

Utilization of Dental Services Among Medicaid Enrolled Children

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The Patient Protection and Affordable Care Act (ACA) has focused attention on insurance coverage for and access to preventive services. The ACA includes preventive dental services for children as an essential benefit beginning in 2014. Currently, Medicaid-enrolled children are already entitled to preventive dental services however many Medicaid enrolled children do not utilize these services. In this issue brief, we estimate current rates of utilization for dental services among Medicaid-enrolled children in nine states. Then, we evaluate how a child's personal and community characteristics impact the likelihood that they utilize dental services.

Introduction

All Medicaid-enrolled children are entitled to dental screening, diagnostic, preventive, and treatment services under Medicaid's Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) program. However, according to Medicaid administrative data from the CMS-416 EPSDT report, on average only 40 percent of Medicaid-enrolled children had any dental care in 2010 (Kaiser Commission on Medicaid and the Uninsured, 2012a). A Government Accountability Office (GAO, 2008) analysis of Medical Expenditure Panel Survey (MEPS) data similarly found that only 37 percent of Medicaid-enrolled children had any dental service use in 2004–2005. This lack of utilization is troubling, because untreated tooth decay can result in pain and infection that can affect children's daily activities, such as eating, playing, and speaking. Dental pain can result in lack of attention during school and missed school days (CDC, 2011; Satcher, 2003).

There are several reasons that Medicaid enrollees may have trouble in accessing dental services. First, according to the Kaiser Commission on Medicaid and the Uninsured (2012b), 15.4 percent of the population nationally lives in areas where there is a shortage of dental providers. These shortages are most pervasive in urban and rural areas, in contrast to suburban

About This Series

The MAX Medicaid policy issue brief series highlights the essential role MAX data can play in analyzing the Medicaid program. MAX is a set of annual, person-level data files on Medicaid eligibility, service utilization, and payments that are derived from state reporting of Medicaid eligibility and claims data into the Medicaid Statistical Information System (MSIS). MAX is an enhanced, research-friendly version of MSIS that includes final adjudicated claims based on the date of service, and data that have undergone additional quality checks and corrections. CMS produces MAX specifically for research purposes. For more information about MAX, please visit: <http://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/MAXGeneralInformation.html>.

areas, which generally have a larger supply of providers. Also, Medicaid enrollees may encounter transportation, language, or other barriers that make accessing treatment difficult. In addition to these factors that can reduce access, there also may be reasons that Medicaid enrollees choose not to use services when providers are available and services are covered under Medicaid. These factors may include time limitations, lack of information on the benefits of dental treatment, and fear or distrust related to the available providers. A Centers for Disease Control and Prevention (CDC) study looking at access to dental care among Hispanic and Latino subgroups (2011) found that those most likely to underutilize dental services were poor or near poor, foreign-born, or had lived in the United States less than five years (Gulnur and Simile, 2012).

This study analyzes the utilization of dental services among children enrolled in Medicaid in nine states (Alabama, Alaska, Arkansas, Illinois, Iowa, Louisiana, Mississippi, New Hampshire,

and Oklahoma), discusses features of each state that may influence the differences in dental service use observed across the states, and explores the impact of enrollee personal characteristics and those of the enrollee's county of residence on utilization of dental treatment.

Methods

The findings from this study are based on the analysis of Mini-MAX 2008, which is a 5 percent sample of the Medicaid Analytic eXtract (MAX) files. MAX files are research-friendly Medicaid administrative files, including data from all 50 states and the District of Columbia. The MAX files contain person-level data on more than 60 million Medicaid enrollees and claims data on more than 2 billion Medicaid-provided services. Many researchers have reported that the size and complexity of the MAX files was a barrier to their use in research. Mini-MAX was developed by the Centers for Medicare & Medicaid Services (CMS) to reduce the processing requirements for MAX data analyses. Mini-MAX is substantially smaller than MAX, since it is a sample and excludes infrequently used variables.

