

**Access to Oral Health Care for Medicaid Children in Illinois:  
A Focus on Rural Illinois**

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## INTRODUCTION

Children's oral health has improved over the past forty years, due to fluoridation, improved oral hygiene, better nutrition, and access to oral health care services. However, oral problems related to dental caries or cavities (painful teeth, missing teeth and poor appearance, impairments in chewing and nutritional limits) and other oral conditions affect the health and well-being of children and lead to missed school days and ongoing dental problems. While oral health care services are an important component of comprehensive primary care services, many children have inadequate dental care. In the last several years, national attention has focused on the problem of limited access to oral health care for low-income children. The Surgeon General's Report on Oral Health in America has called oral health disease a "hidden epidemic"<sup>1</sup>. Also, the Healthy People 2010 Program, a national public health agenda, has identified several targets to increase access to dental care and to reduce the rates of decay and untreated caries.

National data (including the 1988-1994 National Health and Nutrition Examination Survey (NHANES) III, 1996 Medical Expenditures Panel Survey (MEPS), and 1997 National Survey of America's Families (NASF)) consistently indicate that low-income children are worse off in terms of oral health status and dental services utilization than higher-income children. For example, the MEPS data indicate that 30% of low-income children age 0-18 years visited a dentist in 1996, compared to 49% of middle-income children, and 60% of high-income children<sup>2</sup>. Oral health examinations as part of NHANES showed significant differences in children's oral health status (as measured by decayed, filled, missing, and treated surfaces), with worse oral health status among older children, ethnic and racial minorities and low income children<sup>3</sup>. In the mid-1990s, only one in five children with Medicaid nationally received dental care in a year. In Illinois, only 27% of children with Medicaid received dental care in 1998<sup>4</sup>.

The reasons behind the low utilization of dental services by Medicaid children are complex and include problems within the Medicaid program (payments, billing, client eligibility, services covered); limited participation by dentists; a limited number and limited capacity of public facilities offering oral health care services; and a variety of barriers facing children and their families that range from beliefs and attitudes about oral health care to transportation problems. The limited number of dentists willing to provide care to children with Medicaid has been called the most significant barrier to dental care. In Illinois, only 34% of active general and pediatric dentists were enrolled in Medicaid and only 76% of the enrolled dentists participated in Medicaid<sup>5</sup>. Reports from North Carolina and Missouri indicate that more than one-third of counties in these states had no dentist who was willing to treat Medicaid patients<sup>6,7</sup>. Most states are taking steps to expand dentists' participation, with the expectation that this will increase the number of children treated<sup>8</sup>.

### *Children's Oral Health and Dental Services Utilization in Rural Areas*

Data that describe problems related to access to oral health care in rural areas, and specifically for rural Medicaid and non-Medicaid children, are scarce and disparate. Results from a 1986-87 national survey show that the number of decayed surfaces for 5-17 year-old children in non-metropolitan counties was 5% higher than in metropolitan counties<sup>9</sup>. National data for 1993

show that more children (ages 0-17) in non-metropolitan areas reported unmet dental needs (8.4%) than metropolitan children (6.1% in metropolitan areas with a central city, 5.3% in other metropolitan areas)<sup>10</sup>. In 1989, 58.4% of persons two years or age and older visited a dentist in the past year in metropolitan areas compared to 53.6% of persons in non-metropolitan areas<sup>11</sup>. A study of Maryland children in Head Start found that caries presence in low-income children 3 to 5 years of age was higher in rural counties (63%) than in non-rural counties (47%)<sup>12</sup>.

*Rural/Urban Supply of Dentists and Dentists' Medicaid Participation*

Rural areas have had a persistently low supply of dentists. A major study on rural health in America in 1987 reported that the overall supply of dentists in the country was 53 dentists per 100,000 population in 1987, with 58 dentists per 100,000 population in metropolitan areas and 35 dentists per 100,000 population in non-metropolitan areas<sup>13</sup>. The table below shows how the dentist supply decreased as the size of the non-metropolitan area decreased.

**Table 1. Number of Dentists per 100,000 Population, 1987**

	<b>Dentists per 100,000 population</b>	<b>General practice and pediatric dentists</b>
U.S. total	53	43
Metropolitan areas	58	46
Non-metropolitan areas	35	32
50,000 or more	40	34
25,000 – 49,000	35	32
10,000 – 24,999	30	29
2,500 – 9,999	27	26
Fewer than 2,500	15	14

Source: Health Care in Rural America ,1990, p. 272

Rural areas remain underserved by dentists. Of the federally designated Dental Health Professional Shortage Areas (DHPSA) in 1997, 68% were in non-metropolitan and rural areas<sup>14</sup>. Another recent report stated that 38% of all rural counties do not have a dentist<sup>15</sup>.

Studies of medical care in rural areas have found that in rural communities, providers treat both privately insured and Medicaid or uninsured residents. A study of rural safety nets, not focusing on dentists, found that in small rural communities, it is likely that the same providers serve all residents, regardless of insurance status and that safety nets in rural areas include almost all providers<sup>16</sup>. National data indicate that a much higher percentage of children in non-metropolitan areas had a private physician as their regular source of care than children in metropolitan areas<sup>17</sup>. One explanation is that in order to remain financially viable, rural physicians have less ability to ‘self-select’ their patients than urban physicians do. It is not clear how these findings on rural medical care relate to rural oral health care.

## *Study Purpose*

This study describes the dental utilization rates of Illinois Medicaid/KidCare enrolled children (from now on referred to as Medicaid) in rural and non-rural areas and examines how overall dentist supply, dentists' Medicaid participation, and county level socio-demographic factors affect utilization. Specifically, the following research questions were addressed: (1) Which geographic areas, with a focus on rural areas, have a low supply of dentists and low dentist participation in Medicaid?; and (2) How do urban/rural areas compare regarding dentist enrollment and participation in Medicaid and Medicaid children's utilization of dental services? Statewide data are also presented as a basis of comparison. This information should help discern whether rural areas require any special considerations to increase access to oral health care for Medicaid children.

## **METHODS**

Descriptive data are provided by geographic region regarding Medicaid enrollment, Medicaid children's utilization of dental services, sociodemographic and practice characteristics of dentists, and dentist enrollment and participation in the Medicaid program.

