	\$32 million	\$61 million
After 10 years	\$35 million	\$65 million

¹ Estimate is based on taking the federal injection and multiplier times the estimated \$15.6 billion in ongoing revenues for FY2024 for the General Fund and dividing it by Arizona’s State GDP from 2021 (\$411B) multiplied by growth in the GDP deflator and growth in Arizona jobs, the latter as a proxy for real growth.

Oral Health Trends

Dental health is an integral part of an individual's overall well-being. Poor oral health can [increase the likelihood](#) of certain diseases, including endocarditis, cardiovascular disease, respiratory diseases. It can also lead to a decline in life satisfaction and social perception. While society almost universally views [oral health as valuable \(97%\)](#) and agree that regular dental visits keep them healthy (95%), only [66% of adults](#) visited the dentist in the past year.

As a consequence, many dental conditions go untreated. [26 percent of adults](#) have untreated caries (cavities) and 46% of US adults in 2009–2012 had periodontitis (gum disease). Poor oral health is more prevalent among the lower income demographic, with socio-economically disadvantaged individuals [being more susceptible](#) to tooth decay and periodontal disease. Only [20% of people](#) with a low household income visited the dentist in the past year. This is likely due to concerns with payment, as 59% of people who did not visit the dentist in the past year cited cost as the reason.

The inability to receive dental care creates a significant barrier for those in poverty to find better employment and experience economic and social mobility. [29% of low-income adults](#) feel that the appearance of their mouth and teeth affects their ability to interview for a job. This perception is likely, at least in part, accurate, as employers who receive a picture of a candidate missing a front tooth are [less likely to shortlist](#) the candidate for a public-facing job. Social stigma extends beyond the labor market, as [35% of low-income adults](#) avoid smiling and feel embarrassment due to the condition of their mouth and teeth; this self-consciousness leads to 23% of low income adults reducing participation in social activities. Those with missing teeth are also [perceived by others](#) more negatively on all social traits.

These factors negatively impact mental well-being for those with poor oral health. [39 percent of low income adults](#) feel life in general is less satisfying due to the poor condition of their mouth and teeth. Pain is the top oral health problem reported by low income adults, with 42% reporting having difficulties biting and chewing and 30% experiencing anxiety. [A 2009 survey](#) on toothache pain experienced by poor Maryland adults found that 45% of respondents reported the highest level of pain possible, with three-out-of-four respondents turning to prayer for pain relief.

In addition to hampered social mobility and a decline in life satisfaction, poor oral health can lead to serious health complications. Untreated tooth decay can lead to dental abscesses, which put patients at risk for the infection to spread to the bones of the jaw and other areas of the head and neck. Infections that reach the heart or brain can be lethal, leaving families who brought their loved one to the hospital for what they thought was a toothache in shock as they seemingly suddenly pass away. Examples of such a tragedy include [Kyle Willis](#), an uninsured man from Cincinnati who passed away in 2011, and [Deamonte Driver](#), a 12-year-old from Maryland who died in 2007. Jenna, a 41-year old Mesa mother of four, died of a heart attack likely related to her poor dental health during the December holidays of 2021.²

² Last name withheld to protect privacy.

Demographic Trends

Demographic differences in oral health exacerbate racial inequality. A survey found that Black and Hispanic adults were more than [three times as likely](#) to report that they have never been to a dentist than Whites. Asian adults were the least likely to have been to the dentist in the past year, with 52% reporting no visits; fewer Black and Hispanic adults went without a dental visit (42% and 41% respectively), but Whites were the least likely to forgo a dental visit (36%). For those who did visit the dentist, Whites were far more likely to find themselves in the care of somebody of their own race, with [68% of dentists being White](#). Only 4% of dentists are Black, and 6% are Hispanic.

Less frequent dental visits results in disparities in oral health. 9 percent of Black adults believed that they [did not get a job](#) in the past year because of their teeth, mouth, or dentures compared to just 2% of White adults.

The data analyzed for this study showed that Black adults were disproportionately more likely to visit the ED for non-traumatic dental conditions, accounting for 15% of visits but just 6% of the Arizona population. Table 2 provides a demographic comparison of the state population, those on AHCCCS, and adults visiting the ED for non-traumatic dental conditions.