MAX data have not historically included comprehensive utilization data for managed care enrollees. Thus, we excluded states with a substantial enrollment of children in managed care from our analysis. None of the states in our analysis had a dental managed care plan in 2008. In addition, we identified dental services based on procedure codes. We thus excluded states with incomplete reporting of procedure codes from our analysis. These two exclusions resulted in nine analysis states. Preventive dental visits were identified based on Healthcare Common Procedure Coding System (HCPCS) codes D1000-D1999. Receipt of any dental services was defined by receipt of any service in MAX type of service category = 09 (dental services). Only claims data from Mini-MAX's other services file were used, because dental-related inpatient care and prescribed drug claims were not included in this analysis. Illinois and Iowa had a small percentage of children enrolled in a comprehensive managed care plan. These children were excluded from our analysis, as were children who were dually enrolled in Medicare or who had restricted benefits.

The enrollee characteristics used in our analysis were derived from the Mini-MAX person summary (PS) file. Date of birth was used to calculate age on December 31, 2008. Enrollees with basis of eligibility reported as disabled in any month of 2008 were assigned to the disabled category. All others were assigned to the non-disabled category. The PS file includes indicators of Medicaid enrollment for each month of 2008. These indicators were used to count months of Medicaid enrollment for each enrollee and assign the enrollee to one of three length-of-enrollment categories.

A county of residence is identified in the Mini-MAX PS file for each Medicaid enrollee. Descriptive data on each enrollee's county of residence were obtained by linking the enrollee's Mini-MAX records to the Area Resource File (ARF) based on this county. ARF is a database of health-related county characteristics. The county characteristics reflect information about the county in which the enrollee resides, not characteristics of the individual enrollee.

Table 1 shows the overall number of observations of Medicaid-enrolled children in each state as well as the distribution of the children in each state by the personal and Medicaid enrollment-related variables from the Mini-MAX file.

There is substantial variation in these characteristics across the states. For example, Illinois had a high proportion of its Medicaid children in large metropolitan areas (71 percent) in contrast to New Hampshire, where the population was concentrated in small metro areas (32 percent) or rural areas adjacent to metro areas (43 percent). The counties in New Hampshire in which the Medicaid-enrolled children resided were much less racially and ethnically diverse than those in Illinois. For example, all of the Medicaid-enrolled children in New Hampshire were in counties where less than 15 percent of the population was foreign-born, while 55 percent of Medicaid-enrolled children in Illinois were in counties where more than 15 percent of the population was foreign-born.

Findings

In this section, we first provide descriptive statistics on utilization of dental services in the nine analysis states. We then report findings from the multivariate regression analysis, which identifies factors that have a significant influence on the observed utilization rates.

Utilization of Dental Care

On average, across full-year enrolled children in these nine states, the share of children less than 3 years of age who received a preventive dental visit was only 9 percent. This rate is extremely low, given that the American Academy of Pediatrics recommends that children have their first dental visit at one year of age (American Academy of Pediatrics, 2008). It may be that many parents are unaware of this recommendation, or that non-pediatric dentists typically do not accept patients in this age group. The percentage of full-year enrolled children receiving a preventive dental visit increased substantially with age, with 43 percent of children ages 3–6 and 48 percent of children 7–11 having at least one preventive visit. Unfortunately, the rate of receipt of dental services declined to only 37 percent for the 12–17 year-old age group.