### **Data Sources**

#### *Sociodemographic And Practice Data For Illinois Dentists*

A data set of all Illinois dentists was obtained from the American Dental Association (ADA) in February 2000. This data set included both ADA members and non-members. The data set included the following information: address information including zip code, birth date, gender, race, year of graduation from dental school, dental school attended, specialty, and occupation type (e.g., private practice >30 hours per week, hospital dentist, etc.). The only information with a large proportion of missing values was race (28% missing for active dentists). Dentists' zip codes were matched with data from the U.S. Postal Service (USPS) to add county location for each dentist.

#### *County Population Data*

Population estimates for July 1999, total and by age group, for each county were obtained from the U.S. Census Bureau<sup>18</sup>. These were aggregated by urban and rural regions.

#### *Medicaid Provider And Enrollee Data*

Data on dentist enrollment and participation in Medicaid and Medicaid enrollee utilization of dental care were provided by the Illinois Department of Public Aid (IDPA) and Doral Dental Services (Doral), the state's Medicaid dental intermediary. Dentist participation in Medicaid and Medicaid children's utilization of dental services were for services provided from March 1, 1999 through February 29, 2000, for claims paid through June 30, 2000. Medicaid enrollment figures were as of September 1, 1999 (the midpoint of the claims data provided). The list of enrolled providers was as of June 30, 2000.

The enrollee-level data for children were provided by county (often by zip code for Cook County), and for the following age groups: 0-3 years, 4-5 years, 6-12 years, 13-18 years, and 19-20 years. Data included the number of children enrolled in Medicaid and the number of enrolled children who utilized dental services during the year. The Cook County zip code-level data were aggregated to provide estimates for the entire county.

The data only allow reporting of whether a child received any dental service that was billed to Medicaid; uncompensated, or pro bono, care is not reported, and there is no indicator of the level of care received, or whether the child received all the care that was needed.

### *Safety Net Dental Clinics*

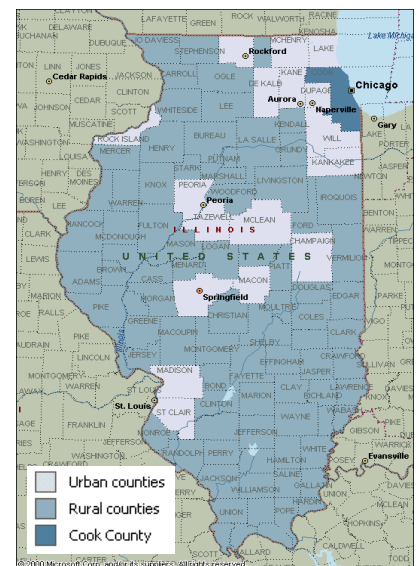
The Illinois Department of Public Health (IDPH) Division of Oral Health provided a map of current and proposed public health clinics as of summer 2000.

## **Description of Variables Used**

### *Geographic Region*

The county data were aggregated by urban/rural status to allow for comparisons by geographic area. The following urban/rural classification is used in this report, as provided by the IDPH Center for Rural Health<sup>19</sup>. Any county that is not a part of a metropolitan statistical area (MSA) is defined as rural, as is any county that is in an MSA but has a population of 60,000 or less. With this definition, 84 counties are rural and 18 are urban. The urban counties are Champaign, Cook, DeKalb, DuPage, Kane, Kankakee, Lake, McHenry, McLean, Macon, Madison, Peoria, Rock Island, St. Clair, Sangamon, Tazewell, Will and Winnebago. The IDPH Center for Rural Health separates Cook County from the other urban counties; this distinction was used in this study. Figure 1 shows the Cook/urban/rural designations of Illinois counties.

Figure 1. Illinois Counties by Geographic Region



### *Active General And Pediatric Dentists*

Active patient care general practice and pediatric dentists (referred to as “active dentists” in this report) were defined from ADA data as dentists whose specialties were listed as “general practice” or “pedodontics” and who were employed as : (1) private practice >30 hours/week; (2) private practice <30 hours/week; (3) hospital staff dentist; or (4) part-time faculty/part-time dentist<sup>i</sup>. Also, dentists in the dataset who were over 75 years of age were excluded from this analysis. This subset of dentists was selected since they are the most likely providers of dental

<sup>i</sup> Excluded occupation codes: full time faculty; armed forces-army, navy, air force, marines; other federal services-VA, public health; state or local government; graduate student/resident; other non-dental student; other health organization staff; not in practice-seeking employment; no longer in practice (retired); and other occupation.

care services to children. The ADA data set is believed to be most useful and reliable for private practice dentists as opposed to dentists who work in government or public health settings.

### *Enrolled And Participating Dentists*

Dentists who wish to provide care and bill the Medicaid program must be enrolled as a Medicaid dental provider. This requires the dentist to complete an application and agree to the terms of the Medicaid program as administered by the dental intermediary. IDPA/Doral provided a list of enrolled providers, as of June 30, 2000, by provider identification number and zip code. Using USPS zip code and county data, each record was coded to a county. An individual provider with multiple locations is listed more than once in the list of enrolled providers. Since, for our study, each site needs to be counted, this overestimates the number of participating dentists in our analysis. Analysis of the list indicated that 385 (19%) of the 2,078 Illinois provider identification numbers were listed more than once. Of these, 278 (72%) had only 2 practice sites, and 199 (72%) of this group had both practice sites in the same county. Many of the observations with multiple sites had all of the sites in Cook County.

IDPA/Doral provided a count of dentists in each county who submitted services, grouped by 1-100 services, 101-999 services, 1000-1999 services, 2000-4999 services, and 5000 or more services. This count is the measure of participation used in this study. A service is any procedure billed and paid for by Medicaid. Thus service and procedure are used interchangeably. Dentist participation data are for individual services billed rather than visits or claims (a visit or claim usually consists of more than one service). This limits the ability to discuss how many Medicaid patient visits occurred, for example, in a county or per dentist.

It should be noted that it was not possible to merge the ADA and IDPA data files, so sociodemographic characteristics of dentists who enrolled or participated in Medicaid could not be studied.

## RESULTS

### *Population and Medicaid Enrollment*

Table 2 shows general information for the geographic regions, based on urban or rural status, with Cook County separated from the urban counties. These areas range in population from almost 5.2 million residents in Cook County, to just over 4.7 million residents in the 17 urban counties to 2.2 million in the 84 rural counties. The percentage of children and adolescents under 21 years of age who were enrolled in Medicaid is about 22% statewide, ranging from 31% in Cook County to 14.5% in the urban counties and 19% in the rural counties.