Table 2: Demographic Comparison

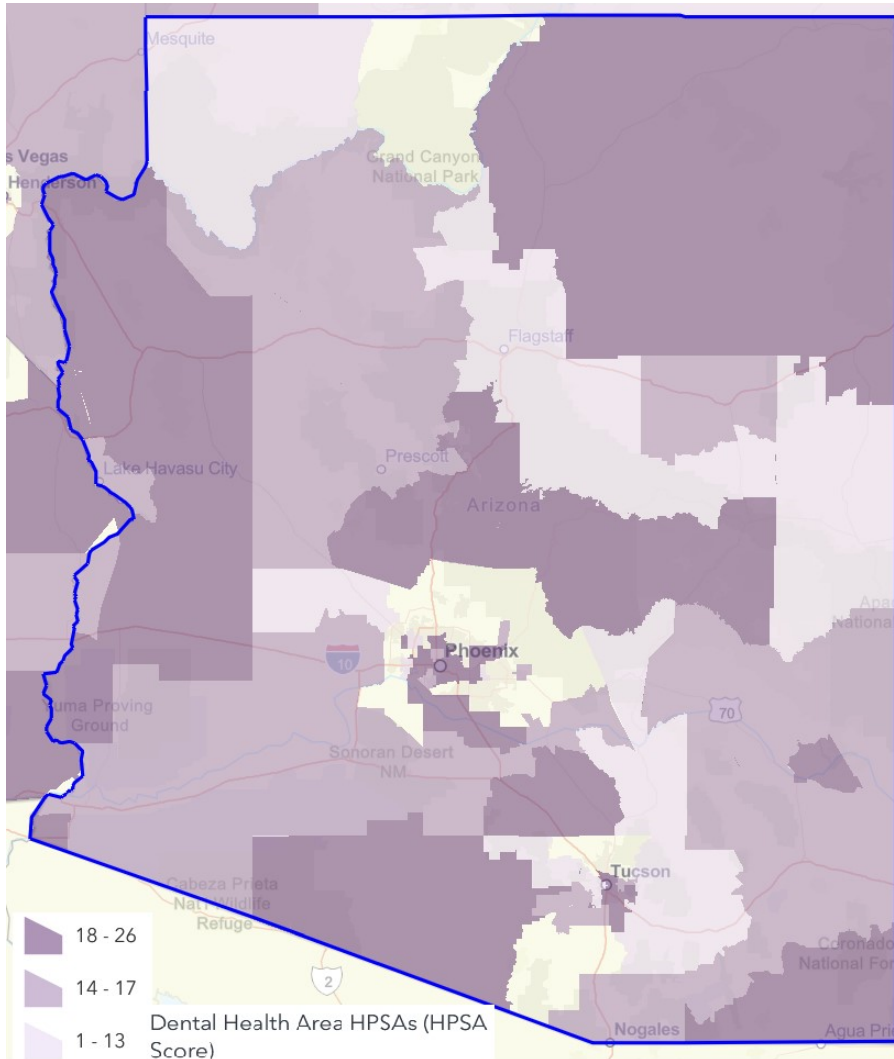
	State population	AHCCCS population	Non-traumatic dental ED visits
Asian or Pacific Islander	3.9%	2%	1%
Black	5.5%	8.1%	14.5%
Hispanic	32.5%	36.4%	25.8%
Native American	5.2%	8.2%	3.8%
White	52.9%	45.3%	55%

Dental Health Professional Shortage Areas

Cost is often not the only barrier for accessing dental healthcare. Geographic areas, population groups, or healthcare facilities may not have sufficient dental health professionals who can meet the needs of the community. The federal Health Resources and Services Administration (HRSA) designates areas, groups, or facilities which lack dental health providers as “health provider shortage areas” (HPSAs).

An HRSA report from July 2023 found that Arizona only meets [34% of the need](#) for dental care providers, with just under three million people living in designated HPSA. To meet this need, Arizona must grow its number of practitioners by 485 dentists. The state is only home to two dental schools: [A.T. Still University](#), with a 2022 class size of 78, and [Midwestern University](#), which had 143 students in their 2023 class. [Figure 1 visualizes](#) dental health area HPSAs in Arizona.

Figure 1: Dental Health Area HPSAs, FY22



Primary Data Sources

The primary data estimation sources to determine cost came from the 2021 Medical Expenditure Panel Survey, which is national, and the unit of analysis is visit, but for dental

procedures each category: preventative, diagnostic, restorative, etc., has an indicated cost. Regression analysis was used to estimate the cost coefficients for each category.

The distribution of procedures for states came from the 2018 Transformed Medicaid Statistical Information System (T-MSIS) and the work of [Nasseh et al.](#) which divided out a procedure mix by category for states with emergency only, limited and extensive dental benefits under Medicaid. The unit of analysis is procedure.

If more than one procedure in a visit was done (diagnostic is the most common possibility) then MEPS will show the combined cost. However, since GCI also used the MEPS data to estimate procedures, then this slight overestimation of cost is countered by a slight overestimation of procedures which combined should yield a fairly accurate result.

The Emergency Department (ED) is Arizona specific from the State Emergency Department Database (SEDD) from 2021 as part of the Health Cost Utilization Project (HCUP). It captures discharge information on all ED encounters that *do not* result in an admission to the same facility. The cost of nontraumatic dental visits was then estimated for Medicaid patients.

Benefit Levels

The [Center for Health Care Strategies](#) classifies the type of dental benefit according to the following criteria:

- **Emergency only:** Relief of pain under defined emergency situations.
- **Limited:** Fewer than 100 diagnostic, preventative, and minor restorative procedures with per person annual expenditure limited to \$1,000 or less.
- **Extensive:** A comprehensive mix of services of diagnostic, preventative, and minor and major restorative procedures with a per-person cap of at least \$1,000.

Arizona currently has an emergency only benefit level. This analysis estimates the fiscal impact of the state adopting a limited benefit level or an extensive benefit level instead.

The limited benefit level modeled in this analysis restricted preventative dental care to the following services

- Oral exam: Twice per year
- X-rays (complete): Once every five years
- X-rays (limited): Once per year
- Prophylaxis (teeth cleaning): Twice per year
- Fluoride: Twice per year
- Fillings: Once per tooth per year
- Implant services: One partial denture per lifetime

Instead of restricting types of preventative services, the extensive benefit model assumes an annual cap for all procedures, preventative and emergency, of \$1,000.

Overall Estimates

Limited Benefit

The average annual cost of the limited preventative benefit was found to be \$314 per patient. Table 3 provides the overall findings using these new estimates. The take-up rate will gradually increase, creating an initial cost of \$53 million that is slightly offset by a \$4 million decrease in dental ED visits. With the 30 percent state contribution currently under Medicaid, the net added state cost is \$15 million. Looking 10 years down the road, excluding population growth and inflation, the cost rises to \$83 million partially offset by less use of the Emergency Department and improved health of recipients, and the state portion is estimated at \$21 million. In addition, improved worker health eventually leads to productivity gains as well of about \$16 million in estimated productivity improvements.

