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Rural Dental Practice:
A Tale of Four States

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by

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WWAMI RURAL HEALTH RESEARCH CENTER

UNIVERSITY OF WASHINGTON • SCHOOL OF MEDICINE • DEPARTMENT OF FAMILY MEDICINE

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ABSTRACT

BACKGROUND

Much of the rural population, especially children, has inadequate access to dental care. The aim of this study was to investigate and report on rural dentist issues (e.g., demography, training, practice characteristics, staff, and job satisfaction) in four states.

METHODS

All rural dentists were surveyed in Alabama, California, Maine, and Missouri. Four mailings of the four-page questionnaire were performed, with a resulting combined response rate of 75 percent.

MAJOR FINDINGS

- Generally, dentists and their work patterns were similar across the four states.
- Dentist practices varied dramatically across states regarding staffing patterns.
- Vacancy rates for dental hygienists varied greatly from state to state, ranging from 35 percent to 6 percent, while dental assistant vacancy rates varied from 12 percent to 4 percent.
- Dentist Medicaid participation and volume differed widely across the states.
- The majority of dentists in the four states were satisfied with their professional life, but the percentage who felt they were too busy or not busy enough varied widely among the states.

POLICY IMPLICATIONS

Rural dentists suggested many ideas to better meet unmet oral health needs. Because the issues are complex and the situations are so different in the survey states, creating general federal policies that work in all states is a daunting challenge. There are dental professional shortages in many rural areas. While training more dentists and dental hygienists is critical, it is not sufficient to provide the population with adequate oral health care. Many other strategies to enhance access, including increasing the ability to pay for dental services, are also needed.

INTRODUCTION

Although oral health is considered part of comprehensive primary care, much of the population, especially children, have inadequate access to care (Edelstein et al., 2000; Macek et al., 2001; USDHHS, 2000). This lack of access has received national attention and study. The problem is further exacerbated for residents of rural areas. Previous work suggests that people of all ages living in rural locations see dental providers at a lower rate than their urban counterparts (Mertz & Grumbach, 2001; USDHHS, 2000). Compared to the population's distribution, dentists are significantly underrepresented within rural counties, especially in smaller and more isolated locations (Brown, 2005; Larson et al., 2003). Additionally, it has been shown that children from disadvantaged backgrounds use fewer dental services, and many have not seen a dentist at all (Byck et al., 2002c; DeAngelis & Warren, 2001; Vargas et al., 2003). Meanwhile, dentists are increasingly limiting their acceptance of Medicaid patients at a time when service availability is vital to increase low-income persons' access to dental care (Capilouto, 1988; Damiano et al., 1990; Milgrom & Riedy, 1998). In order to realistically address access issues in rural places, comprehensive information about the dentists who practice there and their practice patterns is needed.

This study's aim was to collect and report information about rural dentists in four states: Maine, Missouri, California and Alabama. Additionally, this study provides the perspective of the dental provider on issues related to access to care for high-risk patients and ways to address unmet dental needs.

METHODS

SURVEY DEVELOPMENT

A four-page survey questionnaire was developed by the WWAMI Rural Health Research Center (RHRC). The core of the questionnaire was identical for all four states. However, in each of the four study states, interested partners were given the opportunity to collaborate in customizing the survey instrument to address

topics specific to their state and identify state-specific programs. In Maine, the collaborating groups were the Maine Dental Association and the Maine Department of Human Services Oral Health Program. In Missouri, the Missouri Dental Association collaborated on the survey. In California, the California Dental Association, the Oral Health Program of the Department of Human Services, the Dental Health Foundation and the California Rural Health Association all were collaborators. And in Alabama, the Dental Association, the Department of Public Health, the University of Alabama School of Dentistry and the State Medicaid Office all worked as partners with the WWAMI RHRC. The surveys were designed to provide a comprehensive look at the rural dental workforce in these states. The questionnaire sections specifically addressed demography, dental education, practice characteristics, practice staff and recruitment, job satisfaction, Medicaid participation and the future of rural dental care. A copy of each state's questionnaire is included in Appendix A.

SAMPLING FRAME

Lists of the licensed dentists in each of the states were requested and received. Questionnaires were mailed to all licensed dentists in each state who were practicing in a rural location. Rural locations were defined using the ZIP-code Version 1.11 of the Rural-Urban Commuting Area (RUCA) codes (Morrill et al., 1999). The RUCA taxonomy assigns each ZIP code in the country to one of 30 codes. These codes were collapsed into four mutually exclusive rurality categories—urban, large rural, small rural and isolated small rural. The classification of a place is based on its location relative to Census Bureau-defined Urbanized Areas and Urban Clusters of various populations, and uses work-commuting patterns to surrounding cities and towns to measure functional relationships (WWAMI Rural Health Research Center, 2005). Dentists practicing in any of the three rural categories were included in the samples. There were 318 rural dentists identified in Maine, 534 in Missouri, 850 in California and 400 in Alabama, for a total of 2,102 rural dentists.

MAILINGS

The first mailing included an introductory letter on dental association letterhead from the WWAMI RHRC and the collaborating groups, a survey instrument, and a postage-paid, return envelope (dates of first mailings were Maine: May 31, 2002; Missouri: May 31, 2002; California: September 3, 2002; and Alabama: March 7, 2003). Questionnaires that were returned because of incorrect addresses were re-sent with address corrections when they could be found. Four weeks later, all nonrespondents were sent a second mailing. This time the identical questionnaire packet was sent with a letter printed on the associated Department of Public Health letterheads. In Missouri, where there were no other collaborators, the second letter was sent on WWAMI RHRC letterhead. A third mailing was sent to dentists who had not responded to the first two mailings, and included a letter on WWAMI RHRC letterhead with the questionnaire and return envelope, as previously described. Four weeks later the fourth and final mailing was mailed on WWAMI RHRC letterhead and included a handwritten note from the director of the WWAMI RHRC asking for study participation.

RESPONSES

Questionnaires were sent to all rural dentists in Maine, Missouri, California and Alabama. Subsequently, some dentists in each state were determined to be out of scope for this study because of retirement, relocation outside of the state or because they could not be located. This ranged from less than 1 percent in Alabama and Missouri, to 4 percent of dentists in Maine and California. The final adjusted response rates were 83 percent, 73 percent, 71 percent and 76 percent for Maine, Missouri, California and Alabama, respectively. The overall response rate was 74.5 percent.

CODING, DATA ENTRY, DATA CLEANING, AND ANALYSIS

The information from the returned questionnaires was coded, and the data were electronically entered and verified for analysis. The data were checked for systematic errors during routine data analysis. When data that were part of a series of questions could be imputed with a high level of certainty from other data, such imputations were performed. Data analysis was performed with SPSS Statistical Software Version 10.0. Standard chi-square and one-way tests at the 0.05 level of significance were employed to determine the statistical significance of differences.

RESULTS

Initial survey results were used to create eight-page data booklets specific to each of the states. These booklets included state findings from the core questionnaires a well as the results from the state-specific questions. These booklets were printed and provided to the state partners for distribution to state oral health policy makers. Copies of the booklets from each state participating in the study are included in Appendix B.

DEMOGRAPHICS

The demographics of the rural dentist survey respondents varied little across states. Rural dentists were most often white (91%) and male (91%) (Table 1). The average age overall was 50 years. In Maine, Missouri and California, between 30 and 38 percent of the workforce was over age 55, while Alabama had a slightly younger workforce; almost half (47%) reported they do not intend to retire in the next 15 years. Rural dentists in these four states have been in practice for an average of 21 years overall, having spent 18 of these years at their current locations. Over half (55 %) of the

dentists practicing in rural places in these four states reported growing up in a rural location. The percentages for Missouri and Alabama were significantly higher, with more than two-thirds of rural dentists indicating they grew up in a rural location. The corresponding percentages for Maine and California were 40 and 43, respectively.

SPECIALTY INFORMATION

Dentists in each state were asked if they practiced as a specialist in an American Dental Association (ADA)-recognized specialty. In Missouri, no dentists reported practicing as specialists. Subsequently, we determined that the Missouri mailing list included only general dentists. In Alabama, 8 percent of responding dentists reported practicing as a specialist. In Alabama's large rural places and small rural places, 12 percent and 7 percent of dentists were specialists, respectively. In California, 11 percent of dentists practiced as a specialist. In California's large rural places, 14 percent of dentists were specialists, and in the small rural places 8 percent were specialists. Maine had 15 percent specialists, with 25 percent of dentists in large rural places practicing as a specialist. In Maine's small rural places, 14 percent of dentists were specialists. In all three states reporting specialty practices, there were no specialists practicing in isolated small places. The most common type of specialist was an orthodontist in all of the states. Over half (57%) of Maine's specialists were orthodontists, 53 percent of Alabama's specialists were orthodontists and 35 percent of California's specialists practiced orthodontics. The second most common specialty in Alabama and California was pediatric dentistry, with 19 and 23 percent of specialists, respectively. In Maine, the second most common specialty was oral and maxillofacial surgery, at 25 percent.

PRACTICE PATTERNS

The remainder of the analyses are limited to generalist dentists because they make up the vast majority of the rural dentists. Rural general dentists in the four states surveyed had nearly identical practice patterns. The average number of weekly professional work hours ranged from 36 in Alabama, California and Missouri to 38 in Maine (Table 2). Hours spent in direct patient care varied even less (i.e., 32-33) and differences in weeks worked per year were not meaningfully different (i.e., 47-48). Significantly fewer Alabama dentists practiced in solo settings (23%) when compared to dentists in Maine and Missouri (35%) and California (38%). California dentists had been practicing at their current location less time than in the other states.

MEDICAID

General dentists' participation in the state Medicaid programs varied greatly (Table 3). In Maine, 61 percent of rural dentists reported that they participated in the Medicaid program called MaineCare (Figure 1). These rural dentists saw an average of 13.3 MaineCare patients each week, 9.7 of them children. In California, half of the rural dentists reported participating in the California Medicaid Programs called Denti-Cal and Healthy Families. These dentists saw an average of 13.6 children and 17.2 adult patients, for a total of 30.7 Medicaid patients per week. In Missouri, 36 percent of rural dentists reported that they participated in the Medicaid program. These dentists saw an average of 26.4 Medicaid patients each week. In large rural areas in Missouri, this participation rate dropped to 26 percent. In Missouri's isolated small rural places, nearly half (49%) of dentists participated in their program.

Less than half (44%) of dentists in Alabama reported that they participated in the Medicaid program. They saw an average of 19.8 children covered by Medicaid

Table 1: Demographics of All Rural Dentists Practicing in Maine, Missouri, California, and Alabama

	Maine	Missouri	California	Alabama	Statistical Significance of State Differences
Age (mean)	51.4	50.3	50.9	48.0	0.001*
55 and older	34.7	30.2	38.3	27.7	0.011†
Male (%)	91.8	93.5	89.0	88.1	0.065†
White (%)	95.0	97.3	81.9	96.3	0.000†
Years in state (mean)	30.0	39.8	40.8	41.2	0.000*
Grew up in rural location (%)	39.6	69.4	43.4	67.0	0.000†
Number of respondents‡	220	368	494	272	1,354

* One-way analysis of variance.
† Chi-square test.
‡ The number of missing cases for each state from top to bottom are Maine: 1, 1, 0, 1, 4, 3; Missouri: 1, 1, 0, 1, 2, 2; California: 1, 1, 1, 8, 5, 10; and Alabama: 1, 1, 1, 3, 2, 5.

Table 2: Practice Characteristics of Rural General Dentists in Maine, Missouri, California, and Alabama

	Maine	Missouri	California	Alabama	Statistical Significance of State Differences
Weeks worked (mean)	47.2	47.6	46.7	47.9	0.007*
Total professional hours (mean)	37.5	36.3	36.4	35.7	NS*
Direct patient hours (mean)	33.4	33.1	32.2	33.1	NS*
Solo practice (%)	35.4	35.2	38.1	23.3	0.001†
Years practicing in state (mean)	20.5	21.6	21.3	20.1	NS*
Years in current location (mean)	19.0	20.0	16.4	18.3	0.000*
Number of respondents‡	186	364	428	249	1,227

NS = not significant.
* One-way analysis of variance.
† Chi-square test.
‡ The number of missing cases for each state from top to bottom are Maine: 2, 2, 6, 22, 1, 0; Missouri: 4, 3, 12, 32, 0, 1; California: 17, 11, 18, 40, 0, 5; and Alabama: 8, 4, 19, 4, 1, 0.

each week. The program in Alabama, recently revamped, was rated "improved" when compared to the program three years ago, by more than 80 percent of dentists who had an opinion. Interestingly, the issue that Alabama dentists reported as their greatest concern as a Medicaid provider, at twice the rate (52%) of the next mentioned concern, was "missed appointments" and "no shows." Low reimbursement was cited by 26 percent of dentists who provide Medicaid services in Alabama.

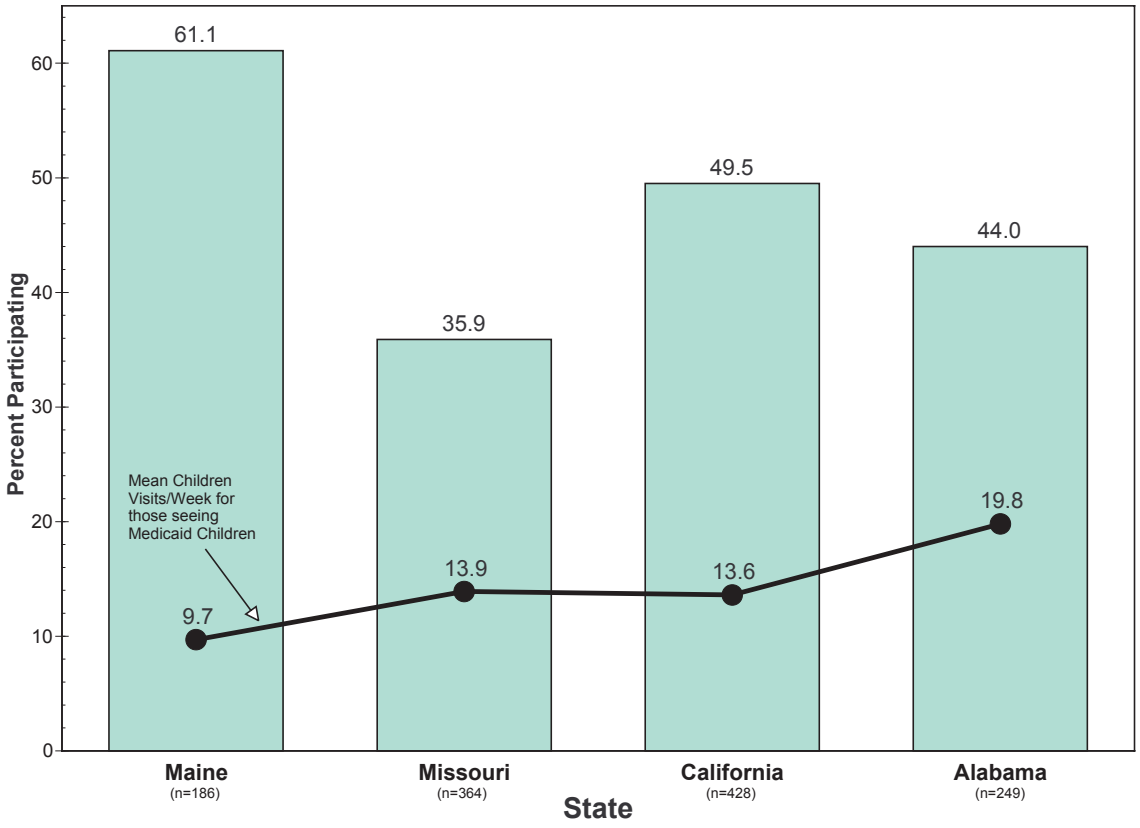
General dentists in each state reported providing free or reduced-fee services. The reported average dollar value donated annually ranged from $13,116 in Maine to $35,275 in California. Dentists in Missouri estimated a contribution of $23,205 annually and Alabama dentists reported contributing an average of $19,515 of donated care annually. These values were not corrected for the differing cost of service in each of the four states. Dentists were also asked to quantify the percentage of their donated care that came from reduced-fee programs. Their reported percentages ranged from 27 percent in Alabama to 36 percent in Maine. Individual dentists donated the remaining part and largest portion of their donated services through programs other than Medicaid or as individual dentists.