**Table 2. Illinois - Cook, Urban, and Rural Areas:  
Number of Counties, Population, and Medicaid Enrolled Children**

	<b>Illinois</b>	<b>Cook County</b>	<b>Urban</b>	<b>Rural</b>
Number of counties	102	1	17	84
Total population <sup>b</sup>	12,128,370	5,192,326	4,694,394	2,241,650
Population under 21 <sup>b</sup>	3,671,280	1,556,778	1,463,668	650,834
Medicaid enrolled children under 21, Total <sup>c</sup>	818,269	482,142	211,710	124,417
Age 0-3	234,871	136,125	64,258	34,488
Age 4-5	100,993	60,829	25,840	14,324
Age 6-12	289,148	173,437	72,310	43,401
Age 13-18	161,157	94,505	40,239	26,413
Age 19-21	32,100	17,246	9,063	5,791
Percent of population <21 enrolled in Medicaid	22.3%	31.0%	14.5%	19.1%

<sup>a</sup> Area Resource File, 2001.

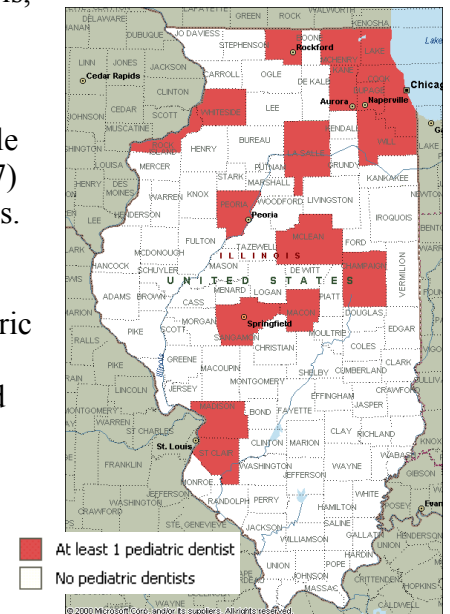
<sup>b</sup> U.S. Census Bureau. Actual figures for ages 0-17, estimated figures for age 18-20.

<sup>c</sup> IDPA, 2000. Enrolled children as of September 1, 1999.

## Characteristics of Dentists

In February 2000, there were 6,920 active patient care dentists in Illinois, excluding dentists over 75 years of age. This definition includes all dentists in private practice, full-time and part-time, as well as hospital staff dentists, and dental school faculty also in private practice<sup>ii</sup>. The specialty distribution of all active patient care dentists is shown in Table 3. Approximately 83% (5,766) were general practitioners and 2% (137) were pediatric dentists, the two specialties most relevant to this analysis. The rural counties have a much greater proportion of dentists who are general practitioners (91%). The urban counties had the lowest proportion of general practitioners and the highest proportion of pediatric dentists among the three areas. Figure 2 indicates the counties which have at least one active pediatric dentist; 82 of the 84 rural counties did not have a pediatric dentist compared to 3 of the 17 urban counties. A separate analysis indicates that 77% of active pediatric dentists were located in the 6 counties with the highest per capita income in Illinois.

**Figure 2. Counties with At Least One Pediatric Dentist**



**Table 3. Illinois Active Dentists\*,\*\* by Specialty**

	Illinois	Cook County	Urban	Rural
	%	%	%	%
General Practice	83	85	80	91
Oral Surgery	4	3	5	3
Endodontics	2	2	2	0.3
Orthodontics	5	4	7	4
Pediatric Dentistry	2	2	3	0.4
Periodontics	3	3	3	1
Prosthodontics	1	1	1	1
Oral Pathology	0.1	0.2	0.1	0
Dental Public Health	0.1	0.1	0.1	0
<b>Total Number of Dentists</b>	100 (6920)	100 (3354)	100 (2857)	100 (709)

Data from the American Dental Association, February 2000

\*Active patient care includes private practice >30 hours, private practice < 30 hours, PT faculty/PT practice, and hospital staff dentist.

\*\* Excludes dentists older than 75 years of age.

Percentages may not equal 100% due to rounding.

<sup>ii</sup> It is not clear from the data whether some dentists in these categories also provide dental care in safety net facilities.

*Population to Dentist Ratios*

Dentist supply is often discussed in terms of dentists per 100,000 population. According to a recent GAO report, there is no agreed upon standard population to dentist ratio for assessing the supply of dentists<sup>20</sup>. The American Academy of Pediatric Dentistry does not have any standards for child population-to-pediatric dentists. Perhaps the only point of comparison is with federal government criteria for determining areas that have a shortage of dentists. The existing total population-to-full-time-equivalent-dentist ratio standards for a geographic area to qualify as either a geographic or special population Dental Health Professional Shortage Area (DHPSA) is at least 5,000 persons to one dentist or 4,000 persons to one dentist, respectively. Population to dentist ratios that are in use do not give consideration to differences in oral health status for different populations. Ratios are but one measure to use in making determinations about the adequacy of dentist supply,

Table 4 shows population to dentist and dentist to population ratios for Illinois and the geographic categories. The Illinois dentist to population ratio was 57 active dentists (all specialties) to 100,000 population, similar to the national average of 58/100,000. However, within Illinois, there is a large disparity among the geographic regions, with 65 and 61 dentists per 100,000 people in Cook County and the urban region, respectively, and only 32 dentists per 100,000 people in the rural region. Cook County and the urban region account for 90% of all active patient care dentists in the state and 82% of the population. The ratios are also provided for general and pediatric dentists only, and follow the same pattern.

To allow for another perspective, Table 4 also displays the population to dentist ratios for Illinois and the geographic regions. These estimates show the potential supply of dentists available to residents of the State. The ratio for all residents is 1,753 persons per one dentist. These ratios are markedly different by geographic region, with higher population to dentist ratios for the rural area (3,162 people per one dentist – all specialties), which also has a lower supply of dentists.

**Table 4. Illinois Active Patient Care\* Dentists\*\* and Dentists to Population Ratios**

	<b>Illinois</b>	<b>Cook County</b>	<b>Urban</b>	<b>Rural</b>
Dentists (all specialties)	6920	3354	2857	709
Dentist to 100,000 pop.	57	65	61	32
Population per dentist (all specialties)	1753	1548	1643	3162
General & pediatric dentists	5903	2896	2359	648
General/pediatric dentists to 100,000 population	49	56	50	29
Population per general/pediatric dentist	2055	1793	1990	3459
Total population	12,128,370	5,192,326	4,694,394	2,241,650

Dentist data from the American Dental Association, February 2000. Population data from the U.S. Census Bureau, 1999 estimates.