Table 3: Net Cost and Savings from Limited Preventative Medicaid Dental Benefit

Added Cost of Limited Adult Benefit	ED use reduction	ED Savings	Health savings	Net Cost	State Portion ³	Net State Cost	Productivity Gain from Benefit
<i>Initial Implementation (millions of dollars)</i>							
\$107	15%	\$4	\$0	\$103	31.18%	\$32	\$0
<i>10 years (excluding population growth and inflation)--steady-state (millions of dollars)</i>							
\$127	20%	\$5	\$9	\$113	31.18%	\$35	\$16

The dental benefit initial will also pull in \$71 million in new federal dollars in the near term annually which with a [1.8 multiplier](#) brings an additional \$57 million in Arizona economic activity and should generate about \$4 million in additional state revenue.

Extensive Benefit

The average annual cost of the extensive preventative benefit was found to be \$675 per patient. Table 4 provides the overall findings. The take-up rate will gradually increase, creating an initial cost of \$142 million that is slightly offset by a \$4 million decrease in dental ED visits. With the 30 percent state contribution currently under Medicaid, the net added state cost is \$42 million. Looking 10-years down the road, excluding population growth and inflation, the cost rises to \$245 million partially offset by less use of the Emergency Department and improved health of recipients, and the state portion is estimated at \$67 million. In addition, improved worker health

³ Federal Medicaid Assistance Percentage (FMAP) for Arizona, average of federal FY2016-FY2019 and federal FY2024. The remainder is the state share. Federal FY2020-FY2023 were impacted by COVID and exceeded 75%. The state share can be accomplished through the General Fund and/or other revenue sources.

eventually leads to productivity gains as well of about \$16 million in estimated productivity improvements.

Table 4: Net Cost and Savings from Extensive Medicaid Dental Benefit

Added Cost of Full Adult Benefit	ED use reduction	ED Savings	Health savings	Net Cost	State Portion	Net State Cost	Productivity Gain from Benefit
<i>Initial implementation (millions of dollars)</i>							
\$200	15%	\$4	\$0	\$196	31.18%	\$61	\$0
<i>10 years (excluding population growth and inflation)</i>							
\$231	20%	\$5	\$18	\$208	31.18%	\$65	\$16

The dental benefit will also initially pull in \$135 million in new federal dollars in the near-term annually which with a [1.8 multiplier](#) brings an additional \$108 million in Arizona economic activity and should generate about \$8 million in additional state revenue.

Utilization Rate of Adult Benefit

[The American Dental Association with Families USA and Community Catalyst study](#) across the 50 states and relies on actual Medicaid expenditures from the Federal [Transformed Medicaid Statistical Information System](#)

While states on average with just an emergency benefit had 9.2% of full-year Medicaid adults using dental services, in Arizona it was only 4.4%. Most likely the lesser use is due to the higher portion of Hispanic families in the state as data appears to consistently show a lower use of dental services for adults who are Hispanic. The national survey data does not show the same level of discrepancy so it may relate to using cash payments for dental services as an alternative. The average state with full adult dental benefits had 28.4% usage by those enrolled all year, so the authors estimate a 19.2% added use base amount with expansion to 23.6% for Arizona. GCI, however, does not see that outcome occurring for about 10 years. In the nearer terms using adult Medicaid enrollment by state and categorizing states by their level of dental benefits, GCI found using [Nasseh et al.](#)'s procedure data that states with limited and extensive benefits had slightly more than 3 times as many procedures per working age adult enrollee (this can include more recipients per recipient as well as more recipients getting procedures). Consequently, GCI expects the 4.4% to increase to 15.2% in the initial roll out.

Emergency Visits (Reduced 15 to 20%)

Across the United States, dental-related visits to the emergency department (ED)—both traumatic and nontraumatic [accounted for 1.4%](#) of total ED visits. 94.5 percent of these dental-visits were treat-and-release with the remaining 5.5% resulting in hospital admission.

[In Arizona, nearly 60% ED visits for dental causes](#) come from Medicaid recipients, whereas in New Jersey it is less 40%. Both Arizona and New Jersey are similar cost states for dental ED care, but New Jersey has had a longstanding dental benefit which means proportionally fewer Medicaid recipients need ED services.

Due to the lack of an adult extensive benefit for Medicaid in Arizona, GCI's analysis of the State Emergency Department Database from 2021 for non-traumatic dental issues indicated that the average cost for emergency care was \$2,620 per visit.

Unfortunately EDs are not equipped to deal with dental issues so primarily provide palliative care. Based on the distribution of [ED admissions nationwide](#), and using [2022 AHCCCS dental fee for service data](#) providing the needed dental care for what led to the emergency department visit would likely cost about \$700.

In other words, the diagnostic and pain treatment in an ED costs more than triple what actually diagnosing and treating the underlying condition in a dentist's office would.

No long-term studies appear to exist yet on how under expanded Medicaid how much states will eventually reduce use of ED for nontraumatic dental. However, two studies ([Giannouchose et al.](#) and [Elaini et al](#)) looked at the states before and after Medicaid expansion. Both compared states that embraced Medicaid expansion and those that did not and within each category looking at states that had more than an emergency dental benefit v. states that had either no benefit or just an emergency benefit.