Table 1. Characteristics of Analysis Population

	Alabama	Alaska	Arkansas	Illinois	Iowa	Louisiana	Mississippi	New Hampshire	Oklahoma
Age¹									
Less than 3	21%	22%	18%	21%	22%	19%	23%	21%	22%
3 to 6	24%	23%	25%	24%	24%	23%	23%	24%	24%
7 to 11	27%	26%	28%	26%	26%	28%	26%	26%	27%
12 to 17	28%	29%	29%	28%	28%	31%	28%	29%	27%
Gender									
Male	54%	51%	54%	51%	55%	54%	54%	52%	53%
Female	46%	49%	46%	49%	45%	46%	46%	48%	47%
Basis of Eligibility									
Non-Disabled	72%	93%	78%	96%	77%	74%	77%	99%	86%
Disabled	28%	7%	22%	4%	23%	26%	23%	1%	14%
Length of Medicaid Enrollment (in Months)									
1 to 6	15%	25%	16%	15%	20%	11%	18%	20%	20%
7 to 11	20%	25%	22%	10%	18%	8%	19%	20%	20%
12	65%	50%	62%	76%	63%	81%	63%	60%	61%
Urbanicity									
Large metro area	21%	0%	3%	71%	0%	23%	5%	25%	31%
Small metro area	26%	50%	41%	8%	30%	26%	18%	32%	27%
Non-core adjacent to metro area or micropolitan area	52%	42%	53%	21%	68%	51%	73%	43%	41%
Non-core non-adjacent area	1%	9%	3%	0%	3%	1%	4%	0%	2%
Racial/Ethnic Diversity of County									
30% or More Black	47%	0%	36%	0%	0%	54%	66%	0%	0%
10% or More Hispanic	0%	0%	2%	56%	4%	0%	0%	0%	2%
15% or More Foreign-Born	0%	2%	0%	55%	0%	0%	0%	0%	1%
Number of Observations	17,819	8,823	19,731	50,136	10,398	23,281	15,803	7,959	19,114

¹Age is defined as of December 31, 2008.

Figure 1 displays the percentage of full-year enrolled children in each state that received a preventive dental visit in CY 2008. Comparing the visit rate across the states, Illinois had the lowest rate of receipt for preventive dental visits among all age groups. New Hampshire had the highest rate of receipt across all age groups.

Next, we extended the type of dental care received beyond preventive services to include any type of dental care. The pattern is similar to that for preventive services. Among full-year Medicaid enrollees, on average, 14 percent of children less than age 3, 54 percent of children ages 3–6, 59 percent of children 7–11, and

48 percent of children 12–17 received any dental services. These utilization rates are somewhat above estimates developed by GAO (2008) for Medicaid children from the MEPS for 2004–2005. The MEPS analysis found that 32 percent of children ages 2–5, 45 percent of children 6–11, 38 percent of children 12–15, and 30 percent of children 16–18 received any dental services in the previous year. It may be that utilization rates are higher for the nine states included in our analysis than the national averages. The difference might also be due to underreporting of services by the respondents to MEPS. GAO’s MEPS analysis indicated that children with private insurance had substantially

higher utilization rates than their counterparts on Medicaid. Among the privately insured children in the MEPS on average 42 percent of children ages 2–5, 64 percent of children 6–11, 58 percent of children 12–15, and 50 percent of children 16–18 received any dental services in the previous year.

Looking only at Medicaid children enrolled for a full 12 months (Figure 2), New Hampshire again had the highest utilization rate across each age group, with the exception of children ages 3–6,

for which Alabama had a slightly higher rate of utilization. Louisiana had the lowest rate of dental treatment utilization.

The American Academy of Pediatric Dentistry recommends a preventive dental visit every six months (2009). In Figure 3, we display the average number of preventive and any dental visits per enrollee by age group. Similar to the share of children receiving a preventive dental visit, the mean number of dental visits increases with age through the 7–11 year-old age group.

Figure 1. Percentage of Full-Year Enrolled Medicaid Children Receiving a Preventive Dental Visit, CY 2008