\*Active patient care includes private practice >30 hours, private practice < 30 hours, PT faculty/PT practice, and hospital staff dentist.

\*\* Excludes dentists older than 75 years of age.

## *Dentists in General Dentistry and Pediatric Dentistry*

Table 5 presents sociodemographic characteristics of active pediatric and general dentists (referred to as “active dentists” from this point on) in each area. Almost all (97%) rural active dentists are white, compared to 89% in urban counties, and 79% in Cook County. The rural region also has the largest proportion of male dentists (93%), followed by the urban region (85%), and then Cook County (78%). The age distribution of active dentists also varied by geographic region<sup>iii</sup>. Eleven percent of Illinois active dentists are under 35 years of age, with the lowest proportion of young dentists (7%) in the rural area. Twenty-three percent of Illinois active dentists were 55 years of age or older. Over 27% of active dentists in the rural region were 55 years or older. Based on the total number of active rural dentists, about 178 of 648 dentists could be expected to retire over the next decade.

**Table 5. Sociodemographic Characteristics of Illinois Active\* Dentists\*\***

	<b>Illinois</b>	<b>Cook County</b>	<b>Urban</b>	<b>Rural</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
<b>White</b>	85	79	89	97
<b>Male</b>	83	78	85	93
<b>Age</b>				
< 35 yrs.	11	13	10	7
35-44 yrs.	33	34	34	26
45-54 yrs.	33	31	34	40
55-64 yrs.	14	14	15	15
65 or older	9	9	7	12

Data from the American Dental Association, February 2000

\*Active patient care includes private practice >30 hours, private practice < 30 hours, PT faculty/PT practice, and hospital staff dentist.

\*\* Excludes dentists older than 75 years of age.

### *Dental School Attended*

In the past, there have been dental schools at the following four Illinois universities: University of Illinois at Chicago (UIC), Southern Illinois University (SIU), Loyola, and Northwestern University. However, only two Illinois dental schools remain, as Loyola closed its dental school in 1994-95 and Northwestern is graduating its last class of dental students this year. Due to the dental school closures and the downsizing of the UIC dental school, the number of Illinois dental graduates has decreased from 460 in 1980 to about 110 in 2002<sup>21</sup>.

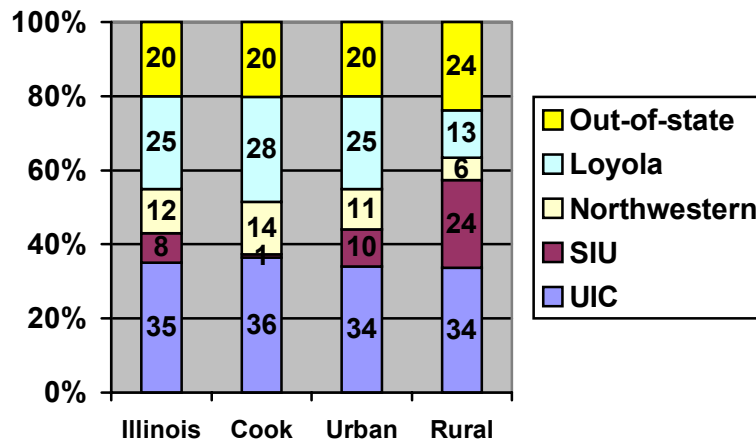
Figure 3 indicates the proportion of active dentists in each geographic region who attended each of the four Illinois dental schools or out-of-state dental schools. Slightly fewer rural active

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<sup>iii</sup> Dentists of unknown age who graduated from dental school between 1993-1999 were included in the younger than age 35 group.

dentists attended an Illinois dental school (76%) than Cook County and urban active dentists (80% each). The proportion of dentists in each geographic region who graduated from UIC was relatively constant (about 35%). However, while only 1% of Cook County active dentists and 13% of active dentists in urban counties graduated from SIU, one-fourth of the rural active dentists graduated from SIU. The Northwestern and Loyola dental school closings will affect the urban counties more than the rural, although these two schools did account for a substantial proportion of rural active dentists (19% of rural Illinois graduates).

**Figure 3. Location of Dental School Attended by Illinois Active\* General and Pediatric Dentists\*\*, by Region**



UIC=University of Illinois at Chicago, SIU=Southern Illinois University  
Data from the American Dental Association, February 2000.

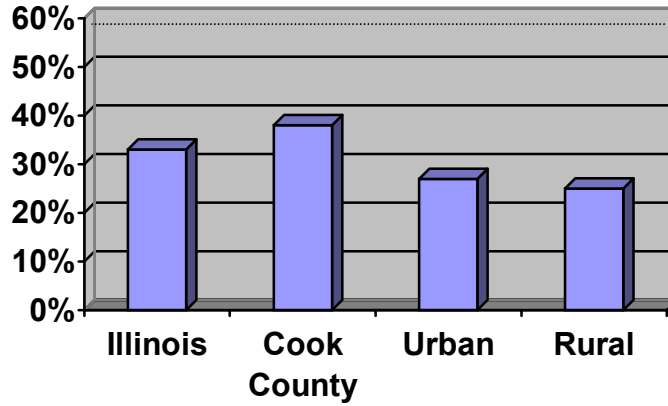
\*Active patient care includes private practice >30 hours, private practice < 30 hours, PT faculty/PT practice, and hospital staff dentist.

\*\* Excludes dentists older than 75 years of age.