Table 3: Medicaid Participation and Practice Patterns of Rural General Dentists in Maine, Missouri, California, and Alabama

	Maine	Missouri	California	Alabama	Statistical Significance of State Differences
Participate in Medicaid (%)	61.1	35.9	49.5	44.0	0.000*
Medicaid children/week (for those seeing 1 or more) (mean)	9.7	13.9	13.6	19.8	0.001†
Medicaid adults/week (for those seeing 1 or more) (mean)	3.6	12.5	17.2	NA	0.000†
Donated care (mean $)	13,166	23,205	35,275	19,515	0.013†
Donated care from Medicaid (%)	36.0	28.7	31.4	26.9	NS†
Number of respondents‡	186	364	428	249	1,227

NA = not applicable.
NS = not significant.
* Chi square test.
† One-way analysis of variance.
‡ The number of missing cases for each state from top to bottom are Maine: 11, 0, 2, 33, 43; Missouri: 10, 0, 0, 75, 85; California: 10, 0, 0, 81, 75; and Alabama: 1, 4, NA, 49, 64.

Figure 1: Dentists Participating in Medicaid by State



PRACTICE STAFF

Staffing patterns of dentists varied significantly across the study states. In Missouri, 44 percent of dentists reported employing at least one dental hygienist, in contrast to much higher percentages in the other states (Table 4). In Alabama, California and Maine, 96 percent, 68 percent and 88 percent of dentists, respectively, reported employing at least one dental hygienist. Vacancy rates for dental hygienists varied significantly across the four states (Figure 2). Missouri had the highest vacancy rate, at 35 percent. California's rural dental hygienist vacancy rate was 18 percent. Vacancy rates for hygienists in Maine and Alabama were much lower, at 9 percent and 6 percent, respectively. The vacancy rates were calculated as the number of vacant positions divided by the sum of filled positions and vacant positions and were weighted to compensate for multi-dentist practices. Rural dentists in Alabama, California, Maine and Missouri indicated that they employed an average of 1.8, 1.4, 1.0 and 0.5 dental hygienists per dentist respectively. The hourly wages earned by dental hygienists ranged from $16.89 in Alabama to $39.54 in California. Without standardizing these values for the differing cost of living in each state, a statistical comparison is not meaningful.

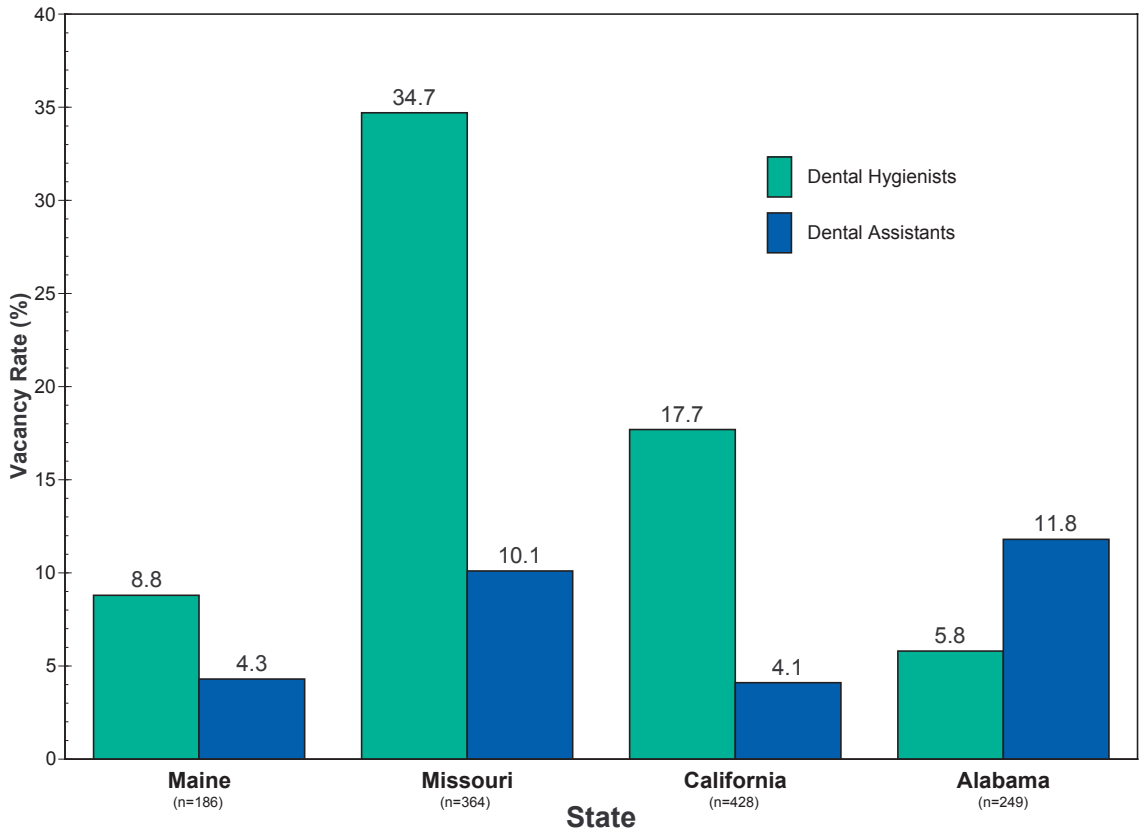
In the four states, virtually all general dentists reported that they employed at least one chair-side dental assistant. Additionally, dentists across the states employed a larger number of dental assistants than dental hygienists. Rural dentists employed an average of 1.7 dental assistants per dentist in Alabama and California. In Maine, there were 1.4 dental assistants employed per dentist, and in Missouri, dentists employed an average of 1.8 chair-side dental assistants. In all four states, the vacancy rates for chair-side dental assistants were lower than the vacancy rates for dental hygienists. Using the same method as described above for dental hygienists, chair-side dental assistant vacancy rates ranged from 4.1 percent in Alabama to 5.7 percent in California. Rates for Missouri and Maine were nearly identical at 4.2 and 4.3 percent respectively. The average hourly wage of chair-side dental assistants ranged from $11.09 in Missouri to $14.35 in California. There were no statistically significant differences in the wages of chair-side dental assistants. As with dental hygienists, without considering the difference in the cost of living across states, this wage comparison is not meaningful, making direct comparisons of the dollar values problematic.

Table 4: Staffing Patterns of Dental Hygienists and Dental Assistants Among Rural General Dentists Practicing in Maine, Missouri, California, and Alabama

	Maine	Missouri	California	Alabama	Statistical Significance of State Differences
% with dental hygienist	87.5	43.9	68.3	95.6	0.000*
Dental hygienists employed (mean)	1.6	0.5	1.0	1.8	0.000†
Dental hygienist vacancy rate (%)	8.8	34.7	17.7	5.8	
Hourly wage (mean $)	24.25	26.68	39.54	16.89	NS†
% with dental assistant	93.5	97.2	98.8	97.6	0.003*
Dental assistants employed (mean)	1.4	1.8	1.7	1.7	0.000†
Dental assistant vacancy rate (%)	4.3	4.2	5.7	4.1	NS
Hourly wage (mean $)	13.20	11.09	14.35	11.75	NS†
Number of respondents‡	186	364	428	249	1,227

NS = not significant.
* Chi-square test.
† One-way analysis of variance.
‡ The number of missing cases for each state from top to bottom are Maine: 20, 20, 23, 36, 23, 23, 72, 28; Missouri: 15, 15, 27, 211, 37, 37, 135, 47; California: 32, 32, 41, 157, 41, 41, 166, 46; Alabama: 3, 3, 5, 38, 6, 6, 41, 31.

Figure 2: Rural Dental Hygienist and Dental Assistant Vacancy Rates by State



CAREER SATISFACTION, PATIENT LOAD, AND FUTURE DENTAL CARE

Dentists were also asked their opinions on professional satisfaction, patient load, and the future of rural dental care (Table 5). In each of the four states, more than 83 percent of dentists reported they were very or somewhat satisfied with their professional life. However, there were differences in dentists' satisfaction with their patient load. About the same number of dentists in all four states reported seeing "just enough" patients (60-67%). However, the percentage of dentists reporting being "too busy" and "not busy enough" differed widely between states. Sixty percent of Maine's rural dentists reported seeing "just enough" patients. Virtually all of the remaining 40 percent reported being "too busy." In Alabama, California and Missouri, 65 percent, 66 percent and 67 percent of dentists, respectively, reported seeing "just enough" patients. Of the remaining 35 percent of dentists in Alabama, only 8 percent said they were "too busy." In California, 21 percent of rural general dentists responded that they were "too busy" and in Missouri 24 percent of dentists said they were "too busy."

Many ideas were proposed to address unmet dental needs. In some states, children at high risk for dental caries receive preventive care from nondental providers (Mitchell et al., 2003). Dentists in the four states responded differently to this idea. Overall, dentists in Alabama showed the least support (only 46% in favor) for high-risk children receiving care from nondental providers. Support in Missouri, California, and Maine was 56, 62 and 65 percent, respectively, for this strategy to address unmet dental needs. When dentists were asked if children from *their own community* should receive preventive care from a nondental provider, support for the idea dropped by about 5 percent in all of the states. Despite dentists' lack of support for nondental providers delivering dental services, the rural dentists in all four states reported that there was unmet need in their communities. In Maine, 80 percent of dentists agreed with the statement that there was significant unmet need in their community. This number dropped to 51 percent in Alabama. When dentists' patient load was considered, it was not surprising to find that dentists who reported being "too busy" were much more supportive of nondental providers delivering care in their community (68%) than those dentists who reported being "not busy enough", where 41 percent favored the idea.

Dentists also provided their own ideas about the best way to address unmet dental needs. In all four states, three of the most commonly suggested ideas were patient education, increased Medicaid reimbursements, and free government dental clinics. Dentists in Maine, Missouri and California cited recruitment of more dentists, including using loan forgiveness programs and other educational incentives as a way to address unmet need in their communities. Improving/enforcing patient responsibility for keeping appointments was another idea mentioned frequently in Alabama and Missouri.

LIMITATIONS

This study is subject to a variety of limitations. Nonrespondent biases could be present if those dentists who chose not to respond were systematically different than the responding dentists. Ideally, the two groups would have been compared, but this was not possible. However, the relatively high response rates mitigate these concerns to some extent. Additionally, since we did not receive responses from all dentists, calculating dentist-to-population ratios to determine geographic areas

Table 5: Professional Satisfaction and Adequacy of Patient Load Among Rural General Dentists Practicing in Maine, Missouri, California, and Alabama

	Maine	Missouri	California	Alabama	Statistical Significance of State Differences	Overall
Satisfied (%)	89.6	88.3	83.1	87.5	NS*	86.5
Patient load (%)					0.000*	
Too busy	40.1	23.6	20.5	8.1		21.9
Just enough	58.8	67.1	66.3	65.4		65.3
Not busy enough	1.1	9.3	13.1	26.4		12.9
Number of respondents†	186	364	428	249	1,227	

NS = not significant.
* Chi-square test.
† The number of missing cases for each state from top to bottom are Maine: 4, 4; Missouri: 5, 8; California: 9, 9; and Alabama 1, 3.

of need was not attempted, although data from other sources is referred to in the discussion section.

Finally, dentists who have been unsuccessful in recruiting for assistants and hygienists for a long period of time may "give up" and stop trying to fill their vacant position. If this is happening, the vacancy rates reported here will underestimate the true vacancy rates.

DISCUSSION

The nation has approximately 174,000 active dentists (Brown, 2005) and 120,000 dental hygienists (American Dental Hygienists' Association, 2005). There is considerable concern over the oral health of the nation's population, with special concerns for the most rural segments of the population. This study examined practice patterns and access issues in the practices of rural dentists in four states. With increased interest in access to dental care have come several state-level studies. For example, studies conducted in Oregon, Wisconsin, Utah, Illinois, California, Montana and Washington attempted to describe the dental workforce in these states (Andrilla & Hart, 2001; Byck et al., 2002a; Byck et al., 2002b; Hart, 2001; Horstmann, 2002; Oregon Health Workforce Project, 2003; Wright et al., 2001). Two of these studies (Montana and Washington) were conducted by the same study team as this study, using similar questions and methods, and are referred to below. In three of the four study states (Maine, Missouri, Alabama) and Montana (Hart, 2001) the demographics of rural dentists are very similar. Greater than 95 percent of rural dentists in these states were white and approximately 90 percent were male. In California, a much larger proportion (18%) of rural dentists were nonwhite. Nationally, American Dental Association data show that 83 percent of all active dentists were male and 87 percent were white in 2002 (Brown, 2005).

The gender composition of dentistry is changing. In the four study states, the proportion of younger rural dentists who are women is increasing. Overall, 25 percent of dentists 40 years of age and younger are women. In comparison, among dentists over 40 years old in these states, only 6 percent were women. This phenomenon is present nationwide (Brown, 2005). Over time, we expect women will enter the dental profession at a higher rate, similar to the increased number of females seen in the medical profession (Niessen, 1993). A current crosscut of the location of dentists by gender and rural and urban location shows that female dentists are much less likely to be located in rural areas than their male counterparts (45% less likely) (Brown, 2005). If this holds true for new cohorts of female dentists, this could have consequences for the rural dental workforce, especially in small and isolated small rural communities.