Arizona has expanded Medicaid and at the time of these studies had no benefit. Today it has an emergency only benefit. The studies found that only states that expanded Medicaid AND had a dental benefit that included preventative care saw a decrease in ED visits. Both studies had both traumatic and nontraumatic dental visits in their data. Traumatic could include, for instance, being in a car accident where one loses teeth and suffers a head fracture. From [Owens et al.](#) loss of teeth is the most common reason for ED visits, especially when identified as the secondary diagnosis (38 percent of primary v. 67 percent of secondary and 45 percent of all dental related ED visits). Based on that detailed breakdown, GCI estimates (possibly conservatively) that one-quarter are traumatic. Since traumatic ED visits do not change with an extensive dental benefit under Medicaid, GCI adjusted the findings in the studies by [Giannouchose et al.](#) and [Elaini et al](#) and estimates a decline in ED visits of between 15 and 30 percent. GCI uses the more conservative figure as its short-term adjustment. If GCI underestimated the share of traumatic ED visits, then the ED reduction estimate would rise.

No studies have emerged to show longer term impacts, so in the ten-year horizon, GCI uses 20 percent as a likely conservative estimate.

In 2021 GCI analysis of Arizona's ED data found 9,328 nontraumatic dental ED visits at a cost of \$24.4 million. \$7.3 million is the state's cost-sharing portion. A reduction of 15%, would save \$3.7 million of which \$1.1 million would be saved from the state's portion.

If that decrease were to improve to 20%, the cost would diminish by \$4.9 million with the state share of savings being \$1.5 million.

These estimates seem to be roughly consistent with studies that examined the impact on ED use when Medicaid dental benefits were removed during past recessions and ED use increased in [California](#), [Massachusetts](#) and [Oregon](#)—though in Oregon the change was far more dramatic.

Health Savings (\$18 million after 10 years)

[Vujicic et al. \(2021\)](#) noted above noting how an expanded Medicaid dental benefit would increase the portion of adults on Medicaid seeking dental treatment to increase from 4.4% to 23.6%.

The ADA study understated the number of adults on Medicaid in Arizona, However, it did provide an estimated in a steady-state long-run of \$21.4 million annually as better dental care leads to improved health for people with diabetes, coronary artery disease and pregnant women.

Adjusting for their understating the Medicaid enrollment in Arizona increases this savings to \$31.1 million and further adjusting their 2018 data for inflation leads to \$37 million. GCI presumes this savings will gradually be realized over a 20 year period or \$1.8 million per year starting in the second year of implementation of the extensive plan.

However, [Vujicic et al. \(2021\)](#) found health savings in limited benefit states were less than emergency states. To reflect this, the long-term health savings are estimated to be half of what they would be with the extensive benefit. The ED and productivity estimates were done conservatively, so these are held constant.

Productivity Gains (\$16 million after 10 years)

While there is considerable evidence that suggests better oral health improves productivity (better jobs and better able to work and be productive at work), nothing is sufficiently quantitative in that regard. However, data on hours lost to unplanned dental visits for US Adults exists from the 2008 National Health Insurance Interview Study (NHIS). [Hours Lost to Planned and Unplanned Dental Visits Among US Adults \(cdc.gov\)](#). GCI uses that data to interpret what the likely hours lost to unplanned dental visits would be for those on Medicaid, recognizing that

the lack of a dental benefit may mean this takes the form of ED visits or in the form of lost productivity at work. GCI considers this a low-end estimate.

The 2008 NHIS found 0.99 hours on average lost over the last 6 months, which equates to 1.98 hours per year. From this GCI looked at the prevalence of caries of permanent teeth, severe periodontal disease and edentulism and severe tooth loss in those with low incomes compared to the population at large. Not all tooth disease is equivalent in severity or in likelihood. For this severity impact, GCI examined the Disability Adjusted Life Years for each as estimated for Arizona in 2019. Together GCI combined these effects to estimate that for lower income Arizonans on Medicaid that yearly hourly loss per person was 4.68 hours, which if the pay per hour was \$14.50 per hour (\$13.80 min. wage in 2023) leads to \$67.82 cost per person in the labor force per year. If a 60% labor force participation rate is assumed ⁴ then estimated productivity losses are \$55 million annually. GCI assumes over 20 years this productivity loss would approach the general population one which would be 1.98 or \$23.3 million. Hence, the productivity gain over 20 years would be \$32 million and over ten years the productivity gain is \$16 million. Table 4 provides a summary of estimated work hours lost for Medicaid enrollees from dental diseases.

Table 4: Estimated Work Hours Lost per Medicaid Enrollee in Labor Force

Dental Condition	Per Capita DALY (Arizona 2019)	Percent of total DALY	Prevalence estimate in low income relative to overall	Estimated Hours Lost for Medicaid Adults
Caries of permanent teeth	0.0003	11%	100%	0.21
Periodontal diseases	0.0008	26%	192%	0.99
Edentulism and severe tooth loss	0.002	63%	277%	3.48
Total	0.003	100%		4.68

Conclusion

Significant barriers exist which prevent low-income adults in Arizona from receiving proper oral healthcare. A lack of AHCCCS coverage for preventative dental procedures, which are necessary for the long-term wellbeing of one's teeth, mouth, and gums, has serious ramifications on the physical, economic, social, and mental wellbeing for those in poverty.

⁴ Matches the overall adult LFP which includes all adults—and this is more of a working age but lower income population. Working age increases, but lower income decreases the LFP.