### *Dental Services Utilization By Medicaid Enrolled Children*

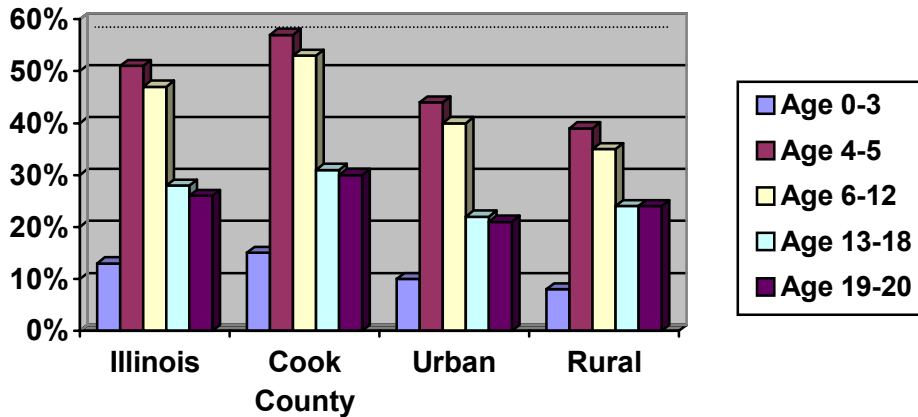
Of children enrolled in Medicaid (see table 2), there was substantial variation in the proportion of children who received any dental services based on urban or rural location. While 25% and 27% of enrolled children in rural and urban counties, respectively, received any dental services, the utilization rate was 38% in Cook County (Figure 4). This pattern held for all age groups (Figure 5), although adolescents (age 13-18 and 19-20) in rural counties actually had slightly higher utilization rates than adolescents in urban counties. Across all geographic regions, utilization rates were highest for the 4-5 year-olds and the 6-12 year-olds. The dotted line at 57% in each of these figures indicates the Healthy People 2010 objective of 57% of children <200% of the federal poverty level having at least one preventive oral health care visit during the year. The 4-5 year-olds in Cook County actually meet the Healthy People 2010 target of 57% utilization, and the Cook County 6-12 year-olds come close to the target. The other regions and age groups have substantially further to go to meet this national goal.

**Figure 4. Dental Services Use by Medicaid Children, All Ages, by Geographic Region**



Data from the Illinois Department of Public Aid, 2000.

**Figure 5. Dental Services Use by Medicaid Children, by Age Group, by Geographic Region**



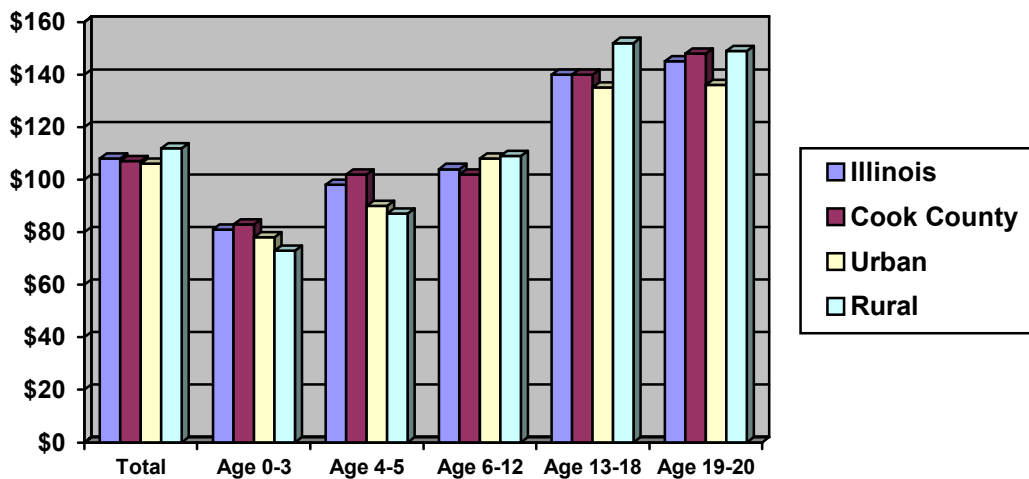
Data from the Illinois Department of Public Aid, 2000.

Note: The dotted line in Figures 4 and 5 indicates the Healthy People 2010 objective of increasing to proportion of low-income children (<200% FPL) who have a preventive oral health care visit during the year to 57%.

### Expenditures

From March 1999 through February 2000, \$29.2 million were spent on dental care for Medicaid enrollees under 21 years of age. The statewide average expenditure per user was \$108 per year, with expenditures increasing with the age of the user, from \$81 for very young children (0-3 years) to \$145 for 19 and 20 year olds (Figure 6). The increases by age group likely reflect the mix of dental services used, with higher cost services (oral surgery and orthodontics) being more common in the older age groups. However, county level data for types of procedures were not available. Overall, it appears that there is more of an age effect than a geographic effect in terms of average expenditures per user.

**Figure 6. Average Expenditure Per Medicaid Dental Services User, by Geographic Region**



Data from the Illinois Department of Public Aid, 2000.

### Dentist Enrollment and Participation in the Medicaid Program

The proportion of active dentists enrolled in Medicaid and participating in Medicaid, by geographic region, is shown in Table 6. The number of active dentists is seen as the upper limit of dentists available to provide care to Medicaid enrolled children, although an unknown number of these dentists would not be willing to enroll in Medicaid under any circumstances, and an unknown number of the general dentists may not feel comfortable treating children. IDPA data show that 34% (2,034 of 5,903) of Illinois active dentists were enrolled as Medicaid providers on June 30, 2000. The proportion of dentists enrolled by area was notably greater in the rural counties (58%) than in Cook County (37%) and the other urban counties (26%). In terms of actually treating and receiving reimbursement for services provided to Medicaid children, 46% of all active dentists in the rural region participated in Medicaid, compared to 27% in Cook County and 20% in other urban counties.

**Table 6. Medicaid Enrollment and Participation of Illinois Active\* Dentists\*\* and Enrolled Dentists**

	<b>Illinois</b>	<b>Cook County</b>	<b>Urban</b>	<b>Rural</b>
Active Dentists	5,903	2,896	2,359	648
<b>Enrollment in Medicaid</b>				
Medicaid enrolled dentists	2,034	1,058	602	374
% of active dentists enrolled in Medicaid	34%	37%	26%	58%
<b>Participation in Medicaid</b>				
Active Dentists Who Participated	1,537	781	461	295
% of Active Dentists Who Participated	26%	27%	20%	46%

Data on number of active dentists provided by the American Dental Association, February 2000. Dentist Medicaid enrollment and participation data provided by Illinois Department of Public Aid, 2000.

\*Active patient care includes private practice >30 hours, private practice < 30 hours, PT faculty/PT practice, and hospital staff dentist.

\*\* Excludes dentists older than 75 years of age.

**Table 7. Volume of Services Submitted by Illinois Active Dentists**

<b>Volume of Services</b>	<b>Illinois</b>		<b>Cook County</b>		<b>Urban</b>		<b>Rural</b>	
	Number of Dentists	% of Active Dentists	Number of Dentists	% of Active Dentists	Number of Dentists	% of Active Dentists	Number of Dentists	% of Active Dentists
<b>1-100</b>	802	14%	334	12%	272	12%	196	30%
<b>101-999</b>	570	10%	346	12%	144	6%	80	12%
<b>999 or more</b>	165	3%	101	3%	45	2%	19	3%

Data on number of active dentists provided by the American Dental Association, February 2000. Dentist Medicaid enrollment and participation data provided by Illinois Department of Public Aid, 2000.