In all of the study states, only a small proportion of the rural dentists were specialists. This suggests that those rural residents in need of specialty care may have to travel to larger rural or urban areas to receive this type of care, facing the burden of greater travel time and costs. Future studies of small and isolated small rural dentists may find that their scope of practice is broader than their urban counterparts because of local needs, as has been found for family physicians (Baldwin et al., 1995). This information could signal the need for curriculum changes for those dental students planning to practice in rural areas and for their continuing dental education opportunities.

Dental hygienist contributions to care continue to be an important issue for dentists. Dentists regularly cite difficulties in hiring and retaining an adequate number of dental hygienists (Hart, 2001). The percentage of dentists who employ any dental hygienist is very different in the four study states. In Alabama, nearly all dentists (96%) employ at least one dental hygienist, while in Missouri less than half (44%) of the dentists do so (nationally, 77.1% of rural and urban dentists employ a dental hygienist [Brown, 2005]). It is interesting to note the relationship between the vacancy rates, the percentage of dentists who employ dental hygienists and the mean hourly wage earned by dental hygienists across the four states. In Missouri, where the lowest percentage of dentists employ a dental hygienist, there is the highest vacancy rate (34.7%). The mean dental hygienist hourly wage is relatively high in Missouri, $26.68, suggesting that dentists compete for the available dental hygienists. In contrast, Alabama has the lowest vacancy rate for dental hygienists (5.8%). In Alabama, 96 percent of dentists employ a dental hygienist and the mean hourly wages is $16.89. In California and Maine, vacancy rates and the percent of dentists employing dental hygienists appear to support the association between these two measures. Higher vacancy rates suggest difficulty in finding dental hygienists to employ, leading to a lower percentage of dentists who have a dental hygienist as part of their staff.

Not surprisingly, mean hourly wages tend to be higher when dentists compete for an inadequate number of dental hygienists. The results of the survey of Washington State's dentists support this finding; the rural average hourly wage was $34.48 with an estimated statewide vacancy rate of 29 percent (Hart, 2001). However, it is difficult to compare the hourly wages of dental hygienists in different states because of the potential variation in the cost of living and because the scope of practice of dental hygienists varies widely between states. The rural generalist dentist to 100,000 population ratios for the four states were Maine 32, Missouri 26, California 35, and Alabama 22 (United States overall was 40) (Larson et al., 2003).

Dentist participation in the Medicaid program also varied greatly across the four states. In Maine, the largest percentage of dentists participated in the program (61%). In Alabama, 44 percent of dentists participated, and this group of dentists bore the largest Medicaid burden for children, treating almost 20 on Medicaid each week.

In all four of the study states, dentists donated a large amount of dental services. The reported mean dollar-value of their annual donated care ranged from $8,276 to $35,905. Caution should be given concerning these figures since they are estimates that may be rough and/or biased. Despite the large differences, the percentage donated through reduced fee Medicaid programs was fairly consistent across the four states. Dentists in Maine attributed 61 percent of the care they donated to reduced-fee programs (MaineCare). In Missouri, California, and Alabama, the percentage of care donated through reduced-fee programs was 71, 70, and 68 percent, respectively. This was particularly interesting because these three states had significantly lower Medicaid participation rates than Maine. This suggests that the dentists in these states that choose to participate in the Medicaid program see a larger number of Medicaid patients, perhaps because of the lack of other available providers.

Dentists also gave away large amounts of care through other programs or as individual dentists. The reported mean dollar-value of donated care ranged from $5,208 to $10,728. Dentists reported providing this care through organized programs and as free dental services for patients unable to pay. This essentially serves as a safety net for uninsured or impoverished patients in rural areas who would otherwise be unable to access dental care.

High percentages of the respondent dentists indicated satisfaction with their professional life. By state, this ranged from 83 percent to 90 percent.

The most marked differences between the dentists in the four states relates to their reported Medicaid participation, their dental hygienist staffing and vacancies, and their estimation of the appropriateness of their patient and work load. While some aspects of rural dental practice vary little across the states (e.g., weekly work hours), rural dental issues across the states are not uniform. Despite some common themes, wide differences across the states in this study are the product of very different populations, sociodemographics, circumstances and oral health needs, as well as oral health provider regulations (including scope of practice, training and supply). For instance, there are dramatic differences across the states in the scope of dental hygienist practice. In a recent study, use of the relatively complex Dental Hygiene Professional Practice Index (DHPPI) had state scores that ranged from 97 to 10 (Wing et al., 2005). The index weights measures of favorable professional status, supervision requirements, tasks permitted, and reimbursement options. The ranks (low numbers are better) of the study states on the 2001 DHPPI were California 4th, Missouri 7th, Maine 10th, and Alabama 47th (Washington was ranked 2nd). For example, Alabama scored 0 points on the "Tasks Permitted" component, while California scored 26 of the possible 28 points. State training programs are geared to teach the competencies permitted by licensing regulation, and some states have significant barriers to potential out-of-state graduate licensure.

The ADA estimates that the dentist per 100,000 population ratio has changed little in the United States during the last decade but that during the next 20 years it will decrease, and the percentage of dentists aged 55 and older will increase by 22 percent (Brown, 2005). The supply of dentists in small and remote rural areas is substantially lower than in urban areas—fewer than half as many (Brown, 2005). This coupled with the potential of decreasing percentages of new graduates choosing to practice in small and remote rural areas because of the increasing percentage of female dental school graduates is cause for concern over the future of dental care access in rural America. Simultaneously, the number of dental hygienists has increased dramatically and issues of dental hygienist independent practice and level of unsupervised practice are hotly debated (American Dental Hygienists' Association, 2005; Brown et al., 2005). As seen from this study's findings, at least in some states, the supply of dental hygienists does not nearly meet the dentist practice vacancies in rural areas. The supply and distribution of dental personnel is a function not only of need but of effective demand, which in turn is a function of socioeconomic, cultural, and locational characteristics and federal and state reimbursement policies. Survey respondents suggested a wide array of ideas on how to provide care to the population with unmet oral health needs. Increasing access to dental care in rural areas requires that many issues be addressed.

While the four states surveyed (and data for Washington and Montana) are not necessarily representative of the nation as a whole, results accrued from these surveys demonstrate the wide variation across the states for a few relevant factors. As a result of variations across states, it is difficult to develop effective national policies that address all concerns, and rural concerns in particular.

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Appendix A:

Questionnaires

2003 Alabama Dentist Survey

A. Demographics

1. What is your age? _____ years

2. What is your gender? ☐ Male ☐ Female

3. What is your race/ethnicity? *(Check all that apply.)*

   ☐ African American ☐ Hispanic/Latino ☐ White
   ☐ American Indian ☐ Native Alaskan ☐ Other (please specify: _____)
   ☐ Asian ☐ Pacific Islander

4. Which of the following best describes the area where you grew up? *(Check one.)*

   ☐ Rural ☐ Suburban ☐ Urban

5. How long have you lived in Alabama? _____ years

6. Please provide the state or country of the dental school from which you graduated: _____

B. Practice Characteristics

1. Which of the following best describes your current professional status?

   ☐ Full-time dentist actively seeing patients (20 hours or more per week working as a clinical dentist)

   ☐ Part-time dentist actively seeing patients (less than 20 hours per week working as a clinical dentist)

   ☐ Semi-retired, treating some patients

   ☐ Active in dental/health activities but not seeing patients
   (PLEASE STOP HERE AND RETURN YOUR QUESTIONNAIRE)

   ☐ Retired, treating no patients
   (PLEASE STOP HERE AND RETURN YOUR QUESTIONNAIRE)

   ☐ Not retired but not professionally active in dentistry
   (PLEASE STOP HERE AND RETURN YOUR QUESTIONNAIRE)

   ☐ Other (please specify: _____)

2. Which of the following describes your anticipated time until retirement (full retirement or no more than one day practice work per week)?

   ☐ Less than 1 year ☐ 10-12 years
   ☐ 1-3 years ☐ 13-15 years
   ☐ 4-6 years ☐ More than 15 years
   ☐ 7-9 years

3. What is the ZIP code of your primary practice location? ___ ___ ___ ___ ___

4. How many years have you practiced in Alabama? _____ years

5. How many years have you practiced in the city or town where you are currently located? _____ years

6. Are you practicing as a specialist in an ADA-recognized specialty?

   ☐ Yes (please list specialty: _____)

   ☐ No, I am a generalist dentist

7. Please answer the following about the time you spent in your practice during the year ***2001***:

   a. Total weeks worked (do not include vacation): _____ weeks per year

   b. Average number of total professional hours worked per week: _____ hours/week
   (Include patient care, professional activities, CDE, and meetings, etc. ***Exclude*** on-call time.)

   c. Average number of your professional hours each week spent in direct patient care: _____ hours/week

8. With how many other dentists do you practice in your office? (Do not count yourself. If none, enter 0.)

   _____ full-time dentists _____ part-time dentists

9. During a typical week, how many children with
Medicaid or CHIP coverage do you treat? (If none, enter zero.) _____ children

10. Please estimate the dollar value of the care you donate per year, including reduced-fee programs
(e.g., Medicaid, CHIP, DDS, Head Start, and clinics):

    _____ dollars/year

    Approximately what percentage of the above amount is from Medicaid or CHIP? _____%

11. Are you enrolled as an Alabama Medicaid provider?

    ☐ Yes ➔ *Please answer the next two questions.*
    ☐ No ➔ *Please skip to question 15.*

12. What issues are of greatest concern to you as a Medicaid provider?
(Please rank only your top three choices, ***1*** being of greatest concern and ***3*** being of least concern.)

    _____ Claims issues

    _____ Low reimbursement

    _____ Missed appointments/no shows

    _____ Prior authorization process

    _____ Other (please specify: _____)

13. What is your perception of the Medicaid program over the past 12 months in comparison to three years ago?

    ☐ Improved ☐ Unchanged ☐ Worse ☐ No opinion

14. If you are not enrolled in the Alabama Medicaid program as a provider, please indicate why:

    _____

    _____

C. Practice Staff

1. How many dental hygienists does your practice currently employ?

   _____ full-time dental hygienists

   _____ part-time dental hygienists

   ☐ None, we currently employ no dental hygienists

2. For how many current hygienist positions are you actively recruiting?

   _____ full-time dental hygienists

   _____ part-time dental hygienists

   ☐ None, we currently do not have vacant dental hygienist positions

3. Please provide the hourly wage for up to two dental hygienists employed in your practice (do ***not*** include benefits):

   Hygienist #1: $_____ per hour

   Hygienist #2: $_____ per hour

4. Considering the dental hygienist position that has been open the longest, how long have you been actively trying to fill it?

   _____ years plus _____ months

   ☐ Check here if you have no open positions

5. How many chair-side ***dental assistants*** does your practice employ? Do not include dental hygienists.

   _____ dental assistants

   ☐ None, we do not employ any chair-side dental assistants

6. For how many current chair-side dental assistants are you actively recruiting?

   _____ full-time chair-side dental assistants

   _____ part-time chair-side dental assistants

   ☐ None, we currently do not have vacant chair-side dental assistant positions

7. Please provide the hourly wage for up to two chair-side dental assistants employed in your practice (do ***not*** include benefits):

   Dental assistant #1: $_____ per hour

   Dental assistant #2: $_____ per hour

D. Satisfaction

1. How satisfied are you with your professional life?

   ☐ Very satisfied ☐ Somewhat satisfied ☐ Neutral ☐ Somewhat dissatisfied ☐ Very dissatisfied

⇨⇨⇨

2. Are you currently seeing as many patients as you would like? *(Check one.)*

   ☐ Yes, just enough ☐ No, I am too busy ☐ No, I am not busy enough

3. What are the most important factors that influenced your decision to practice in Alabama? List most important first.

   1. _____
   2. _____

4. In your practice of dentistry, what is your most significant source of dissatisfaction? _____

   _____

   _____

   _____

E. Future Dental Care

In some states, non-dentist providers are increasing their role in providing dental care to patients who have difficulty obtaining access to professional dental care. Please indicate your opinion on the following topics.

1. Children at high risk for dental caries should be able to receive preventive dental treatment (e.g., fluoride varnish) and dental education during routine well-child visits to their nondental medical care providers (e.g., nurse).

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

2. I believe there is significant unmet need for dental care in my community.

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

3. Non-dentist providers ***in my community*** should be able to provide preventive treatment (e.g., fluoride varnish and dental education) to children who have difficulty obtaining dental care (due to geographic or financial barriers).

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

4. I think the best way to address unmet dental care needs in my community is: _____

   _____

   _____

   _____

THANK YOU for your time and effort.

Please return this questionnaire in the enclosed postage-paid envelope.

If you have questions, please call Dr. Stuart Lockwood at the Alabama Dept. of Public Health, 334-206-2952.

2002 California Rural Dentist Survey

A. Demographics

1. What is your age? _____ years

2. What is your sex? ☐ Male ☐ Female

3. What is your race/ethnicity? *(Check all that apply.)*
   ☐ African American ☐ Hispanic/Latino ☐ White
   ☐ American Indian ☐ Native Alaskan ☐ Other (please specify: _____)
   ☐ Asian ☐ Pacific Islander

4. Which of the following best describes the area where you grew up? *(Check one.)*
   ☐ Rural ☐ Suburban ☐ Urban

5. How long have you lived in California? _____ years

6. Please provide the state or country of the dental school from which you graduated: _____

B. Practice Characteristics

1. Which of the following best describes your current professional status?
   ☐ Full-time dentist actively seeing patients (20 hours or more per week working as a clinical dentist)
   ☐ Part-time dentist actively seeing patients (less than 20 hours per week working as a clinical dentist)
   ☐ Semi-retired, treating some patients
   ☐ Active in dental/health activities but not seeing patients
   (PLEASE STOP HERE AND RETURN YOUR QUESTIONNAIRE)
   ☐ Retired, treating no patients
   (PLEASE STOP HERE AND RETURN YOUR QUESTIONNAIRE)
   ☐ Not retired but not professionally active in dentistry
   (PLEASE STOP HERE AND RETURN YOUR QUESTIONNAIRE)
   ☐ Other (please specify: _____)

2. Are you practicing as a specialist in an ADA-recognized specialty?
   ☐ Yes (please list specialty: _____)
   ☐ No, I am a general dentist

3. What is the ZIP code of your primary practice location? ___ ___ ___ ___ ___

4. How many years have you practiced in California? _____ years

5. How many years have you practiced in the city or town where you are currently located? _____ years

6. Please answer the following about the time you spent in your practice during the year ***2001***:

   a. Total weeks worked (do not include vacation): _____ weeks per year

   b. Average number of total professional hours worked per week: _____ hours/week
   (Include patient care, professional activities, CDE, and meetings, etc. ***Exclude*** on-call time.)

   c. Average number of your professional hours each week spent in direct patient care: _____ hours/week

7. With how many other dentists do you practice in your office? (Do not count yourself.)

   _____ full-time dentists _____ part-time dentists

8. During a typical week, how many children (age 0-17 years) with
Denti-Cal or Healthy Families coverage do you treat? (If none, enter zero.) _____ children

9. During a typical week, how many adults (age 18 years and up)
with Denti-Cal coverage do you treat? (If none, enter zero.) _____ adults

10. Please estimate the dollar value of the care you donate per year, including reduced-fee programs
(e.g., Denti-Cal, Healthy Families, Donated Dental Services, Head Start, and clinics):

    _____ dollars/year

    Approximately what percentage of the above amount is from Denti-Cal or Healthy Families?