Low-income adults in Arizona are far more likely to delay or forgo dental care, relying instead on EDs to provide temporary relief via pain medication and antibiotics. Those who do seek emergency dental care are far more likely to require expensive, invasive procedures such as oral surgery. Tooth decay and loss prevents economic and social mobility, as employers are less likely to consider candidates with missing teeth. Often, those with poor oral health experience persistent, severe pain and discomfort.

Expanding AHCCCS coverage to include preventative dental procedures is a key step to removing barriers for those needing oral care. This report finds that this expansion requires a \$15–\$42 million annual investment by Arizona, increasing to \$21–\$67 million over ten years. The state would see \$16 million in productivity improvements after ten years, along with \$38–\$124 million of additional economic activity.

Further research and policy actions must be taken to fully understand the impact that dental care HPSAs have on oral health outcomes. The coverage of preventative dental care by AHCCCS will make little difference for those who are not able to find transportation to or secure an appointment with a dental office. Only 34% of the state’s need for dental care providers is met, with three million Arizonans living in shortage areas.

As with any social service, the changes to public policy needed to fully address Arizona’s oral health needs are numerous and complex. However, expanding AHCCCS coverage to include preventative dental procedures could provide life-changing care to hundreds of thousands of low-income adults at the cost of only \$15–\$42 million annually. This care enables recipients to pursue economic mobility and live pain-free in ways that once were not possible.

About

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Appendix: Methodology details

Current Emergency Dental

1. Data for the number of adults on AHCCCS was gathered from the [AHCCCS April 2023 population demographic report](#)
2. The average annual dental procedures per person for procedures with Medicaid claims was calculated
 - a. Data was from the Medical Expenditure Panel Survey: [2021 Dental Visits File](#). This contained data at the dental event level gathered from surveying households
 - b. Because dental events had multiple procedures, this was estimated by dividing the weighted annual procedures with medicaid patients by the total person weights with medicaid payments.
3. The average number of procedures was then multiplied to get the annual Medicaid dental procedures.
4. The annual Medicaid dental procedures were multiplied by the dental procedure mix from [table 3](#) for adults 21-64 and table 4 for adults 65+ of [Nasseh et al \(2022\)](#) for adults with emergency dental medicaid to find the number of each type of procedure performed on AHCCCS patients.
5. The average medicaid payment, and the average total payments were calculated
 - a. Data was from the Medical Expenditure Panel Survey: [2019 Dental Visits File](#). This contained data at the dental event level gathered from surveying households
 - b. Procedures were grouped into the procedure mix from Nasseh et al (2022).
 - c. Flat fees paid by a patient for a series of procedures were averaged across all applicable events.
 - d. Because dental events often involved multiple procedures and the amounts paid were for the entire event, the cost of each procedure had to be estimated (unless it was the only procedure performed)
 - i. Regressions were used to find the coefficients for each procedure related to the adjusted Medicaid payment, which was converted to logarithmic form to reduce heteroskedasticity.
 - ii. Ratios for the coefficients of each procedure performed by the total coefficients for all procedures in that event were found.
 - iii. The ratios were then multiplied by the amount paid to find the estimate of the cost of each procedure.
 - e. The number of Medicaid patients who had annual charges over \$1,000 were found, and charges exceeding \$1,000 were noted for removal from the final cost estimates for the current benefit. For the expanded benefit this was removed..
 - f. The weighted average the cost of each procedure was then generated.

Emergency Room Costs

1. Data was from the 2021 Arizona [state emergency department database](#) (SEDD) from the Healthcare Cost and Utilization project (HCUP)
2. Each ED visit was analyzed to determine if the visit was for a non-traumatic dental condition, a dental condition, or neither.

- a. ICD-10 diagnosis codes for dental conditions were derived from a 2022 United Healthcare Medicare Advantage [policy appendix](#).
 - b. “Routine dental diagnosis codes that are not covered” were used to indicate non-traumatic dental conditions
 - c. “Medical dental diagnosis codes that may be covered” were used to indicate traumatic dental conditions.
 - d. The diagnosis codes listed as the reason for the ED visit were then analyzed.
3. The average total charge for adults aged 18 and over expected to pay with Medicaid who came to the ED for a non-traumatic dental condition was then found.
 4. Demographic distributions, including sex, race, age groups, and income were then found.

Limited Dental Cost Estimates

This analysis was constructed by reviewing states identified by the [Center for Healthcare Strategies](#) as having a “limited” dental benefit, which includes both a restriction on the types of services allowable and an expenditure cap of at most \$1,000. These states include:

- *Kentucky*: Includes oral exams, emergency visits, x-rays, extractions, and fillings.
- *Arkansas*: Expenditure cap of \$500 and one office visit, one cleaning, and one fluoride treatment per year. Upon dental recommendation, additional services include extractions, fillings, and one set of dentures (per lifetime).
- *Louisiana*: Includes oral exams, x-rays, prophylaxis, fluoride, fillings, and dentures.

The [benefit table \(p.10\)](#) for Louisiana was the starting point for the development of the alternative analysis procedure list. The frequency for some procedures, such as x-rays, was adjusted based on the 2022 Arkansas Blue Cross [procedure guidelines](#). For procedures that occurred over multiple years, the average cost for one year was used. Fillings were estimated by finding the average number of fillings received by adults [between the ages of 20–64](#) (19.8 fillings, assuming a median survival time of amalgam fillings being [12.8 years](#)). Dentures utilized Arkansas’ program of one per lifetime using the estimated annual cost. Table A1 provides a breakdown of these estimates for each procedure.