\*Active patient care includes private practice >30 hours, private practice < 30 hours, PT faculty/PT practice, and hospital staff dentist.

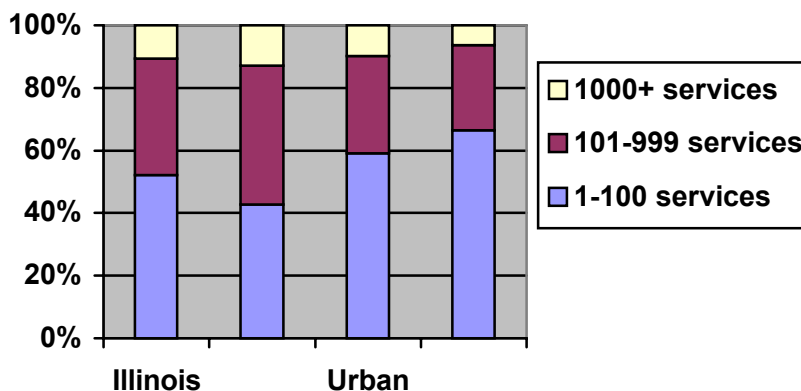
\*\* Excludes dentists older than 75 years of age.

Table 7 presents the level of Medicaid participation among active Illinois dentists, expressed as number of services submitted to and reimbursed by IDPA. These data indicate that, statewide, 570 dentists provided a moderate to substantial volume of care (100 to 999 procedures) and 165 dentists provided large to very large volumes of care (1,000 or more procedures). For purposes of comparison, a recent GAO report defined “substantial participation” as seeing at least 100 Medicaid patients in a year<sup>22</sup>. In most states, less than 25% of dentists met this definition. In Illinois, it appears that about 13% of dentists come near this level of participation. Equal percentages of dentists in the rural region and in Cook County participated at moderate and high levels, and their rate of participation at these levels was higher than in the urban region.

While the above data indicate level of participation among all dentists, Figure 7 shows level of participation among participating dentists only. Examined this way, more rural participating dentists provided lower volumes of services than did participating dentists in the urban region

and, especially, in Cook County. There were 18 counties, all rural, which did not have any dentists who participated in Medicaid.

**Figure 7. Level of Medicaid Participation, Among Medicaid Participating Dentists**



Source: IDPA, 2000. For the period March 1, 1999 through February 29, 2000, for claims paid through June 30, 2000.

### *High Volume Dentists*

Of the 165 dentists (3% of all active dentists) who submitted at least 1,000 services during the year, data not in the table show that 109 dentists submitted between 1,000-1,999 services, 51 submitted between 2,000-4,999 services, and 5 submitted 5,000 or more services. Most of these high volume dentists were located in Cook County.

There were 19 high volume dentists in 15 rural counties. Of the 15 rural counties with high volume providers, 7 also had safety net dental clinics, while none had any pediatric dentists. These 7 counties with both high volume providers and safety net dental providers ranked in the top half of rural counties in terms of the percentage of Medicaid children who used dental services.

### *Medicaid Children to Medicaid Dentist Ratios*

Table 8 presents the ratios, for each geographic region, of the number of Medicaid enrolled children per Medicaid participating dentist and the number of Medicaid enrolled children who used any dental services per Medicaid participating dentist. These averages do not reflect the reality that most dentists treat very small numbers of children and others treat much larger numbers. The number of Medicaid enrolled children per participating dentist is lowest in the rural area (422 children) and highest in Cook County (617 children). Including only Medicaid children who used dental services results in a ratio of 106 children per participating dentist in the rural region to 233 children per participating dentist in Cook County. Using the statewide



**Table 9. Illinois Safety Net Dental Clinics**

	<b>Illinois</b>	<b>Cook County</b>	<b>Urban</b>	<b>Rural</b>
Number of safety net dental clinics	70	35	20	15
Number of counties in region with no dental clinic	74	---	3	71

Clinics in Illinois from the IDPH Division of Oral Health

## SUMMARY OF RESULTS

There are important differences in access to dental care for Medicaid enrolled children based on geographic region. The key differences, with a focus on the rural region, are summarized below, with further discussion following.

### *Medicaid Enrolled Children*

- The rural and urban regions had proportionately fewer children enrolled in Medicaid than Cook County.
- One-third of Medicaid enrolled children in Illinois receive at least one dental service during the year.
  - Proportionately fewer rural Medicaid children received dental care.
  - The high statewide utilization rate is due to utilization in Cook County.
  - Utilization varies markedly by age, with 4-5 year-olds and 6-12 year-olds having the highest utilization rates in each geographic region.

### *Dentist Characteristics*

- The rural counties have proportionately fewer specialists.
- 82 of the 84 rural counties do not have a pediatric dentist.
- The rural region has the highest proportions of active dentists who are male, white, and over 55 years of age.
- Almost one-fifth of active rural dentists graduated from dental schools in Illinois which have now closed.

### *Dentist Participation in Medicaid*

- Every urban county had at least one Medicaid participating dentist; 18 rural counties did not have any dentist who participated in Medicaid.
- Proportionately more rural dentists participated in Medicaid than dentists in the urban region or Cook County.
- Rural participating dentists had lower volumes of service than participating dentists in the urban region or in Cook County.

## DISCUSSION

### *1. Low Medicaid Children's Dental Utilization*

Medicaid children in rural areas have comparable dental services utilization to children in urban areas (25% vs. 27%), but children in both regions have lower utilization rates than children in Cook County (38%). The state and regional utilization rates for all ages are well below the Healthy People 2010 target of having 57% of children <200% of the federal poverty level have at least one preventive oral health care visit during the year. In addition, a letter was recently sent to all state Medicaid directors from the Health Care Financing Administration (HCFA) which notified states of HCFA's intention to assess state compliance with achieving children's access to Medicaid dental services<sup>23</sup>. This letter indicated that any state with less than 30% of Medicaid-enrolled children having a dental visit in the past year would be subject to review by HCFA staff. States with utilization between 30-50% will be subject to a less intensive review. The statewide utilization rate of 33% puts Illinois into the less intensive review category, although separating Cook County from the rest of the state would put Illinois into the intensive review category.