    _____%

C. Practice Staff

1. How many dental hygienists does your practice currently employ?

   _____ full-time dental hygienists

   _____ part-time dental hygienists

   ☐ None, we currently employ no dental hygienists

2. For how many current hygienist positions are you actively recruiting?

   _____ full-time dental hygienists

   _____ part-time dental hygienists

   ☐ None, we currently do not have vacant dental hygienist positions

3. Please provide the hourly wage for up to two dental hygienists employed in your practice
(do ***not*** include benefits):

   Hygienist #1: $_____ per hour

   Hygienist #2: $_____ per hour

4. Considering the dental hygienist position that has been open the longest, how long have you been actively trying to fill it?

   _____ years plus _____ months

   ☐ Check here if you have no open positions

5. How many chair-side ***dental assistants*** does your practice employ? Do not include dental hygienists.

   _____ dental assistants

   ☐ None, we do not employ any chair-side dental assistants

6. For how many current chair-side dental assistants are you actively recruiting?

   _____ full-time chair-side dental assistants

   _____ part-time chair-side dental assistants

7. Please provide the hourly wage for up to two chair-side dental assistants employed in your practice (do ***not*** include benefits):

   Dental assistant #1: $_____ per hour

   Dental assistant #2: $_____ per hour

D. Satisfaction

1. How satisfied are you with your professional life?

   ☐ Very satisfied ☐ Somewhat satisfied ☐ Neutral ☐ Somewhat dissatisfied ☐ Very dissatisfied

2. Are you currently seeing as many patients as you would like? *(Check one.)*

   ☐ Yes, just enough ☐ No, I am too busy ☐ No, I am not busy enough

3. What are the most important factors that influenced your decision to practice in California? List most important first.

   1. _____
   2. _____

4. In your practice of dentistry, what is your most significant source of dissatisfaction? _____

   _____

   _____

   _____

Please turn the page to continue ⇨

E. Future Rural Dental Care

In some states, non-dentist providers are increasing their role in providing dental care to patients who have difficulty obtaining access to professional dental care. Please indicate your opinion on the following topics.

1. Children at high risk for dental caries should be able to receive preventive dental treatment (e.g., fluoride varnish and dental education) during routine well-child visits to their nondental medical care providers (e.g., nurse).

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

2. I believe there is significant unmet need for dental care in my community.

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

3. Non-dentist providers ***in my community*** should be able to provide preventive treatment (e.g., fluoride varnish and dental education) to children who have difficulty obtaining dental care (due to geographic or financial barriers).

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

4. I think the best way to address unmet dental care needs in my community is: _____

   _____

   _____

   _____

   _____

THANK YOU for your time and effort.

Please return this questionnaire in the postage paid envelope to:

California Rural Dentist Study
Rural Health Research Center
University of Washington
Box 354696
Seattle, WA 98195-4696

If you have questions, please call Ms. Holly Andrilla of the Rural Health Research Center at 206-685-0402.

2002 Maine Rural Dentist Survey

A. Demographics

1. What is your age? _____ years

2. What is your gender? ☐ Male ☐ Female

3. What is your race/ethnicity? *(Check all that apply.)*
   ☐ African American ☐ Hispanic/Latino ☐ White
   ☐ American Indian ☐ Native Alaskan ☐ Other (please specify: _____)
   ☐ Asian ☐ Pacific Islander

4. Which of the following best describes the area where you grew up? *(Check one.)*
   ☐ Rural ☐ Suburban ☐ Urban

5. How long have you lived in Maine? _____ years

6. Please provide the state or country of the dental school from which you graduated: _____

B. Practice Characteristics

1. Which of the following best describes your current professional status?
   ☐ Full-time dentist actively seeing patients (20 hours or more per week working as a clinical dentist)
   ☐ Part-time dentist actively seeing patients (less than 20 hours per week working as a clinical dentist)
   ☐ Semi-retired, treating some patients
   ☐ Active in dental/health activities but not seeing patients
   (PLEASE STOP HERE AND RETURN YOUR QUESTIONNAIRE)
   ☐ Retired, treating no patients
   (PLEASE STOP HERE AND RETURN YOUR QUESTIONNAIRE)
   ☐ Not retired but not professionally active in dentistry
   (PLEASE STOP HERE AND RETURN YOUR QUESTIONNAIRE)
   ☐ Other (please specify: _____)

2. Are you practicing as a specialist in an ADA-recognized specialty?
   ☐ Yes (please list specialty: _____)
   ☐ No, I am a generalist dentist

3. What is the ZIP code of your primary practice location? ___ ___ ___ ___ ___

4. How many years have you practiced in Maine? _____ years

5. How many years have you practiced in the city or town where you are currently located? _____ years

6. Please answer the following about the time you spent in your practice during the year ***2001***:

   a. Total weeks worked (do not include vacation): _____ weeks per year

   b. Average number of total professional hours worked per week: _____ hours/week
   (Include patient care, professional activities, CDE, and meetings, etc. ***Exclude*** on-call time.)

   c. Average number of your professional hours each week spent in direct patient care: _____ hours/week

7. With how many other dentists do you practice in your office? (Do not count yourself.)

   _____ full-time dentists _____ part-time dentists

8. During a typical week, how many children with MaineCare
(formerly CubCare/Medicaid) coverage do you treat? (If none, enter zero.) _____ children

9. During a typical week, how many adults with MaineCare
(formerly CubCare/Medicaid) coverage do you treat? (If none, enter zero.) _____ adults

10. Please estimate the dollar value of the care you donate per year, including reduced-fee programs
(e.g., MaineCare, Give Back a Smile, Cole Foundation, DDS, and free care):

    _____ dollars/year

    Approximately what percentage of the above amount is from MaineCare? _____%

C. Practice Staff

1. How many dental hygienists does your practice currently employ?

   _____ full-time dental hygienists

   _____ part-time dental hygienists

   ☐ None, we currently employ no dental hygienists

2. For how many current hygienist positions are you actively recruiting?

   _____ full-time dental hygienists

   _____ part-time dental hygienists

   ☐ None, we currently do not have vacant dental hygienist positions

3. Please provide the hourly wage for up to two dental hygienists employed in your practice
(do ***not*** include benefits):

   Hygienist #1: $_____ per hour

   Hygienist #2: $_____ per hour

4. Considering the dental hygienist position that has been open the longest, how long have you been actively trying to fill it?

   _____ years plus _____ months

   ☐ Check here if you have no open positions

5. How many chair-side ***dental assistants*** does your practice employ? Do not include dental hygienists.

   _____ dental assistants

   ☐ None, we do not employ any chair-side dental assistants

6. For how many current chair-side dental assistants are you actively recruiting?

   _____ full-time chair-side dental assistants

   _____ part-time chair-side dental assistants

7. Please provide the hourly wage for up to two chair-side dental assistants employed in your practice (do ***not*** include benefits):

   Dental assistant #1: $_____ per hour

   Dental assistant #2: $_____ per hour

D. Satisfaction

1. How satisfied are you with your professional life?

   ☐ Very satisfied ☐ Somewhat satisfied ☐ Neutral ☐ Somewhat dissatisfied ☐ Very dissatisfied

2. Are you currently seeing as many patients as you would like? *(Check one.)*

   ☐ Yes, just enough ☐ No, I am too busy ☐ No, I am not busy enough

3. What are the most important factors that influenced your decision to practice in Maine? List most important first.

   1. _____
   2. _____

4. In your practice of dentistry, what is your most significant source of dissatisfaction? _____

   _____

   _____

Please turn the page to continue ⇨

E. Future Rural Dental Care

In some states, non-dentist providers are increasing their role in providing dental care to patients who have difficulty obtaining access to professional dental care. Please indicate your opinion on the following topics.

1. Children at high risk for dental caries should be able to receive preventive dental treatment (e.g., fluoride varnish and dental education) during routine well-child visits to their nondental medical care providers (e.g., nurse).

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

2. I believe there is significant unmet need for dental care in my community.

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

3. Non-dentist providers ***in my community*** should be able to provide preventive treatment (e.g., fluoride varnish and dental education) to children who have difficulty obtaining dental care (due to geographic or financial barriers).

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

4. The scope of practice of expanded-function dental assistants (under dentist supervision) should be expanded to address dental access problems in Maine.

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

5. I think the best way to address unmet dental care needs in my community is: _____

   _____

   _____

THANK YOU for your time and effort.

Please return this questionnaire in the postage paid envelope to:

Maine Rural Dentist Study
Rural Health Research Center
University of Washington
Box 354696
Seattle, WA 98195-4696

If you have questions, please call Ms. Frances Miliano of the Maine Dental Association at 207-622-7900.

2002 Missouri Rural Dentist Survey

A. Demographics

1. What is your age? _____ years

2. What is your gender? ☐ Male ☐ Female

3. What is your race/ethnicity? *(Check all that apply.)*
   ☐ African American ☐ Hispanic/Latino ☐ White
   ☐ American Indian ☐ Native Alaskan ☐ Other (please specify: _____)
   ☐ Asian ☐ Pacific Islander

4. Which of the following best describes the area where you grew up? *(Check one.)*
   ☐ Rural ☐ Suburban ☐ Urban

5. How long have you lived in Missouri? _____ years

6. Please provide the state or country of the dental school from which you graduated: _____

B. Practice Characteristics

1. Which of the following best describes your current professional status?
   ☐ Full-time dentist actively seeing patients (20 hours or more per week working as a clinical dentist)
   ☐ Part-time dentist actively seeing patients (less than 20 hours per week working as a clinical dentist)
   ☐ Semi-retired, treating some patients
   ☐ Active in dental/health activities but not seeing patients
   (PLEASE STOP HERE AND RETURN YOUR QUESTIONNAIRE)
   ☐ Retired, treating no patients
   (PLEASE STOP HERE AND RETURN YOUR QUESTIONNAIRE)
   ☐ Not retired but not professionally active in dentistry
   (PLEASE STOP HERE AND RETURN YOUR QUESTIONNAIRE)
   ☐ Other (please specify: _____)

2. Are you practicing as a specialist in an ADA-recognized specialty?
   ☐ Yes (please list specialty: _____)
   ☐ No, I am a generalist dentist

3. What is the ZIP code of your primary practice location? ___ ___ ___ ___ ___

4. How many years have you practiced in Missouri? _____ years

5. How many years have you practiced in the city or town where you are currently located? _____ years

6. Please answer the following about the time you spent in your practice during the year ***2001***:

   a. Total weeks worked (do not include vacation): _____ weeks per year

   b. Average number of total professional hours worked per week: _____ hours/week
   (Include patient care, professional activities, CDE, and meetings, etc. ***Exclude*** on-call time.)

   c. Average number of your professional hours each week spent in direct patient care: _____ hours/week

7. With how many other dentists do you practice in your office? (Do not count yourself.)

   _____ full-time dentists _____ part-time dentists

8. During a typical week, how many children with Medicaid, MC+, or CHIP coverage do you treat? (If none, enter zero.) _____ children

9. During a typical week, how many adults with Medicaid, MC+, or CHIP coverage do you treat? (If none, enter zero.) _____ adults

10. Please estimate the dollar value of the care you donate per year, including reduced-fee programs (e.g., Medicaid, MC+, CHIP, DDS, Head Start, and clinics):

    _____ dollars/year

    Approximately what percentage of the above amount is from Medicaid, MC+, or CHIP? _____%

C. Practice Staff

1. How many dental hygienists does your practice currently employ?

   _____ full-time dental hygienists

   _____ part-time dental hygienists

   ☐ None, we currently employ no dental hygienists

2. For how many current hygienist positions are you actively recruiting?

   _____ full-time dental hygienists

   _____ part-time dental hygienists

   ☐ None, we currently do not have vacant dental hygienist positions

3. Please provide the hourly wage for up to two dental hygienists employed in your practice (do ***not*** include benefits):

   Hygienist #1: $_____ per hour

   Hygienist #2: $_____ per hour

4. Considering the dental hygienist position that has been open the longest, how long have you been actively trying to fill it?

   _____ years plus _____ months

   ☐ Check here if you have no open positions

5. How many chair-side ***dental assistants*** does your practice employ? Do not include dental hygienists.

   _____ dental assistants

   ☐ None, we do not employ any chair-side dental assistants

6. For how many current chair-side dental assistants are you actively recruiting?

   _____ full-time chair-side dental assistants

   _____ part-time chair-side dental assistants

7. Please provide the hourly wage for up to two chair-side dental assistants employed in your practice (do ***not*** include benefits):

   Dental assistant #1: $_____ per hour

   Dental assistant #2: $_____ per hour

D. Satisfaction

1. How satisfied are you with your professional life?

   ☐ Very satisfied ☐ Somewhat satisfied ☐ Neutral ☐ Somewhat dissatisfied ☐ Very dissatisfied

2. Are you currently seeing as many patients as you would like? *(Check one.)*

   ☐ Yes, just enough ☐ No, I am too busy ☐ No, I am not busy enough

3. What are the most important factors that influenced your decision to practice in Missouri? List most important first.

   1. _____
   2. _____

4. In your practice of dentistry, what is your most significant source of dissatisfaction? _____

   _____

   _____

   _____

Please turn the page to continue ⇨

E. Future Rural Dental Care

In some states, non-dentist providers are increasing their role in providing dental care to patients who have difficulty obtaining access to professional dental care. Please indicate your opinion on the following topics.

1. Children at high risk for dental caries should be able to receive preventive dental treatment (e.g., fluoride varnish and dental education) during routine well-child visits to their nondental medical care providers (e.g., nurse).

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

2. I believe there is significant unmet need for dental care in my community.

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

3. Non-dentist providers ***in my community*** should be able to provide preventive treatment (e.g., fluoride varnish and dental education) to children who have difficulty obtaining dental care (due to geographic or financial barriers).