Table A1: Breakdown of Procedure Cost Estimates

Procedure Type	Procedure	Frequency	CDT Codes	AHCCCS FFS	Total annual cost
Diagnostic	Oral Exam	2 per year	D0120 Periodic exam – established patient	\$29.74	\$59.48
Diagnostic	X-rays (complete)	1 per 5 years	D0210 Intraoral complete series intraoral - complete series of radiographic images	\$72.29	\$14.46
Diagnostic	X-rays (limited)	1 per year	D0274 Bitewings – four radiographic image	\$34.28	\$34.28
Preventative	Prophylaxis	2 per year	D1110 Prophylaxis – adult	\$54.36	\$108.72
Preventative	Fluoride	2 per year	D1206 Topical application of fluoride varnish	\$20.93	\$41.86
Restorative	Fillings	1 per tooth per year	D2140 Amalgam – 1 surface, permanent or primary D2330 Resin-based composite, 1 surface, anterior D2391 Resin-based composite, 1 surface, posterior, permanent or primary	Average: \$78.87 D2140: \$71.62 D2230: \$84.08 D2391: \$80.90	\$35.49
Implant services & prosthodontics	Partial denture	1 per lifetime (partial or complete)	D5214 Mandibular partial denture - cast metal framework with resin denture bases	Up to \$848.52	Up to \$19.28
Average annual cost per adult preventative care					\$313.57

Fiscal and Economic Impacts of Full Dental Medicaid Benefit

For the Limited Dental Benefit, analysis of the distributions of procedures led to an assumption that emergency use would double with the remainder covered by the plan illustrated in the Table above. A similar reduction in emergency dental procedures was followed for the added emergency dental costs.

For the Comprehensive Dental Benefit regression costs coefficients were used instead from the broader national Medicaid data with a reduction taken for the portion of patients exceeding \$1,000 across all procedures.

For all of the calculations below, adult Medicaid enrollment was calculated from 2019 based on data compiled by the [Kaiser Family Foundation](#). States were organized by Emergency Only, Limited Benefit or Comprehensive Benefit to determine the total number of enrolled individuals in each category of state. These were the denominator, with the numerator being data on usage organized along similar lines by [Nasseh et al.](#) which provided procedure mix for each category for 2018. Note Nasseh’s adult group is 21 to 64 plus 65+, while Kaiser was 19-64 plus 65+. Arizona currently has a lower per capita use rate among Medicaid enrollees than other emergency-only states according to [the ADA study](#) of 4.4% instead of 9.2%. That percentage was used to adjust the current use percentages from [Nasseh et al.](#) Based on both sources GCI assumes that under a limited dental benefit use rises to 72% of the limited and extensive use rates initially and 83% after 10 years.

The Federal Medicaid Assistance Percentage (FMAP) for Arizona for federal FY2024 is 66.24%, which is the lowest it has been since federal FY2013. GCI took the average of the five years before COVID (federal FY2016-FY2019 plus FY2024) as the FMAP for this analysis. Arizona’s FMAP for federal FY2020-FY2023 all exceeded 75%, which was significantly higher. The average of those five years is 68.82%, which means the state share is 31.18%.

For Current Adult Dental Emergency Benefit
Emergency Rate calculated from adults Medicaid enrollees

Table A2: Estimated Cost of Current Emergency Dental Procedures

Current Emergency Dental Procedures			
Age 19-64			
AZ Emerg Rate Per Enrollee	Procedure Cost (regression)	Total Cost	

Fiscal and Economic Impacts of Full Dental Medicaid Benefit

Current Emergency Dental Procedures			
Observations per adult	0.19		
Diagnostic rate	0.11	\$98.98	\$14,396,123
Preventative rate	0.01	\$93.40	\$1,843,566
Restorative rate	0.01	\$374.00	\$7,091,106
Endodontics rate	0.00	\$493.12	\$640,384
Periodontics rate	0.00	\$880.42	\$2,515,360
Implants Services & Prosthodontics rate	0.00	\$383.79	\$1,196,159
Oral & Maxillofacial Surgery rate	0.04	\$425.76	\$25,102,113
Orthodontics rate	0.00	\$0.00	\$0
Adjunctive General rate	0.01	\$379.17	\$3,446,829
	Age 65+		
Observations per adult	0.07		
Diagnostic rate	0.04	\$98.98	\$560,586
Preventative rate	0.00	\$93.40	\$70,996

Fiscal and Economic Impacts of Full Dental Medicaid Benefit

Current Emergency Dental Procedures			
Restorative rate	0.00	\$374.00	\$256,271
Endodontics rate	0.00	\$493.12	\$21,118
Periodontics rate	0.00	\$880.42	\$179,098
Implants Services & Prosthodontics rate	0.00	\$383.79	\$271,194
Oral & Maxillofacial Surgery rate	0.02	\$425.76	\$1,039,317
Orthodontics rate	0.00	\$0.00	\$0
Adjunctive General rate	0.00	\$379.17	\$81,191
		Sum	\$58,711,413
		>\$1,000	\$21,796,384
		Adjusted Sum	\$36,915,029
		AZ Share	\$11,510,106

For Limited Dental Benefit Initial Cost
 FFS rate for Non-Emergency, Regression for Emergency
 Assumes Emergency use doubles
 Only Emergency Exceeds \$1,000