The differences in utilization by age group are likely the result of a number of factors including need, availability of pediatric dentists, willingness of general practice dentists to treat children, and the presence of targeted oral health programs. The only one of these factors that this study can address is the availability of pediatric dentists. Pediatric dentists treat all children, but often see children with special medical or oral health care needs. They may also treat children who have behavioral problems. Access to pediatric dentists is very limited in rural areas, with 82 of the 84 rural counties without an active pediatric dentist. Along with some level of reluctance or discomfort of general dentists treating very young children, this may help to explain lower utilization rates in rural areas for the 0-3 and 4-5 year old age groups. Also, as children age they tend to develop more cavities as well as get more cavities treated, which may factor into the explanation for why utilization rates for rural adolescents slightly exceed rates for adolescents in the urban region.

Increases in utilization would, of course, have budget implications. If 57% of Illinois Medicaid enrolled children received dental care, the number of new children receiving services would be 195,261 (466,413 - 271,152 current users), which at \$108 per child yields an additional cost of \$21.1 million, for a total cost of \$50.3 million (466,413 x \$108). If the utilization rate in the rural region were to increase from 25% to 57%, and using the rural average expenditure of \$112/user, the budget for rural children's Medicaid dental care would increase from \$3.5 million to \$7.9 million.

### *2. Low Dentist Supply in Rural Areas*

A low supply of dentists in rural areas affects the entire rural population, not only Medicaid enrolled children. For Medicaid, as well as uninsured, children, it exacerbates the existing barriers to care. There were 18 rural Illinois counties that had no dentists who participated in Medicaid. The rural region also has few dental specialists, especially pediatric dentists. Also, the rural region had a slightly higher proportion (27%; 178/648) of active dentists who were 55

years of age or older. National ADA data show that older dentists treat fewer patient visits per year. The slightly higher proportion of older rural dentists and their estimated lower productivity leads to even further competition among all potential patients for the dentists' time. As these older dentists retire, and there are not enough new dentists to replace them (see #3 below), it will affect access for all people in their communities, especially those with Medicaid coverage or who are uninsured.

### *3. Fewer Illinois Dental Graduates*

The output of Illinois dental school graduates has fallen dramatically in the last 20 years, from 460 in 1980 to 110 in 2002, partially due to the closure of the Loyola and Northwestern dental schools and to the downsizing of the UIC dental school. Currently, 80% of active dentists in Illinois attended an Illinois dental school. Since all areas of the state – as well as other states – will be competing for fewer new Illinois dental graduates, rural areas will likely have more difficulty recruiting new dentists, leading to a tighter supply of dentists in rural areas in the future.

### *4. Higher Rural Dentist Participation*

The data on dentist participation in Medicaid show striking differences by geographic region. Rural dentists do seem more willing to participate in Medicaid than their urban and Cook County counterparts. The data available for this study do not allow us to ascertain what factors might account for this difference in behavior. There were also no available dentist participation data for rural areas in other states with which to compare the rural Illinois dentist participation rate. The previous discussion of low rural dentist supply and fewer new dental graduates raises the question of how Medicaid participation can be sustained, much less increased, as rural communities face future dentist supply challenges. Initiatives aimed at provider participation should take into account the need to sustain current participation as well as increase the number of participating providers.

### *5. Data and Analysis*

This study provides important data which aid in understanding and addressing the problems related to access to oral health care services in rural Illinois. However, there are many areas which require further exploration or still need to be examined. For example, the population to dentist ratios do not account for differences in oral health status (and, thus, need) based on population subgroups or geographic region. Medicaid data do not include the site of care, so it was not possible to examine how much care was provided to Medicaid children at safety net dental clinics. There are also no data available to systematically account for pro bono or uncompensated care provided to Medicaid children by private practice dentists. In addition, it is not possible to compare the results presented here with data for rural areas from other states or nationally. Continued analysis and more detailed data are needed to inform policy decisions and develop public health interventions.

### *Policy Recommendations*

A recently completed study, *Access to Dental Care for Low-Income Children in Illinois*, by the same authors<sup>24</sup>, concluded with eight policy recommendations (listed below in Table 10). As the applicability of these recommendations to rural areas varies, only a few of the recommendations will be discussed here.

**Table 10. Policy Recommendations from *Access to Dental Care for Low-Income Children in Illinois*, December 2000.**

- Policy Recommendation 1: More dentists should be recruited to enroll in the Medicaid program. Efforts should be made to increase the number of children treated by currently enrolled dentists. This recommendation includes discussion of: adequate reimbursement rates; outreach to enroll new dentists in Medicaid; increasing participation levels of currently participating dentists
- Policy Recommendation 2: Consider options to increase the dentist supply in underserved areas of Illinois.
- Policy Recommendation 3. Explore the feasibility of expanding the capacity of dental clinics known as safety net providers, such as community health centers, local health departments and others.
- Policy Recommendation 4. Encourage the integration of oral health care with primary health care.
- Policy Recommendation 5. Enhance dental school training to include population-based studies of oral and dental disease among the high-risk groups, the problems with access to dental care, and public health dentistry. Expose dental students to community based private practices and safety net clinics where high-risk children are receiving care.
- Policy Recommendation 6. Expand the role of dental hygienists in the care of Medicaid children.
- Policy Recommendation 7. Establish a statewide oral health surveillance system.
- Policy Recommendation 8. Expand community based preventive programs.

Source: Byck GR, Russinof HJ, Cooksey JA. *Access to Dental Care for Low-Income Children in Illinois*. University of Illinois at Chicago Illinois Center for Health Workforce Studies, December 2000. ([www.uic.edu/sph/ichws](http://www.uic.edu/sph/ichws))

- *Develop programs to increase the dentist supply in underserved areas of Illinois.* In rural Illinois, the existing dentist supply is quite low. Competition for dentists' time among the entire rural population is thus high. The markedly reduced output of new graduates from Illinois dental schools will make it difficult for these communities to recruit new dentists. This situation should be further assessed and key groups should review findings of this and other studies. At a minimum, this review should include the dental schools, the Illinois State Dental Society, local dental societies, Doral and IDPA, as well as other groups that are community stakeholders, such as businesses, and educational institutions. These discussions may require consideration of expanding dental school enrollments to produce more Illinois dentists.