   ☐ Strongly agree ☐ Somewhat agree ☐ Neither agree nor disagree ☐ Somewhat disagree ☐ Strongly disagree

4. I think the best way to address unmet dental care needs in my community is: _____

   _____

   _____

   _____

THANK YOU for your time and effort.

Please return this questionnaire in the postage paid envelope to:

Missouri Rural Dentist Study
Rural Health Research Center
University of Washington
Box 354696
Seattle, WA 98195-4696

If you have questions, please call Ms. Holly Andrilla of the Rural Health Research Center at 206-685-0402.

Appendix B:

State Pamphlets

WWAMI RURAL HEALTH RESEARCH CENTER

University of Washington School of Medicine Department of Family Medicine
Box 354982 • Seattle WA 98195-4982 • Phone 206-685-0402 • Fax 206-616-4768

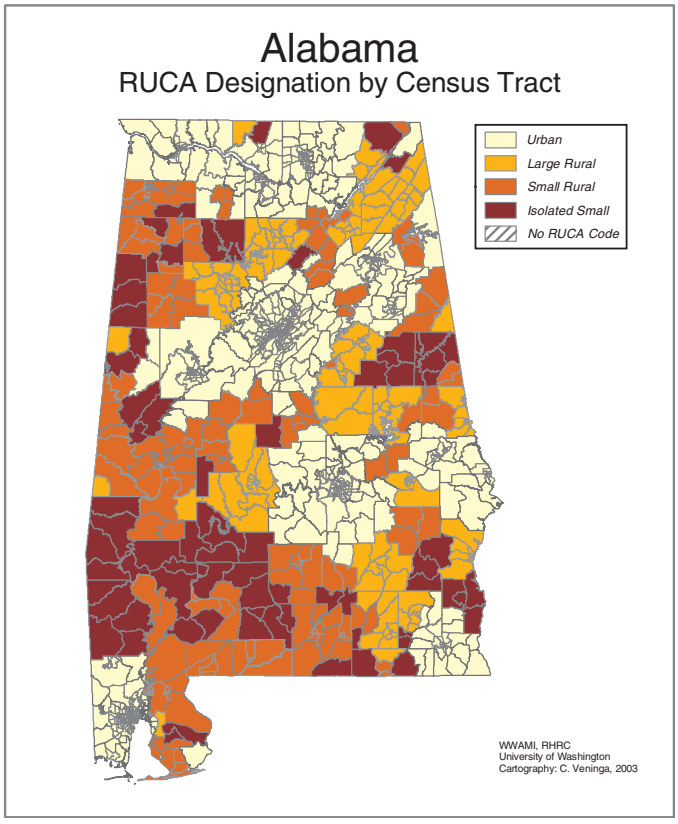
Alabama Rural Dentist Survey 2003

The WWAMI Rural Health Research Center, in cooperation with the Alabama Dental Association, the Alabama Department of Public Health, and the University of Alabama School of Dentistry, conducted a survey of all dentists practicing in rural Alabama. The survey was designed to provide a comprehensive look at Alabama's rural dental workforce, including its demography, practice staff, practice characteristics, and job satisfaction. Additionally, dentists were asked to provide their opinions on several ideas for addressing unmet dental care needs. Surveys were sent from March 2003 until June 2003 to 400 dentists. The study had a final response rate of 76 percent.

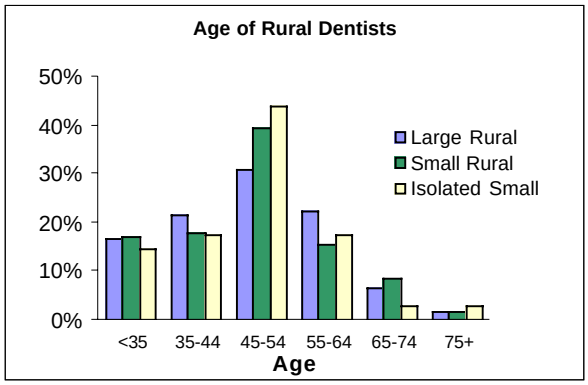
Defining Rural Areas: In this study, we used Rural-Urban Commuting Area (RUCA) codes to define rural and urban areas. The RUCA taxonomy is being widely adopted by the federal government to define rural areas and determine eligibility for programs targeted for rural populations. In the RUCA system, census tracts and ZIP codes are classified based on population density and patterns of commuting for work. For this study we aggregated the 30 RUCA codes into four categories designed to capture the relative isolation of rural places.

1. Urban.
2. Large rural (majority of commuting focused on large rural cities or towns of 10,000 to 50,000 population).
3. Small town rural (majority of commuting focused on small towns of 2,500 to 10,000 population).
4. Isolated small rural (minimal commuting or commuting primarily to small towns).

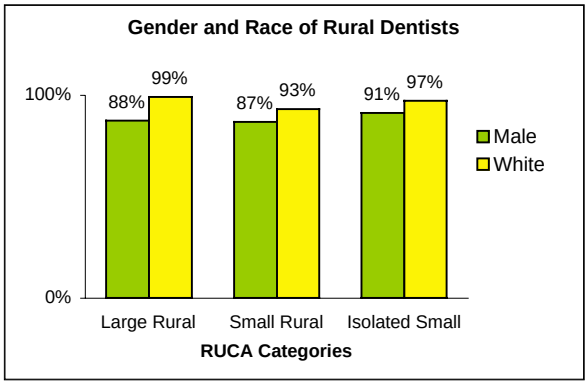
More information on RUCAs can be found on the Web at http://www.fammed.washington.edu/wwamirhrc/.



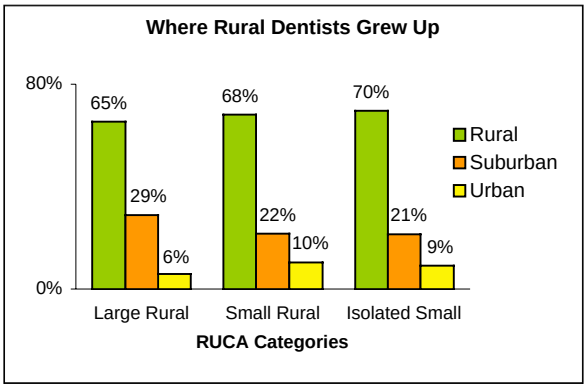
Demographic Information of Alabama's Dentists



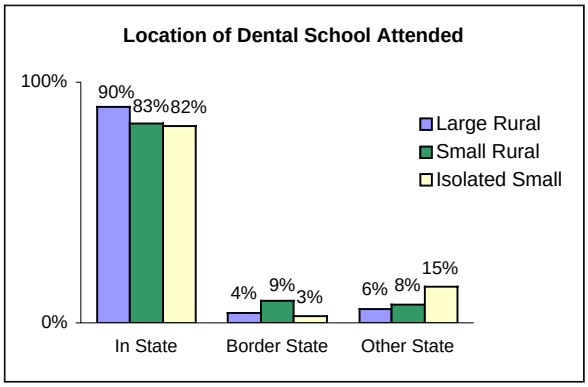
The average age of rural dentists is 48 years.



Overall, 88 percent of rural dentists are male and 96 percent are white.

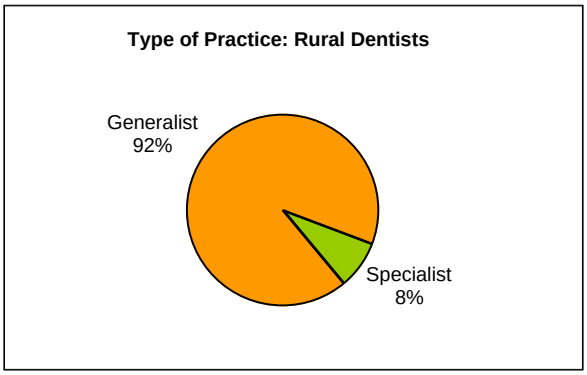


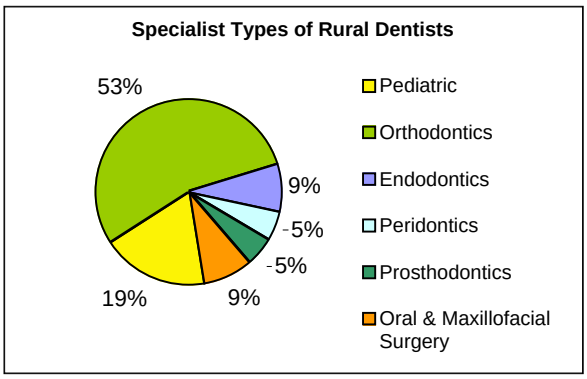
67 percent of Alabama's dentists practicing in rural places reported growing up in a rural place, and only 8 percent reported growing up in an urban location.



Overall, 86 percent of Alabama's rural dentists graduated from dental school in Alabama.
6 percent attended dental school in a state that borders Alabama, and the remaining 8 percent attended dental school elsewhere in the United States.

Practice Characteristics of Alabama's Rural Dentists

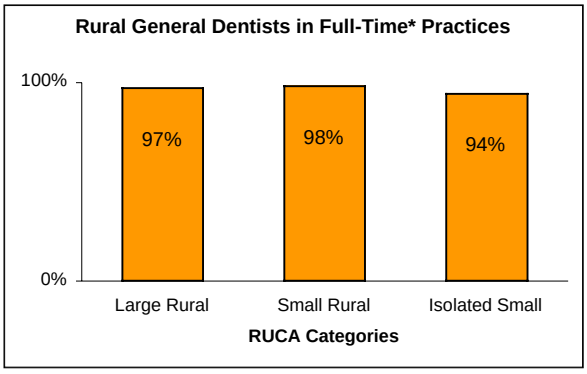




Overall, only 8 percent of Alabama's rural dentists are specialists. Small rural places have 7 percent specialists, and there are no specialists in any of Alabama's small isolated places. In large rural places, 12 percent of dentists are specialists. Orthodontics is the most common specialty in all places.

Alabama's Rural General Dentists

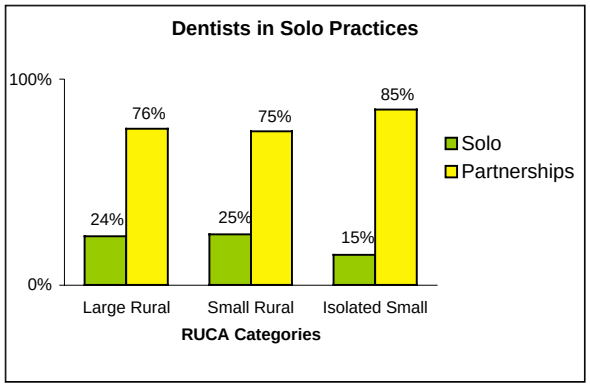
- General dentists practicing in rural areas work an average of 36 hours per week.
- Direct patient care accounts for an average of 33 practice hours each week.
- General dentists in rural locations work an average of 48 weeks per year.



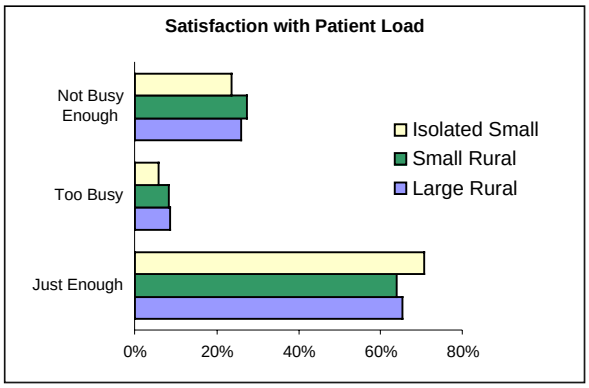
* Full-time work was defined to be actively working as a clinical dentist (seeing patients) 20 or more hours each week.

Practice Characteristics of Rural General Dentists

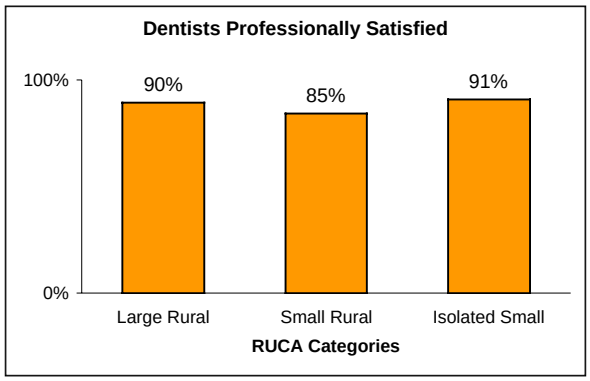
- Dentists practicing in rural areas have lived in Alabama for an average of 41 years.
- On average, rural dentists have practiced in Alabama for 20 years and have practiced at their current location for 18 years.



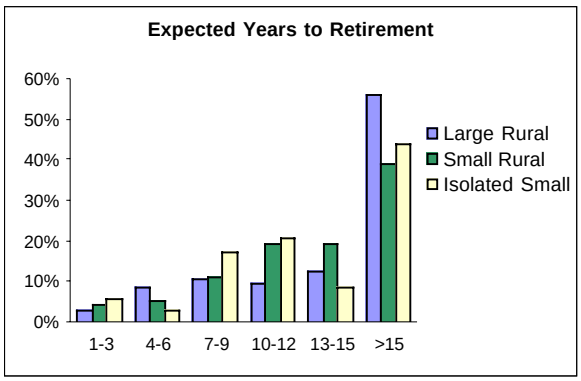
Overall, 77 percent of rural dentists participate in a partnership practice; the remaining 23 percent reported practicing alone.



65 percent of Alabama's rural dentists reported having "just enough" patients. 26 percent reported "not being busy enough," and only 8 percent said they are "too busy."

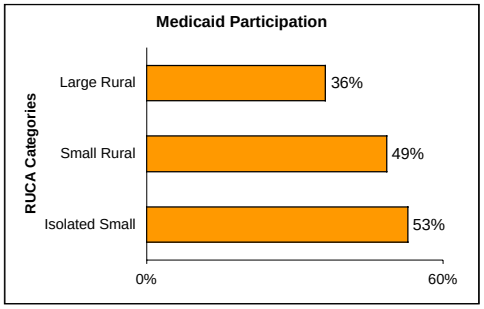


Overall, rural dentists reported feeling professionally satisfied. Almost 9 in 10 reported they are "very satisfied" or "somewhat satisfied" with their professional life.