Table A3: Estimated Initial Cost of Non-Emergency Limited Benefits

	Non-Emergency Limited Benefit Calculation (Initial)								
	Age 19-64				assumes doubles	FFS	Emergency use increases	Non- Emergency	Emergency
	AZ Emerg Rate	AZ Limited Rate	Change	Non- emergency	Emergency	Per Procedure Cost	Regression Cost	Total Cost	Added Cost
Observations per adult	0.19	1.02	0.83						
Diagnostic rate	0.11	0.48	0.38	0.27	0.11	\$33.79	\$98.98	\$12,615,677	\$14,396,123
Preventative rate	0.01	0.12	0.11	0.09	0.01	\$37.65	\$93.40	\$4,884,990	\$1,843,566
Restorative rate	0.01	0.19	0.18	0.17	0.01	\$78.87	\$374.00	\$18,032,670	\$7,091,106
Endodontics rate	0.00	0.01	0.01	0.00	0.00	0	\$493.12	\$0	\$640,384
Periodontics rate	0.00	0.02	0.02	0.02	0.00	0	\$880.42	\$0	\$2,515,360
Implants Services & Prosthodontics rate	0.00	0.02	0.02	0.01	0.00	\$0.00	\$383.79	\$0	\$1,196,159

Fiscal and Economic Impacts of Full Dental Medicaid Benefit

	Non-Emergency Limited Benefit Calculation (Initial)								
Oral & Maxillofacial Surgery rate	0.04	0.13	0.09	0.05	0.04	\$425.76	\$425.76	\$29,058,741	\$25,102,113
Orthodontics rate	0.00	0.00	0.00	0.00	0.00	0	\$0.00	\$0	\$0
Adjunctive General rate	0.01	0.04	0.03	0.03	0.01	0	\$379.17	\$0	\$3,446,829
	Age 65+								
Observations per adult	0.07	0.61	0.54	0.48	0.07			\$0	\$0
Diagnostic rate	0.04	0.27	0.24	0.20	0.04	\$33.79	\$98.98	\$1,079,173	\$560,586
Preventative rate	0.00	0.08	0.08	0.07	0.00	\$37.65	\$93.40	\$437,228	\$70,996
Restorative rate	0.00	0.07	0.07	0.07	0.00	\$78.87	\$374.00	\$813,599	\$256,271
Endodontics rate	0.00	0.00	0.00	0.00	0.00	0	\$493.12	\$0	\$21,118
Periodontics rate	0.00	0.03	0.02	0.02	0.00	0	\$880.42	\$0	\$179,098
Implants Services & Prosthodontics rate	0.00	0.05	0.04	0.04	0.00	\$0.00	\$383.79	\$0	\$271,194

Fiscal and Economic Impacts of Full Dental Medicaid Benefit

	Non-Emergency Limited Benefit Calculation (Initial)								
Oral & Maxillofacial Surgery rate	0.02	0.07	0.06	0.04	0.02	\$425.76	\$425.76	\$2,732,387	\$1,039,317
Orthodontics rate	0.00	0.00	0.00	0.00	0.00	0	\$0.00	\$0	\$0
Adjunctive General rate	0.00	0.03	0.03	0.03	0.00	0	\$379.17	\$0	\$81,191
							Sum	\$69,654,466	\$58,711,413
							>\$1,000	0	\$21,796,384
							Adjusted Sum	\$69,654,466	\$36,915,029
							Net Cost		\$106,569,495
							AZ Share		\$33,228,369

For Limited Dental Benefit 10 year estimate
 FFS rate for Non-Emergency, Regression for Emergency
 Assumes Emergency use doubles
 Only Emergency Exceeds \$1,000

Table A4: Estimated Limited Benefit Cost After 10 Years (Steady-State)

10 year	Non-Emergency Limited Benefit Calculation						
	Age 19-64				assumes doubles	Non-Emergency	
	AZ Emerg Rate	AZ Limited Rate	Change	Preventative	Emergency	Total cost	

Fiscal and Economic Impacts of Full Dental Medicaid Benefit

10 year	Non-Emergency Limited Benefit Calculation							
Observations per adult	0.19	1.17	0.98					
Diagnostic rate	0.11	0.55	0.45	0.34	0.11	\$15,932,399		
Preventative rate	0.01	0.14	0.13	0.11	0.01	\$5,826,496		
Restorative rate	0.01	0.22	0.21	0.19	0.01	\$21,139,431		
Endodontics rate	0.00	0.01	0.01	0.01	0.00	0		
Periodontics rate	0.00	0.03	0.03	0.02	0.00	0		
Implants Services & Prosthodontics rate	0.00	0.02	0.02	0.02	0.00	\$0		
Oral & Maxillofacial Surgery rate	0.04	0.15	0.11	0.07	0.04	\$40,771,910		
Orthodontics rate	0.00	0.00	0.00	0.00	0.00	0		
Adjunctive General rate	0.01	0.04	0.04	0.03	0.01	0		
	Age 65+							
Observations per adult	0.07	0.70	0.64	0.57	0.07			

Fiscal and Economic Impacts of Full Dental Medicaid Benefit

10 year	Non-Emergency Limited Benefit Calculation						
Diagnostic rate	0.04	0.31	0.28	0.24	0.04	\$1,295,207	
Preventative rate	0.00	0.10	0.09	0.09	0.00	\$510,297	
Restorative rate	0.00	0.09	0.08	0.08	0.00	\$949,802	
Endodontics rate	0.00	0.00	0.00	0.00	0.00	0	
Periodontics rate	0.00	0.03	0.03	0.03	0.00	0	
Implants Services & Prosthodontics rate	0.00	0.06	0.05	0.05	0.00	\$0	
Oral & Maxillofacial Surgery rate	0.02	0.08	0.07	0.05	0.02	\$3,443,341	
Orthodontics rate	0.00	0.00	0.00	0.00	0.00	0	
Adjunctive General rate	0.00	0.04	0.04	0.03	0.00	0	
						\$89,868,883	NonEmergency
						\$36,915,029	Emergency
						\$126,783,912	Limited Dental Benefit 10 yrs.
						\$39,531,224	Arizona Share