Successful models which address the challenges of recruiting health care providers to rural areas should be studied. For example, the University of Illinois at Chicago at Rockford Medical School has a program known as RMED. Students from rural areas are recruited to be part of RMED and, in return, pledge to work in rural communities after completing their training. Other options include the development of state loan forgiveness programs for dentists willing to practice in underserved areas or those willing to provide care to a certain level of Medicaid patients. For example, the State of Maryland just began a loan assistance repayment plan for dentists who commit to treating Medicaid patients as at least 30% of their practice patient load; five dentists enrolled the first year of the program. The Illinois Department of Public Health offers scholarship and loan repayment programs for health care providers, but these are mostly used by physicians.

- *Recruit more dentists to the Medicaid program and increase the participation levels of currently enrolled dentists through such efforts as ensuring adequate reimbursement rates and targeted outreach.* An important first step in increasing provider participation in Medicaid is adequate reimbursement rates, as well as simplified billing and administration. Currently, the dental fees paid by Medicaid are estimated at 55-60% of the usual, customary, and reasonable (UCR) rate; many groups indicate that fees nearer 70 to 75% of UCR may be needed to attract dentists. However, even with improvements in reimbursement rates, studies show that increases in dentists' Medicaid participation may be modest.

Considering the comparatively high participation rates of rural dentists, and the problems discussed above regarding the low supply and aging of the rural dental workforce, it is unclear how feasible it is to further increase enrollment and participation in rural areas. The first charge must be to ensure that current levels of participation are maintained. Models to consider include the Maryland loan repayment program mentioned above as well as the Michigan Healthy Kids dental program. The Michigan program, operating in 22 demonstration counties, provides Medicaid children with Delta Dental insurance cards that are identical to the cards privately insured Delta patients receive. Therefore, in theory, dentists and their staff do not know which patients are covered by Medicaid and which are privately insured. An overwhelming majority of Michigan dentists are Delta providers, opening up a whole network of dentists to these Medicaid children in the demonstration counties. The program began in 2000 and has yet to be evaluated.

- *Explore the feasibility of maintaining or expanding the capacity of dental clinics known as safety net providers, such as dental school clinics, community health centers, local health departments and others.* While our study did not have provider participation data or number of services provided at safety net dental clinics, these clinics represent places where dental services are now provided and where high-risk children are found (schools, community health centers, local health departments, community centers, and dental training sites). IDPH is collecting information on these sites and this is an important first step; also, the authors are currently studying the role of safety net dental providers in access to oral health care services for low-income children. Healthy People 2010 sets a target of increasing to 75% the proportion of local health departments and community health centers that have an oral health component. Further assessment is needed of the issues safety net dental clinics encounter in recruiting and retaining staff, equipping their sites, and obtaining both start-up and continuing funding. There are some models and initiatives to consider:

- It would be useful to study and learn from safety net medical care models which have successfully used non-physician providers (physician assistants and nurse practitioners) to provide health care services. Applying these models to oral health care may indicate ways in which an expanded role for dental hygienists can increase access for low-income populations.
- To address the high capital costs of starting a dental clinic, last year Michigan awarded \$5.9 million in capacity building grants to approximately 30 facilities to be used for capital and start up costs. These funds can be used for chairs, supplies, and up to 3 months of staff salaries. Also, the Illinois Department of Public Aid has funding available (\$35,000/year for 2 years) for local health departments to start-up dental clinics or to bring part-time dental clinics up to full-time status.
- In addition, greater use of existing facilities may be possible, although these opportunities may be more limited in rural areas. For example, many colleges have dental hygiene and dental technician programs and accompanying clinical facilities. It may be possible to use these facilities outside of class time, which would alleviate the barrier relating to expensive equipment and facilities. Southern Illinois University's Dental Hygiene Program recently opened a clinic for children using existing facilities and students and faculty.
- *Implement a statewide oral health surveillance system.* Currently, in Illinois as well as nationally, there are limited data available to inform health professionals, policy makers, health advocates, and others about the oral health needs of the population, particularly rural populations. Extensive searching and numerous discussions with employees at federal agencies with a focus on rural health (as well as other informed professionals) revealed that data on rural oral health care is extremely limited, almost nonexistent. A comprehensive oral health surveillance system will enable Illinois to collect and analyze oral health data in order to monitor the oral health status of the population and subgroups (including rural populations), identify needs, make decisions, influence policy makers, secure program resources, and evaluate programmatic success in improving oral health. The oral health surveillance system could have the capacity to assess oral health workforce capacity and characteristics, oral disease burden, population trends, oral health status, health behaviors related to adverse oral health, and dental insurance coverage.
- *Expand community based preventive programs and insure that programs in rural areas are targeted to the needs and characteristics of rural communities.* Prevention of oral disease is key in decreasing the demand for services among low-income children; decreasing the need for services is certainly important in rural areas with limited supplies of dentists. School based oral health education programs, community based sealant programs, and programs that raise awareness and educate low-income families about the importance of oral health care and influence their behavior in seeking oral health care for their children should be developed and or expanded. This recommendation acknowledges the importance of community water fluoridation in oral health promotion and disease prevention.

### *Study Limitations*

There were several important limitations to this study. One was the limited, almost nonexistent, data available on rural children's access to dental care, preventing comparisons of our data with other findings. Another is that the data we received were provided as county level counts, not individual records for either children or dentists. We could not perform any tests on the quality of the data; we simply used it as presented to us. Common problems with Medicaid data, such as inadequate reporting of all dental services, duplicate reporting of services, inaccuracies in dentist assignments for services, changes in addresses of recipients, and other issues could not be assessed. This argues strongly for the continued study of the Illinois experience and the use of data at the record level, which would allow for better assessment of data reliability and more detailed analysis.

Another study limitation was our inability to merge the data from the ADA (with demographic and practice characteristics of dentists) with the data on participation from the IDPA/Doral data on dental care. This would have been useful in studying the characteristics of dentists who participated in Medicaid, especially considering the differences in Medicaid participation by geographic region. Data from IDPA/Doral were provided in services/procedures, rather than visits, preventing us from discussing participation in terms of patient visits per dentist. Also, data from safety net dental clinics were not available by site; dentists at these sites bill under their own provider ID number. These dentists may split their time among multiple private offices and safety net clinics, making it impossible to differentiate what and how many services were provided at each location. An understanding of the role safety net dental clinics play in the overall provision of dental services to low-income children, particularly rural children, would be useful.

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