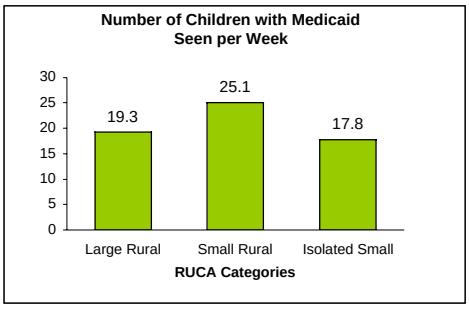


Nearly half of rural dentists (47%) reported that they don't anticipate retiring for 15 or more years.

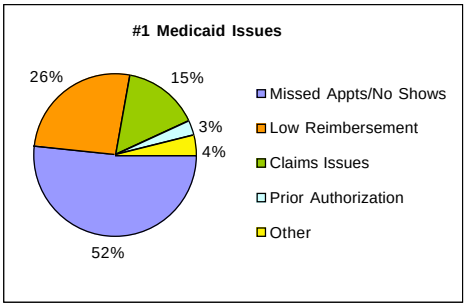
Alabama Medicaid Information



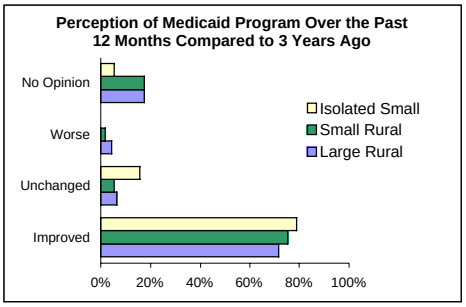
Overall, 44 percent of rural dentists reported participating in the Medicaid program.



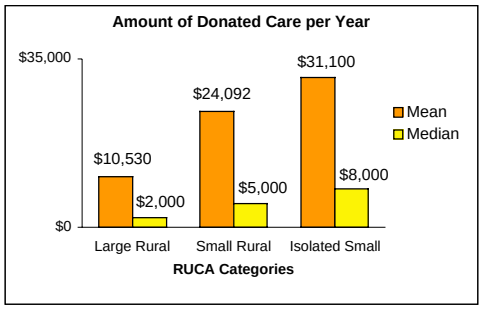
Dentists that participate in the Medicaid program report seeing an average of 19.8 children on Medicaid each week.



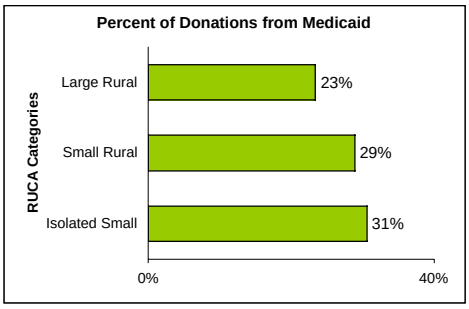
52 percent of Alabama's rural dentists said that "missed appointments and no shows" was the issue of greatest concern to them as a Medicaid provider.



Perception of the Medicaid program among rural dentists has improved. Of those expressing an opinion, 88 percent reported that they felt the program had improved over the past 12 months compared to the program three years ago.

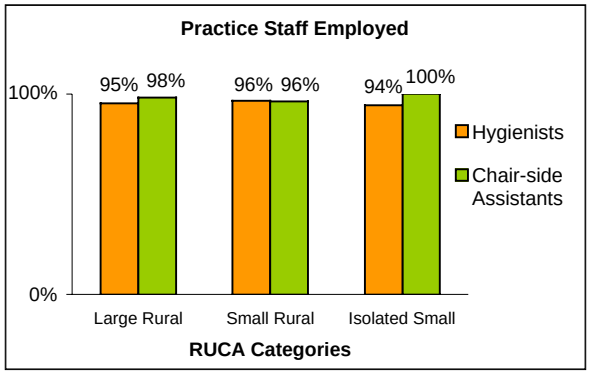


Rural dentists reported providing an average of $19,515 of donated care each year. This number includes reduced-fee programs such as Medicaid.



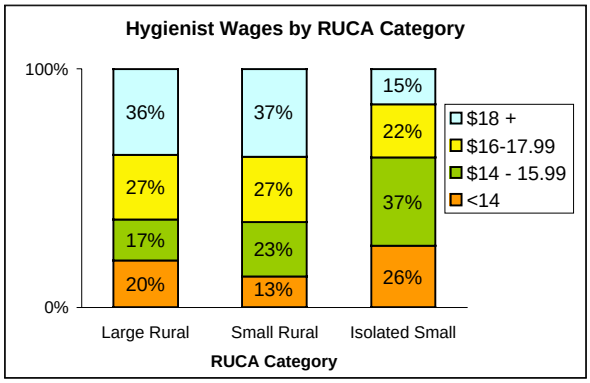
Medicaid reduced payments accounted for 27 percent of the care donated by rural dentists. The remaining 73 percent was donated through other programs or by individual dentists.

Practice Staff Information

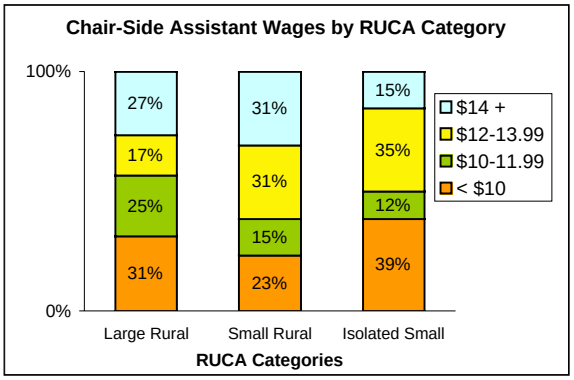


- There is an average of 1.8 dental hygienists employed per dentist in rural Alabama.
- The vacancy rate for dental hygienists working in general dentistry offices in rural Alabama is 5.8 percent.
- Rural Alabama dentists employ an average of 1.7 chair-side dental assistants.

Overall, 96 percent of rural dentists employ at least one dental hygienist and 97 percent employ at least one chair-side dental assistant.



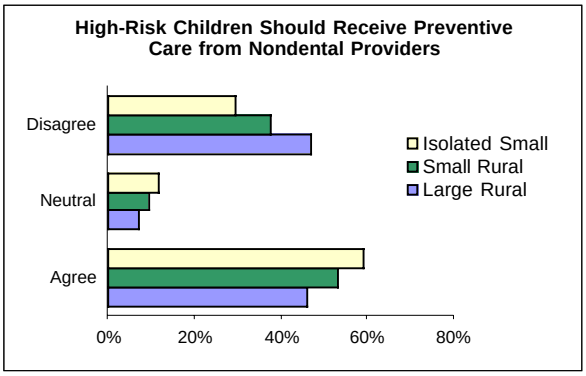
The average hourly wage for dental hygienists employed in all rural areas in Alabama is $16.89.

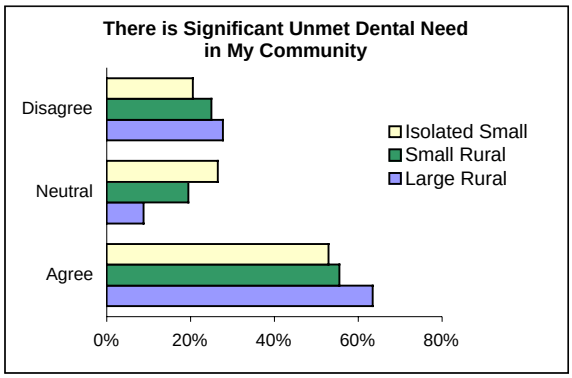


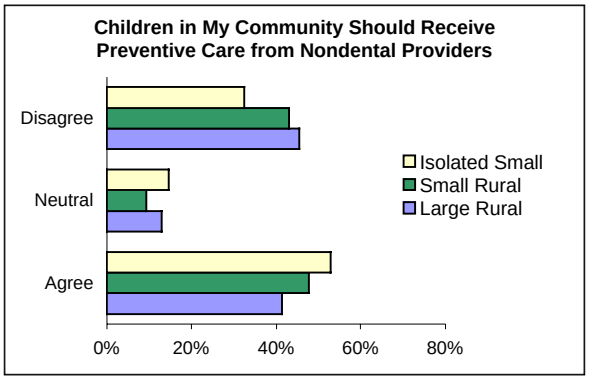
In rural areas in Alabama, chair-side dental assistants earn an average of $11.75 per hour.

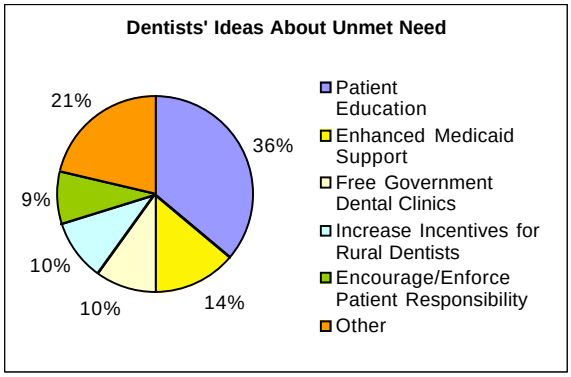
Future of Rural Dental Care in Alabama

Dentists were asked to give their opinion on several topics related to addressing unmet dental needs. Their responses are shown below. Additionally, dentists could provide their own ideas as to how unmet dental needs could best be met. Their responses were categorized and are also shown below.

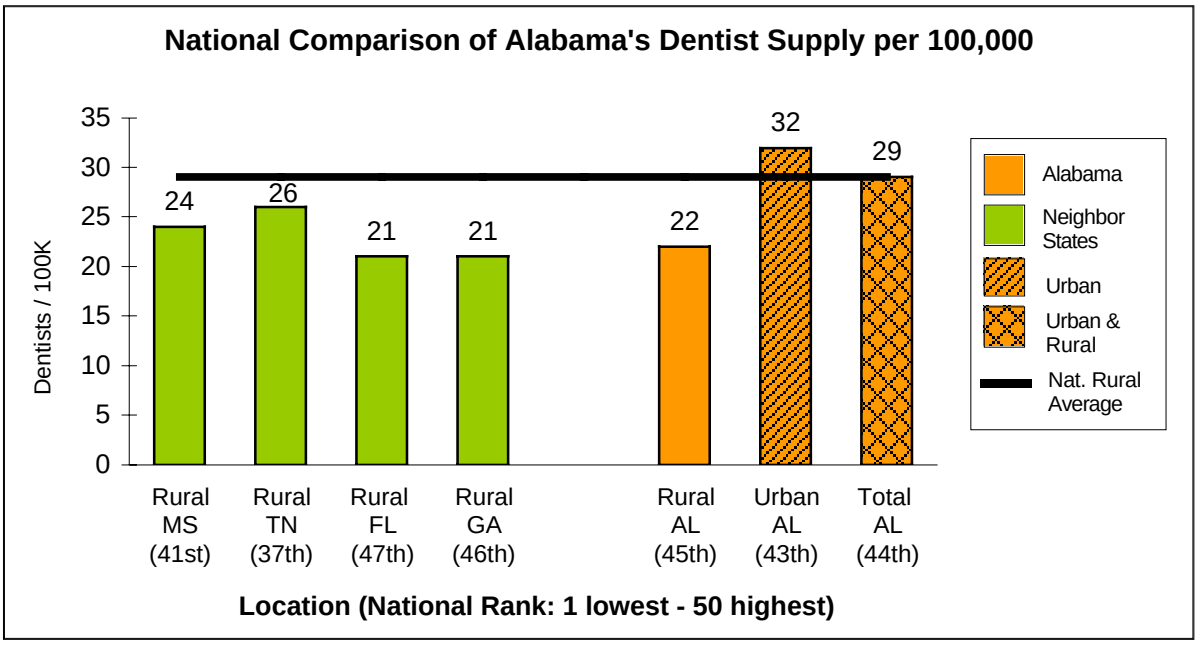








National Comparisons



Alabama ranks 45th among the 50 states in rural dentists/100,000 rural population. When compared to its neighboring states (Mississippi, Tennessee, Florida, Georgia), rural Alabama has 5 percent fewer dentists/100,000 population.

National information was obtained from Larson EH, Johnson KE, Norris TE, Lishner DM, Rosenblatt RA, Hart LG; *State of the health workforce in rural America: profiles and comparisons;* Seattle, WA: WWAMI Rural Health Research Center, University of Washington, August 2003.

About this Report:

The Rural Dentist Survey is a four-state (Alabama, California, Maine, Missouri) project conducted by the WWAMI Rural Health Research Center (RHRC) at the University of Washington and is funded by HRSA's Federal Office of Rural Health Policy (grant #5 UIC RH00035). If you have any questions or comments, please contact Holly Andrilla at 206-685-0402 or by e-mail at hollya@fammed.washington.edu. Additional authors: Beth Kirlin, Graduate Research Assistant; Catherine Veninga, Graduate Research Assistant; Eric Larson, Deputy Director, WWAMI RHRC; and Gary Hart, Director, WWAMI RHRC.

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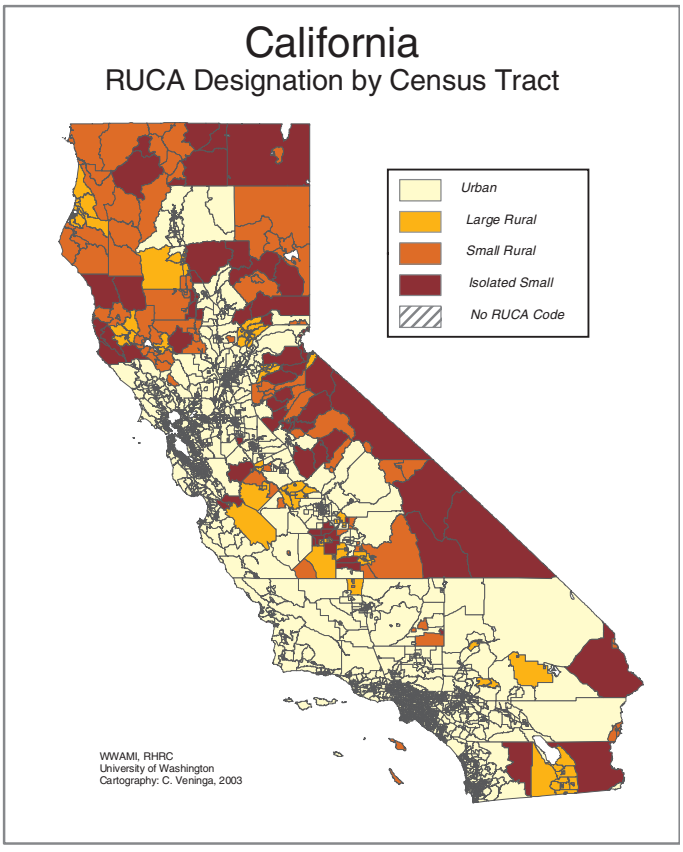
California Rural Dentist Survey 2003

The WWAMI Rural Health Research Center, in cooperation with the California Dental Association, the California Oral Health Program, and the California Rural Health Association, conducted a survey of all dentists practicing in rural California. The survey was designed to provide a comprehensive look at California's rural dental workforce, including its demography, practice staff, practice characteristics, and job satisfaction. Additionally, dentists were asked to provide their opinions on several ideas for addressing unmet dental care needs. Surveys were sent from May 2002 until September 2002 to 845 dentists. The study had a final response rate of 71 percent.