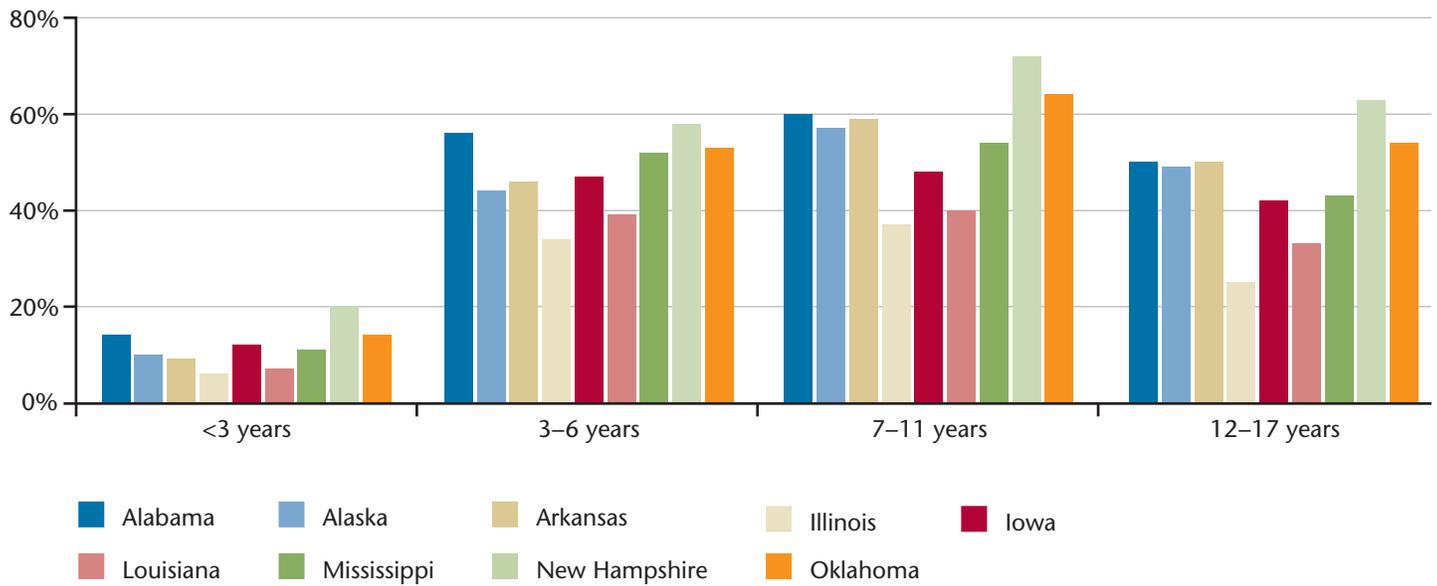


Figure 2: Percentage of Full-Year Enrolled Medicaid Children with Any Dental Service, CY 2008

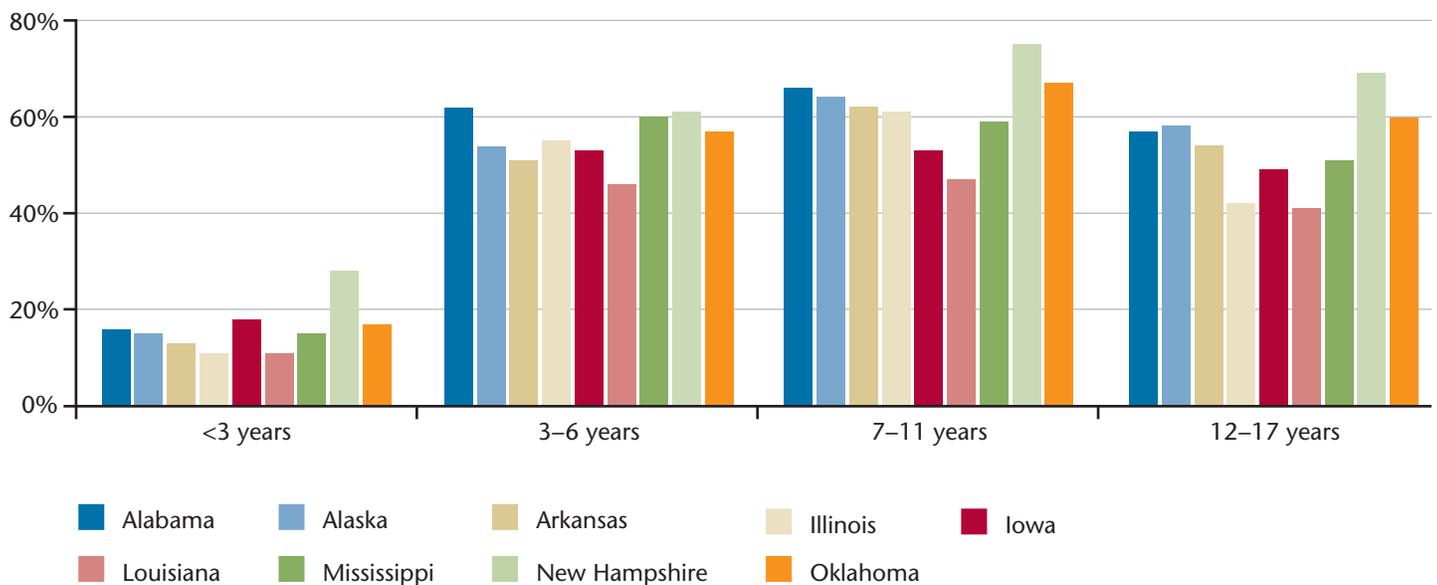
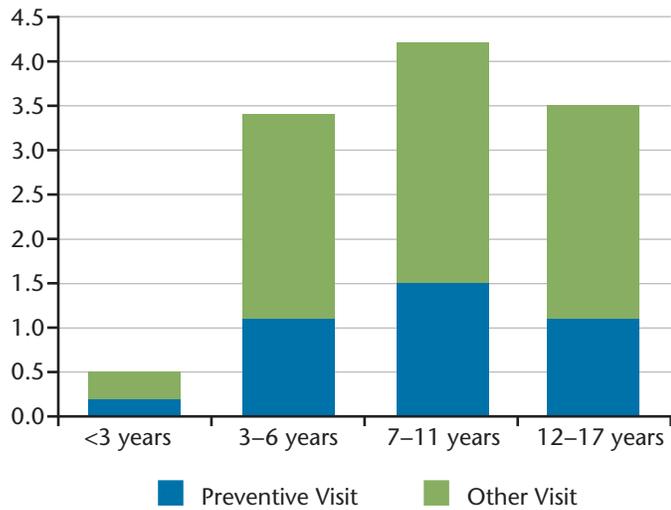