Fiscal and Economic Impacts of Full Dental Medicaid Benefit

For Extensive Dental Benefit Initial
 Assume Regression Coefficient Costs
 All users subject to \$1,000 cap

Table A5: Estimated Initial Cost of Extensive Benefit

Non-Emergency Extensive Benefit Calculation Initial						
Age 18-64						
	AZ Emerg Rate	AZ Comp Rate	Change	Regression Cost	Total Cost	
Observations per adult	0.19	0.95	0.76			
Diagnostic rate	0.11	0.48	0.37	\$98.98	\$50,562,033	
Preventative rate	0.01	0.11	0.10	\$93.40	\$12,621,929	
Restorative rate	0.01	0.16	0.15	\$374.00	\$77,835,429	
Endodontics rate	0.00	0.01	0.01	\$493.12	\$5,184,931	
Periodontics rate	0.00	0.03	0.03	\$880.42	\$35,619,982	
Implants Services & Prosthodontics rate	0.00	0.02	0.01	\$383.79	\$7,367,564	

Fiscal and Economic Impacts of Full Dental Medicaid Benefit

	Non-Emergency Extensive Benefit Calculation Initial					
Oral & Maxillofacial Surgery rate	0.04	0.11	0.07	\$425.76	\$40,841,479	
Orthodontics rate	0.00	0.00	0.00	\$0.00	\$0	
Adjunctive General rate	0.01	0.04	0.03	\$379.17	\$14,967,655	
	Age 65+					
Observations per adult	0.07	0.76	0.69			
Diagnostic rate	0.04	0.36	0.32	\$98.98	\$5,013,810	
Preventative rate	0.00	0.09	0.08	\$93.40	\$1,185,123	
Restorative rate	0.00	0.07	0.07	\$374.00	\$4,100,154	
Endodontics rate	0.00	0.01	0.01	\$493.12	\$452,609	
Periodontics rate	0.00	0.04	0.04	\$880.42	\$5,952,914	
Implants Services & Prosthodontics rate	0.00	0.05	0.05	\$383.79	\$2,816,610	
Oral & Maxillofacial	0.02	0.08	0.06	\$425.76	\$4,277,909	

Fiscal and Economic Impacts of Full Dental Medicaid Benefit

Non-Emergency Extensive Benefit Calculation Initial						
Surgery rate						
Orthodontics rate	0.00	0.00	0.00	\$0.00	\$0	
Adjunctive General rate	0.00	0.06	0.06	\$379.17	\$3,789,049	
				Sum	\$272,589,177	
				>\$1,000	\$72,456,238	
				Adjusted Sum	\$200,132,939	Comprehensive Dental Benefit Initial
					\$62,401,450	Arizona Share

For Extensive Dental Benefit 10 years
 Assume Regression Coefficient Costs
 All users subject to \$1,000 cap

Table A6: Estimated Cost of Extensive Dental Benefit After 10 years (Steady-State)

Non-Emergency Extensive Benefit Calculation (10 years)					
	Age 18-64			Comprehensive Total Cost	
	AZ Emerg Rate	AZ Comp Rate	Change		
Observations per adult	0.19	1.09	0.90		
Diagnostic rate	0.11	0.55	0.44	\$60,161,293	

Fiscal and Economic Impacts of Full Dental Medicaid Benefit

	Non-Emergency Extensive Benefit Calculation (10 years)				
Preventative rate	0.01	0.13	0.11	\$14,759,582	
Restorative rate	0.01	0.19	0.18	\$90,385,538	
Endodontics rate	0.00	0.01	0.01	\$6,045,773	
Periodontics rate	0.00	0.04	0.03	\$41,255,473	
Implants Services & Prosthodontics rate	0.00	0.02	0.02	\$8,633,077	
Oral & Maxillofacial Surgery rate	0.04	0.13	0.09	\$50,586,363	
Orthodontics rate	0.00	0.00	0.00	\$0	
Adjunctive General rate	0.01	0.04	0.03	\$17,688,875	
	Age 65+				
Observations per adult	0.07	0.87	0.81		
Diagnostic rate	0.04	0.41	0.37	\$5,837,572	
Preventative rate	0.00	0.10	0.09	\$1,370,747	

Fiscal and Economic Impacts of Full Dental Medicaid Benefit

Non-Emergency Extensive Benefit Calculation (10 years)					
Restorative rate	0.00	0.08	0.08	\$4,743,929	
Endodontics rate	0.00	0.01	0.01	\$522,614	
Periodontics rate	0.00	0.05	0.05	\$6,859,078	
Implants Services & Postodontics rate	0.00	0.06	0.05	\$3,272,913	
Oral & Maxillofacial Surgery rate	0.02	0.09	0.08	\$5,063,668	
Orthodontics rate	0.00	0.00	0.00	\$0	
Adjunctive General rate	0.00	0.07	0.07	\$4,360,978	
			Sum	\$321,547,474	
			> \$1,000	\$90,398,862	
			Adjusted Sum	\$231,148,611	Comprehensive Dental Benefit 10 yrs
				\$72,072,137	Arizona Cost