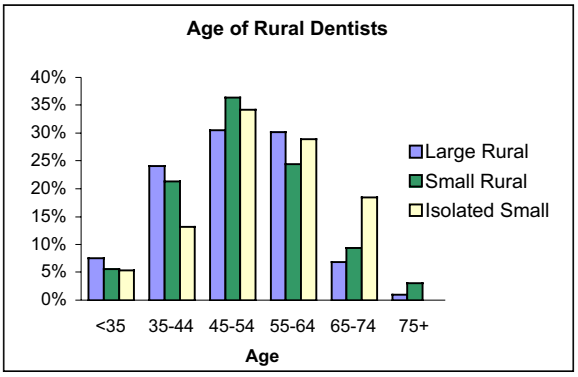
Defining Rural Areas: In this study, we used Rural-Urban Commuting Area (RUCA) codes to define rural and urban areas. The RUCA taxonomy is being widely adopted by the federal government to define rural areas and determine eligibility for programs targeted for rural populations. In the RUCA system, census tracts and ZIP codes are classified based on population density and patterns of commuting for work. For this study we aggregated the 30 RUCA codes into four categories designed to capture the relative isolation of rural places.

1. Urban.
2. Large rural (majority of commuting focused on large rural cities or towns of 10,000 to 50,000 population).
3. Small town rural (majority of commuting focused on small towns of 2,500 to 10,000 population).
4. Isolated small rural (minimal commuting or commuting primarily to small towns).

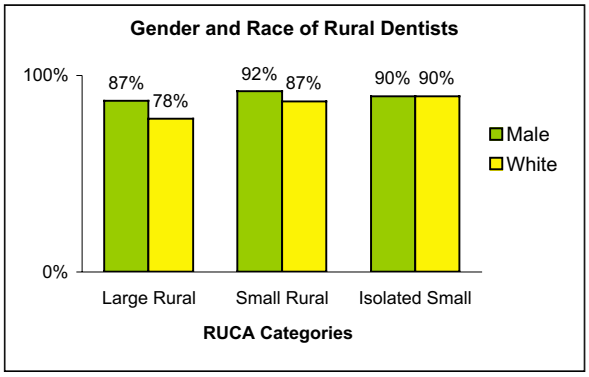
More information on RUCAs can be found on the Web at http://www.fammed.washington.edu/wwamirhrc/.



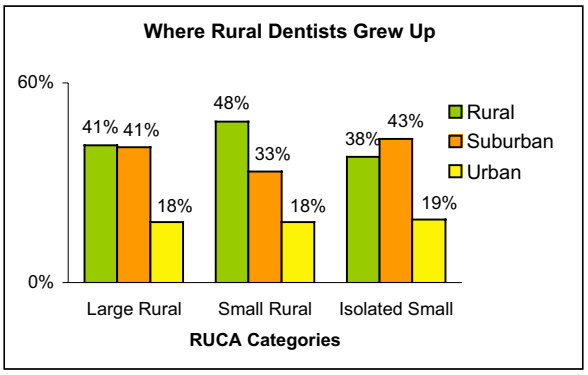
Demographic Information of California's Dentists



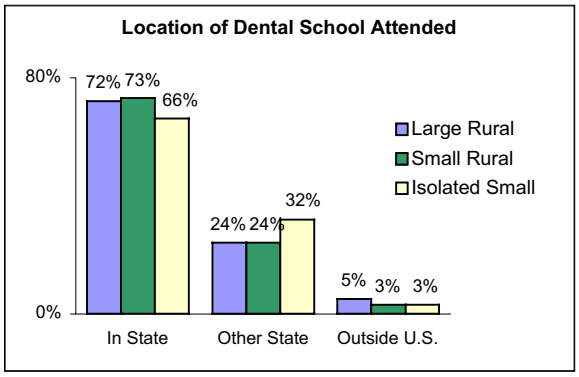
The average age of rural dentists is 51 years, and 38 percent of the dental workforce is over age 55.



Overall, 89 percent of rural dentists are male and 82 percent are white.

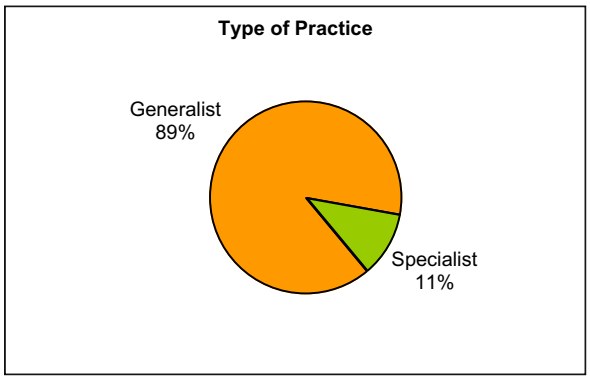


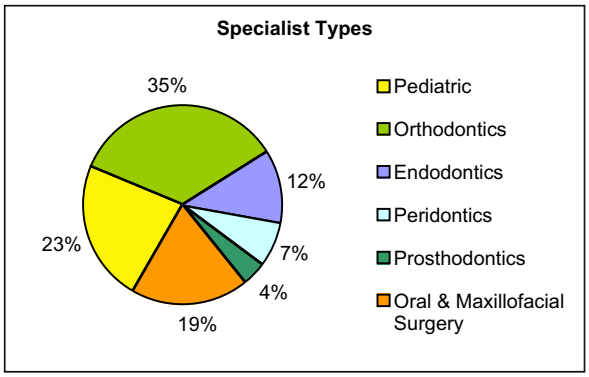
43 percent of dentists practicing in rural places report growing up in a rural place, and only 18 percent report growing up in an urban location.



Overall, 72 percent of California's rural dentists graduated from California dental schools. 11 percent of California rural dentists graduated from dental schools in the Midwest Census Division.

Practice Characteristics of California's Rural Dentists

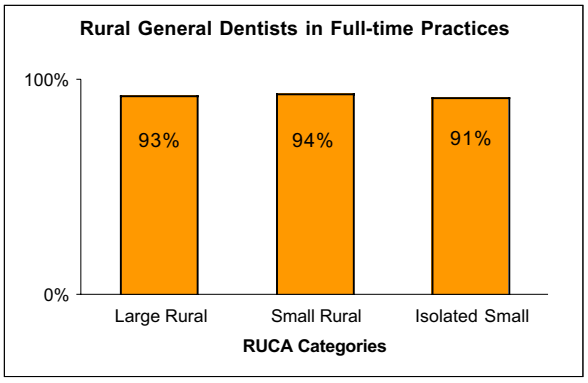




Overall, 11 percent of California's rural dentists are specialists. Small rural places have 8 percent specialists, and there are no specialists in any of California's small isolated places. Most rural places in California are classified as large rural places, and these areas have 14 percent specialists. In all places, orthodontics is the most common specialty, followed by pediatric dentistry.

California's Rural General Dentists

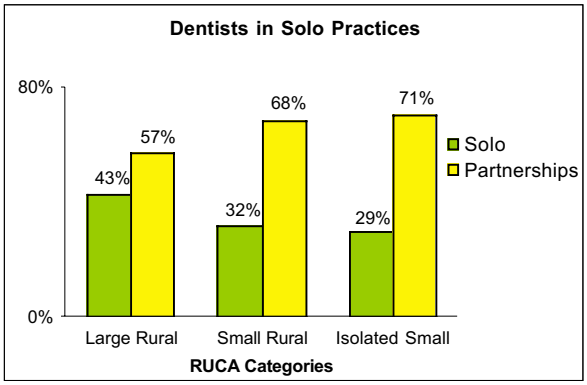
- General dentists practicing in rural areas work an average of 36 hours per week.
- Direct patient care accounts for an average of 32 practice hours each week.
- General dentists in rural locations work an average of 47 weeks per year.



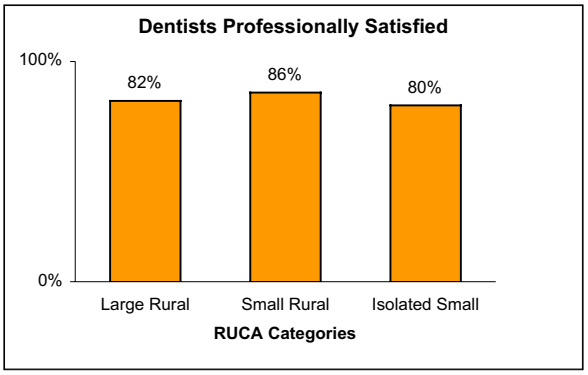
Full-time work was defined to be actively working as a clinical dentist (seeing patients) 20 or more hours each week.

Practice Characteristics of Rural General Dentists

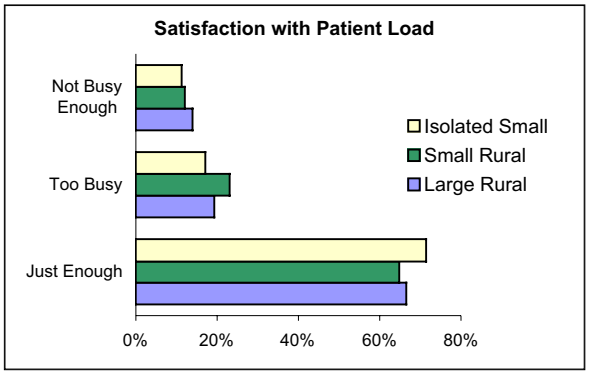
- Dentists practicing in rural areas have lived in California for an average of 41 years.
- On average, rural dentists have practiced in California for 21 years and have practiced at their current location for 16 years.



Overall, 62 percent of rural dentists participate in a partnership practice; the remaining 38 percent report practicing alone.

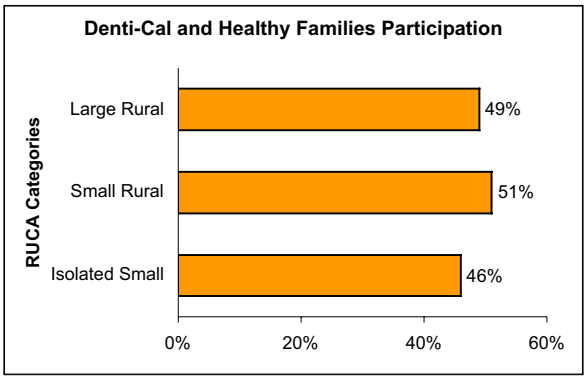


Overall, rural dentists reported feeling professionally satisfied. More than 8 in 10 reported they are “very satisfied” or “somewhat satisfied” with their professional life.

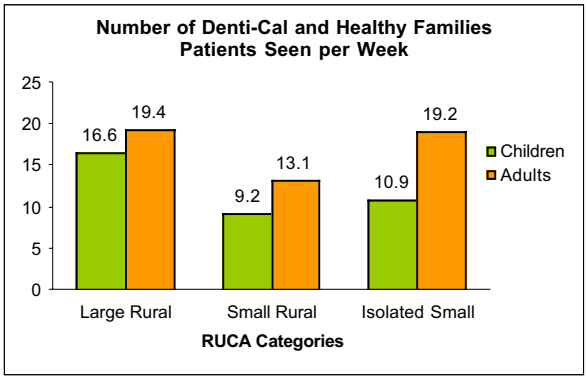


Overall, 66 percent of all dentists reported seeing just enough patients. Only 13 percent reported not being busy enough, and 21 percent reported they were too busy.

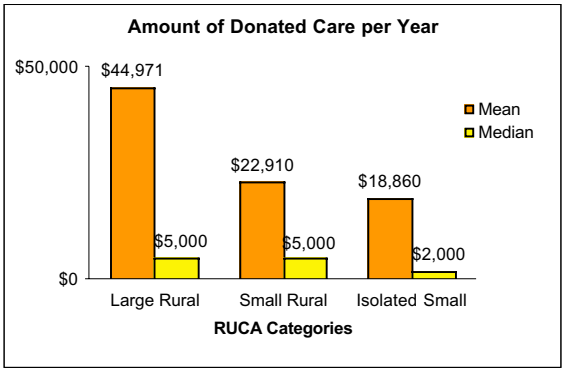
Denti-Cal and Healthy Families Information



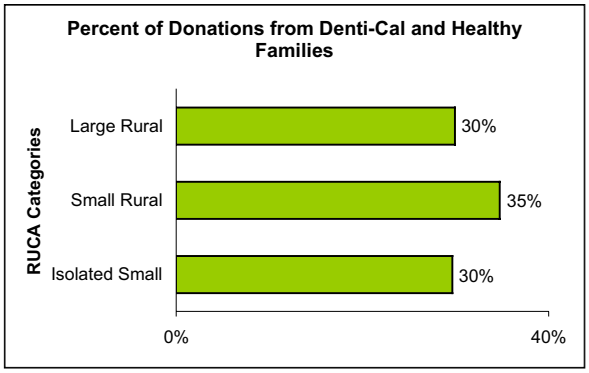
Overall, half of rural dentists in California participate in the Denti-Cal or Healthy Families programs.



Dentists that participate in the Denti-Cal or Healthy Families programs see an average of 30.7 patients (13.6 children and 17.2 adults) per week.

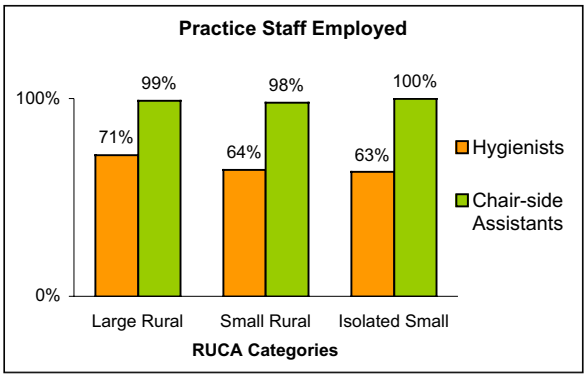


Rural dentists report providing an average of $35,275 of donated care each year. This number includes reduced-fee programs such as Denti-Cal and Healthy Families.