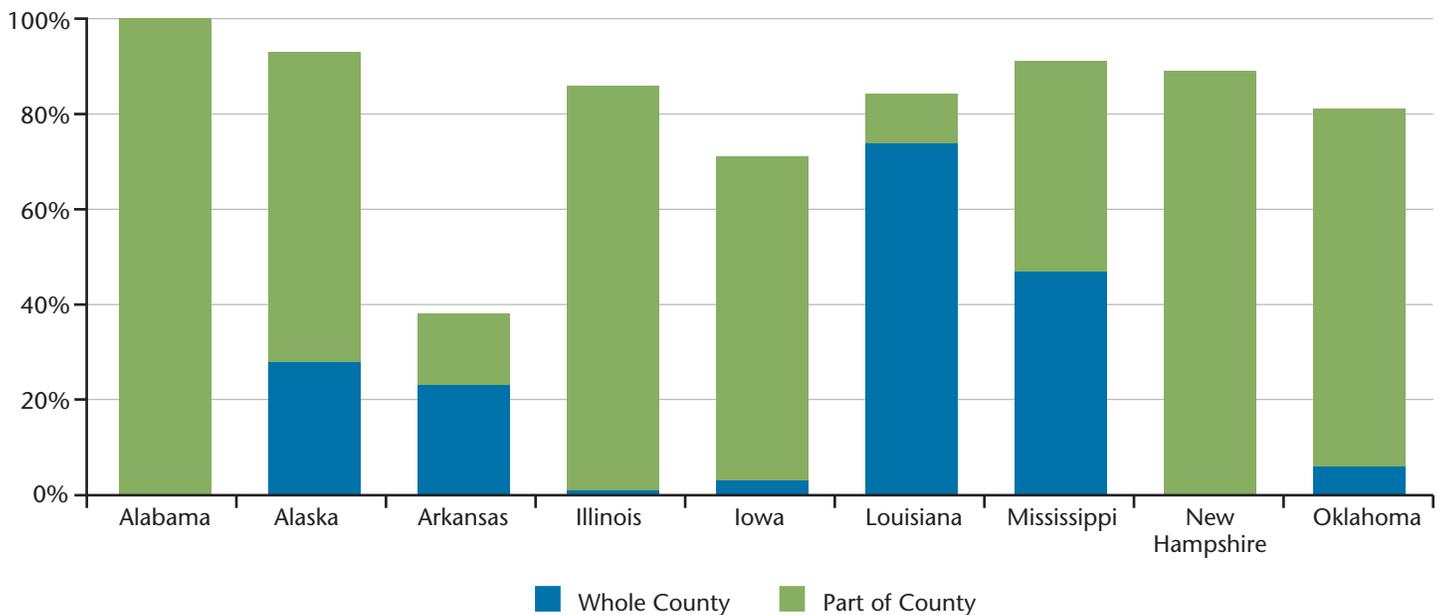
Figure 3. Mean Number of Preventive and Other Dental Visits, CY 2008



However, adolescents (ages 12–17) have a lower mean number of dental visits than their younger counterparts. Comparing the number of visits among 7–11 year-olds with those for 12–17 year-olds, both preventive and other visits decline, but the decline in preventive visits is steeper.

The availability of dental providers is a particularly important factor in accessing treatment. The Health Resources and Services Administration (HRSA), Bureau of Primary Health Care (BPHC) designates dental provider shortage areas. These areas have (1) a full-time equivalent (FTE) dentist ratio of at least 5,000 residents per dentist or (2) an FTE dentist ratio of less than 5,000 residents per dentist but greater than 4,000 residents per dentist and either an unusually high need for dental services or insufficient capacity of dental providers. In addition, dental professionals in contiguous areas must be overutilized, excessively distant, or inaccessible to the population in the area. An entire county or some part of it may be designated as a dental professional shortage area. Based on county designations recorded in the ARF, Figure 4 displays the proportion of Medicaid children in each state that live in a county that has been fully or partially so designated. With the exception of Iowa and Arkansas, more than 80 percent of the Medicaid children resided in a county in which the whole county or some part of the county has been designated as a dental professional shortage area. Most of the children lived in a county where only part of the county rather than the whole was designated as a shortage area. Louisiana (74 percent), Mississippi (47 percent), Alaska (28 percent), and Arkansas (23 percent) had the highest percentages of children residing in counties where the whole county was so designated.

Figure 4. Percentage of Medicaid Children Residing in a Dental Professional Shortage Area, CY 2008



Factors Influencing Utilization

We used multivariate regression analysis to explore the factors that may have influenced these differences in utilization of dental services, holding other factors constant. In Table 2, we present two sets of logistical regression results. In the first set, the dependent variable is receipt of preventive dental treatment; in the second set, it is receipt of any dental treatment. Both regressions control for personal and demographic characteristics. These include age, gender, basis of eligibility, and months of Medicaid enrollment. In addition, the logistical regressions also control for variables that indicate characteristics of the county in which the enrollee lives. These variables include urbanicity, education, median household income, health insurance coverage rates, race/ethnicity, and supply of providers.

Odds ratios are used to interpret the results of the logistic regression. For an indicator variable, the “odds ratio” compares the odds of receiving treatment for someone with the given characteristic relative to someone who does not have the characteristic. Thus, an odds ratio greater than one implies that the presence of the characteristic results in an increase in the odds of receiving treatment. In contrast, an odds ratio of less than one implies that an increase in the variable or the presence of the characteristic will decrease the odds of receiving treatment.

Looking at the personal characteristics of the Medicaid enrollee, females were more likely to receive treatment than their male counterparts and, as noted in the descriptive statistics, children ages 7–11 were the most likely to receive treatment, with children 3–6 and 12–17 being somewhat less likely to receive treatment and children less than 3 being substantially less likely. Not surprisingly, individuals enrolled in Medicaid for only part of the year were substantially less likely to receive treatment covered by Medicaid than individuals enrolled for the full year. Children eligible for Medicaid based on disability were substantially less likely to receive treatment than their counterparts who were eligible based on income.

The findings for the state indicators show significant differences in the likelihood of utilization across the states even when controlling for other enrollee and county characteristics. Children in Illinois had the lowest likelihood of utilization for both preventive and any dental care. Children in Louisiana, the state with the next lowest likelihood of utilization, were about two

times more likely to utilize preventive dental care than children in Illinois, but only slight more likely (10 percent) than a child in Illinois to use any dental care. Similar to the descriptive findings, children in New Hampshire had the highest likelihood of using both preventive and any dental care.

Turning to the characteristics of the enrollee’s county, the level of urbanicity in a child’s area of residence had a significant impact on their likelihood of utilization. Children in large metro areas were 21 percent more likely to use preventive dental care than their counterparts in small metro areas. Children in rural areas that were not adjacent to a metropolitan or micropolitan area were just as likely to use preventive dental care as children in small metropolitan areas. Children in rural areas that were adjacent to metropolitan or micropolitan areas had a slightly lower likelihood of utilization relative to those in small metropolitan areas. Residence in counties where less than 75 percent of working-age adults had a high school diploma or equivalent had no impact on the likelihood of using dental care.

The findings related to the median household income in the enrollee’s county are somewhat surprising. Holding other enrollee and county characteristics constant, enrollees in counties with median household income of less than \$50,000 had greater likelihood of using dental care than those in counties with a median household income of \$50,000–\$64,999. Enrollees in counties with median household income greater than \$65,000 also had a higher likelihood of using dental care relative to those residing in an area with a median household income of \$50,000–\$64,999. Residing in a county where more than 20 percent of the population was without health insurance decreased the likelihood of using both preventive and any dental treatment. Counties with a higher proportion of black residents (30 percent or more) had a lower likelihood of using preventive or any dental care. Medicaid enrollees in counties with more than 10 percent Hispanic population were also less likely to use preventive dental care, however residence in a county with more than 15 percent foreign-born residents was associated with an increased likelihood of both preventive and any dental care. Surprisingly, residence in a county in which the whole county was designated as a dental professional shortage area had no impact on likelihood of using dental care. In addition, residence in a county in which part of the county was designated as a dental professional shortage area was associated with a slightly increased likelihood of dental care utilization.

Table 2. Multivariate Regression Results for Receipt of Preventive and Any Dental Services, CY 2008

	Receipt of Preventive Dental Care			Receipt of Any Dental Services		
	95% Confidence Limits			95% Confidence Limits		
	Odds Ratio	Lower	Upper	Odds Ratio	Lower	Upper
Enrollee-Level Data						
Gender (reference group: male)						
Female	1.07*	1.04	1.10	1.09*	1.06	1.11
Age (reference group: ages 7 to 11)						
Less than 3	0.09*	0.08	0.09	0.09*	0.08	0.09
3 to 6	0.79*	0.76	0.81	0.79*	0.77	0.81
12 to 17	0.67*	0.65	0.69	0.65*	0.63	0.67
Basis of Eligibility (reference group: non-disabled)						
Disabled	0.69*	0.66	0.71	0.70*	0.68	0.72
Length of Medicaid Enrollment (reference group: 12 months)						
1 to 6 months of enrollment	0.15*	0.14	0.16	0.14*	0.14	0.15
7 to 11 months of enrollment	0.53*	0.51	0.55	0.51*	0.49	0.53
State of Enrollment (reference group: Illinois)						
Alabama	3.74*	3.52	3.97	1.96*	1.86	2.08
Alaska	2.75*	2.43	3.11	1.71*	1.51	1.92
Arkansas	3.72*	3.49	3.96	1.77*	1.67	1.88
Iowa	2.68*	2.52	2.87	1.36*	1.27	1.44
Louisiana	2.06*	1.90	2.24	1.10*	1.02	1.19
Mississippi	3.44*	3.20	3.71	1.78*	1.66	1.91
New Hampshire	4.82*	4.50	5.17	2.44*	2.28	2.61
Oklahoma	3.36*	3.06	3.70	1.74*	1.58	1.91
County-Level Data						
Urbanicity (reference group: small metro area)						
Large metro area	1.21*	1.15	1.26	1.16*	1.11	1.21
Noncore adjacent to metro area or micropolitan area	0.95*	0.91	0.99	0.96*	0.92	0.99
Noncore non-adjacent area	0.92	0.83	1.02	0.99	0.89	1.09
Low Education (reference group = no)¹						
Yes	0.96	0.92	1.01	0.98	0.94	1.03
Median Household Income (reference group = \$50,000–\$64,999)						
<\$35,000	1.15*	1.08	1.23	1.17*	1.10	1.25
\$35,000–\$49,999	1.07*	1.03	1.12	1.07*	1.03	1.12
\$65,000+	1.13*	1.06	1.21	1.08*	1.02	1.15
Percent under 65 without Health Insurance (reference group = <20%)						
20%+	0.92*	0.89	0.96	0.93*	0.89	0.97
Percent Black (reference group = <15%)						
15%–29.99%	1.01	0.97	1.06	0.99	0.95	1.04
30%+	0.88*	0.83	0.92	0.88*	0.84	0.92

(continued)

Table 2. Multivariate Regression Results for Receipt of Preventive and Any Dental Services, CY 2008 (continued)

	Receipt of Preventive Dental Care			Receipt of Any Dental Services		
	95% Confidence Limits			95% Confidence Limits		
	Odds Ratio	Lower	Upper	Odds Ratio	Lower	Upper
Percent Hispanic (reference group = <10%) 10%+	0.87*	0.80	0.94	1.03	0.95	1.10
Percent with Two or More Races (reference group = <2.5%) 2.5%+	1.10*	1.01	1.20	1.02	0.94	1.11
Percent Foreign-Born (reference group = <2%) 2% - 14.99% 15%+	1.02 1.43*	0.98 1.31	1.05 1.58	1.03 1.19*	0.99 1.09	1.06 1.30
Health Professional Shortage Area, Dental (reference group = no) ² Whole County Part of County	1.01 1.10*	0.96 1.06	1.06 1.15	1.02 1.10*	0.97 1.06	1.07 1.15

* Statistically different likelihood from reference group at the 95 percent confidence level.

¹“Yes” implies 25 percent or more of residents ages 25 through 64 had neither a high school diploma nor GED in 2000.

²As designated by the Health Resources and Services Administration (HRSA), Bureau of Primary Health Care (BPHC), a dental provider shortage area has (1) a full-time equivalent (FTE) dentist ratio of at least 5000:1, or (2) an FTE dentist ratio of less than 5000:1 but greater than 4000:1 and either an unusually high need for dental services or insufficient capacity of dental providers. In addition, dental professionals in contiguous areas must be overutilized, excessively distant, or inaccessible to the population in the area.

Discussion

Overall, this study confirms the findings of earlier research on utilization of dental services among Medicaid-enrolled children. Although Medicaid covers preventive dental services for children, among children enrolled in Medicaid for the full-year only 9 percent of children less than three, 43 percent of children ages 3–6, 48 percent of children 7–11, and 37 percent of children 12–17 received a preventive dental visit in 2008.

Children residing in counties that were designated as dental professional shortages were no less likely to utilize dental care than their counterparts who were not residing in shortage areas. This suggests that the policies currently in place in these counties are working to assure access to care in these areas. Children living in counties where more than 20 percent of residents did not have health insurance were 8 percent less likely to receive preventive dental care. The resources available to support providers may be more limited in these communities, and thus, these providers may be less able to provide services to Medicaid enrollees.

The findings related to race/ethnicity and utilization among foreign born individuals are mixed. Children living in areas with higher percentages of Black and Hispanic residents were less

likely to use dental care, however, those in areas with a high percentage of foreign-born residents were more likely to use dental services. Further research appears warranted on those factors that result in reduced utilization in Black and Hispanic communities and methods to address these differences.

Finally, children who qualified for Medicaid based on disability were substantially less likely to receive dental treatment than their counterparts who qualified for Medicaid based on family income. This population may be more costly to serve than non-disabled Medicaid children and require providers with additional training. Analysis of the needs of this population and barriers to access is suggested to address this gap.

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