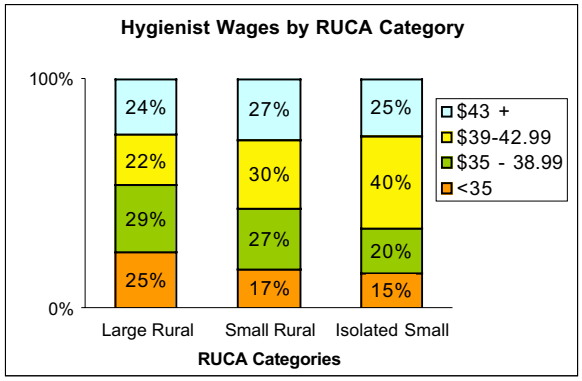
Denti-Cal and Healthy Families reduced payments accounted for 31 percent of the care donated by rural dentists. The remaining 69 percent was donated through other programs or by individual dentists.

Practice Staff Information

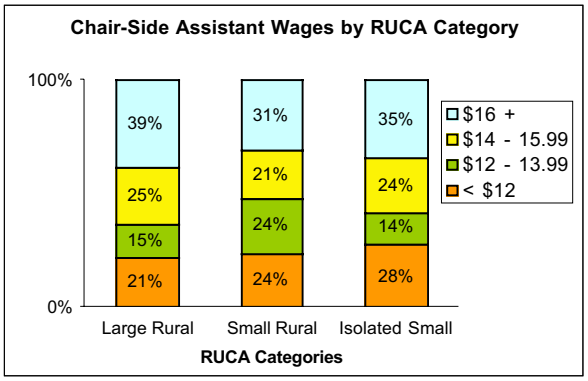


- There is an average of 1.0 dental hygienists employed per dentist in rural California.
- The vacancy rate for dental hygienists working in general dentistry offices in rural California is 17.7 percent.
- Rural dentists employ an average of 1.7 chair-side dental assistants.

Overall, 68 percent of dentists employ at least one dental hygienist and virtually all (99%) employ at least one chair-side dental assistant.



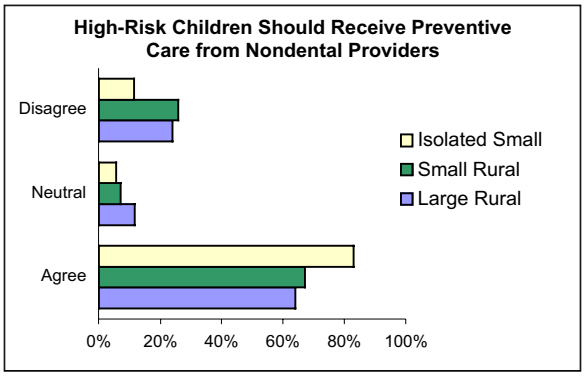
The average hourly wage for dental hygienists employed in rural California is $39.54.

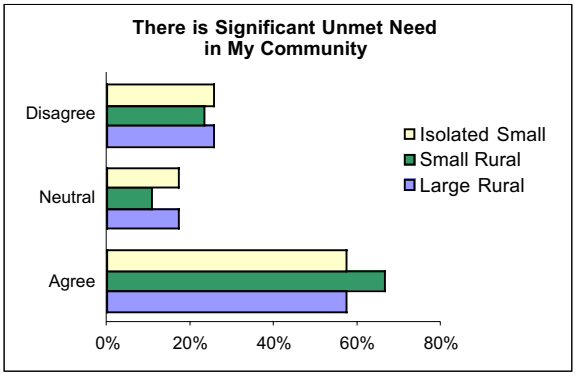


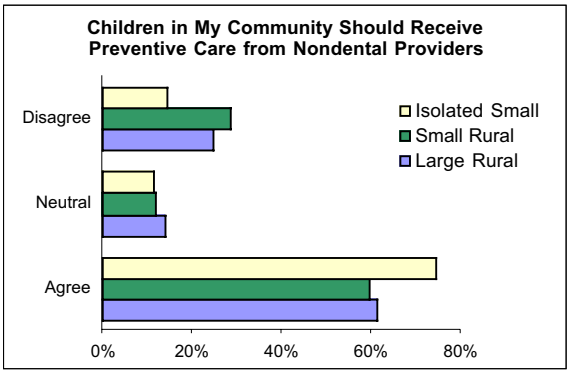
In rural areas, chair-side dental assistants earn an average of $14.35 per hour.

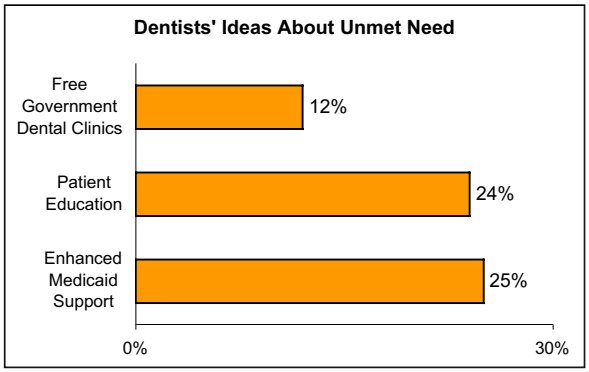
Future of Rural Dental Care in California

Dentists were asked to give their opinion on several topics related to addressing unmet dental needs. Their responses are shown below. Additionally, dental providers were asked how they thought unmet care needs could best be addressed. The three ideas that were mentioned most often were (1) increase Denti-Cal and Healthy Families compensation levels, (2) educate children and their parents about the importance of a healthy diet and good oral hygiene, and (3) provide free government dental clinics.

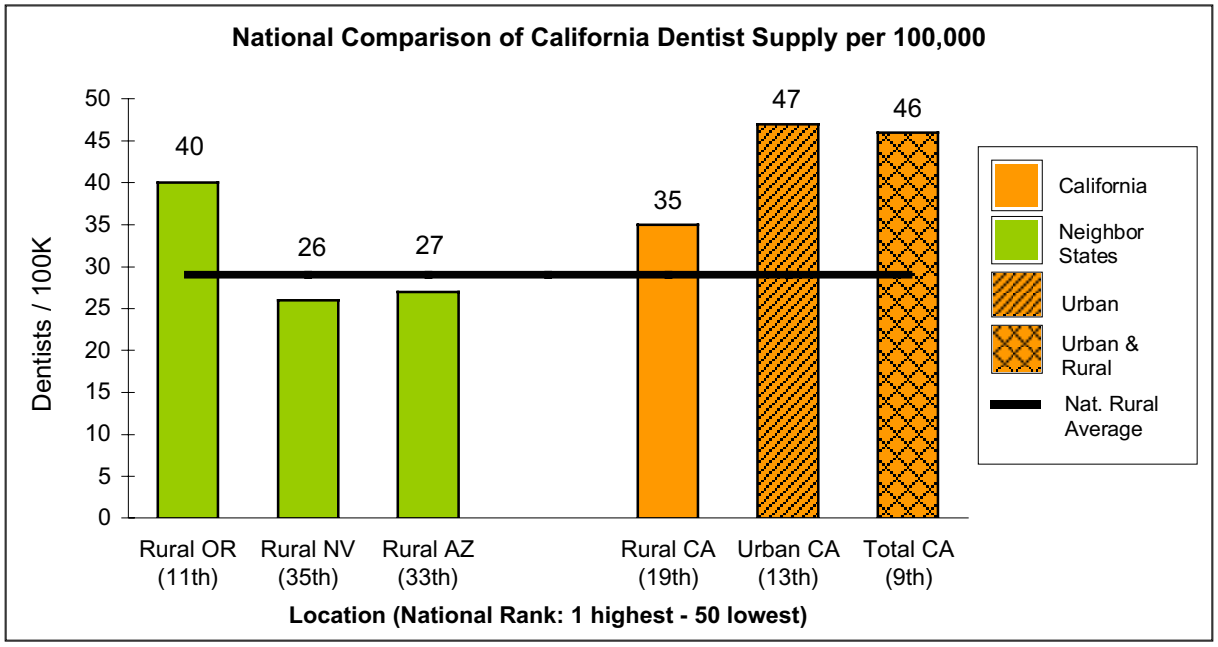








National Comparisons



California ranks 19th among the 50 states in rural dentists/100,000 rural population. When compared to its neighboring states (Oregon, Nevada, Arizona), rural California is above the national rural average of 29/100,000 and only rural Oregon, with a rank of 11th, has a higher national ranking.

National information was obtained from Larson EH, Johnson KE, Norris TE, Lishner DM, Rosenblatt RA, Hart LG; *State of the health workforce in rural America: profiles and comparisons;* Seattle, WA: WWAMI Rural Health Research Center, University of Washington, August 2003.

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Maine Rural Dentist Survey 2002

The WWAMI Rural Health Research Center, in cooperation with the Maine Dental Association and the Maine Oral Health Program, conducted a survey of all dentists practicing in rural Maine. The survey was designed to provide a comprehensive look at Maine's rural dental workforce, including its demography, practice staff, practice characteristics, and job satisfaction. Additionally, dentists were asked to provide their opinions on several ideas for addressing unmet dental care needs. Surveys were sent from May 2002 until September 2002 to 318 dentists. The study had a final response rate of 83 percent.

Defining Rural Areas: In this study, we used Rural-Urban Commuting Area (RUCA) codes to define rural and urban areas. The RUCA taxonomy is being widely adopted by the federal government to define rural areas and determine eligibility for programs targeted for rural populations. In the RUCA system, census tracts and ZIP codes are classified based on population density and patterns of commuting for work. For this study we aggregated the 30 RUCA codes into four categories designed to capture the relative isolation of rural places.

1. Urban.
2. Large rural (majority of commuting focused on large rural cities or towns of 10,000 to 50,000 population).
3. Small town rural (majority of commuting focused on small towns of 2,500 to 10,000 population).
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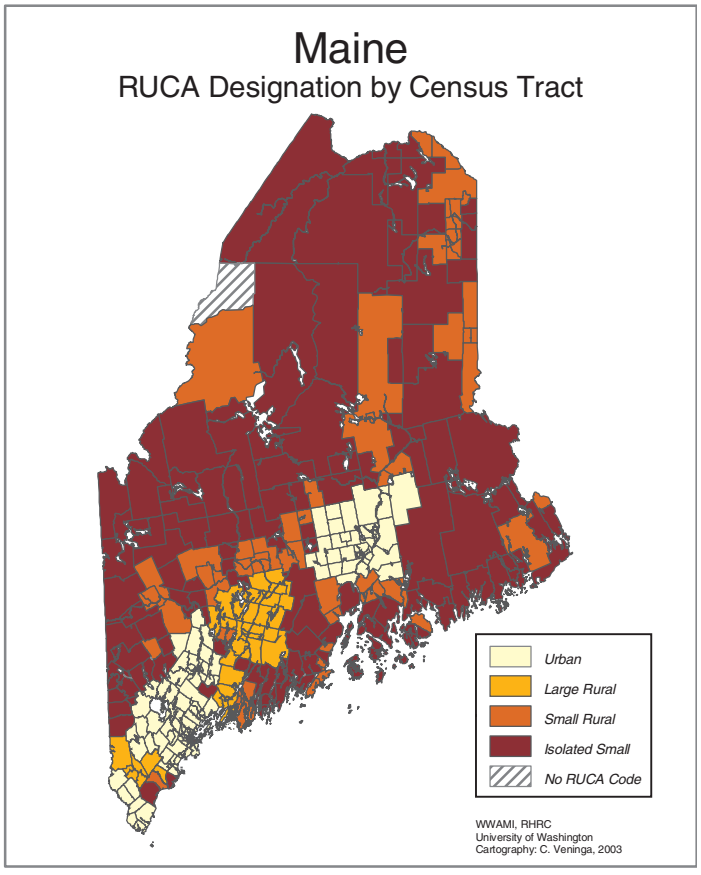
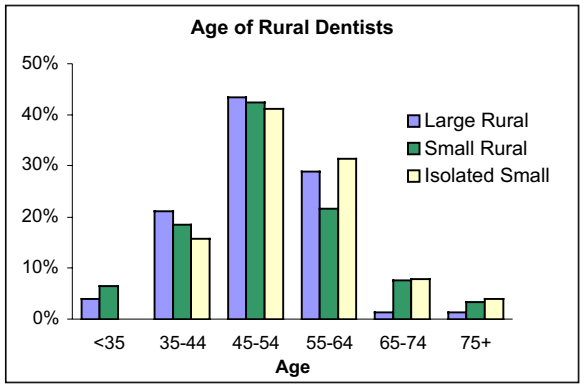
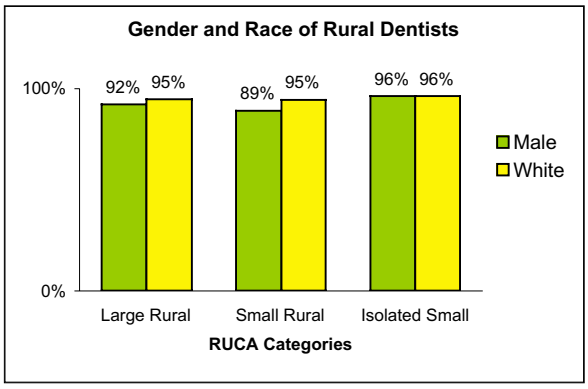
More information on RUCAs can be found on the Web at http://www.fammed.washington.edu/wwamirhrc/.



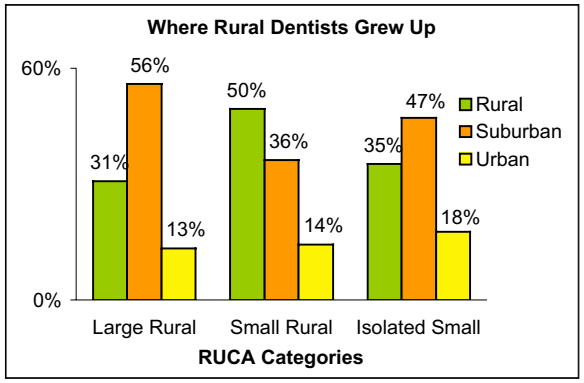
Demographic Information of Maine's Dentists



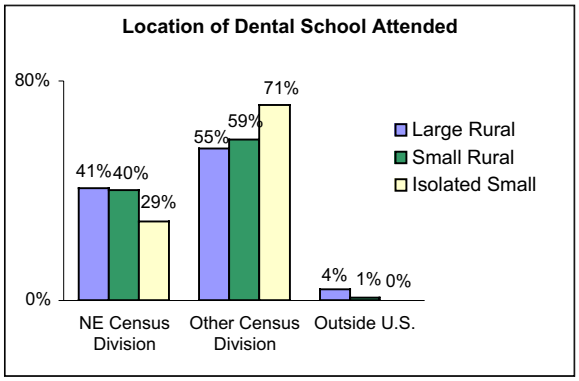
The average age of rural dentists in Maine is 51 years, and 35 percent of the dental workforce is over age 55.



Overall, 92 percent of rural dentists are male and 95 percent are white.

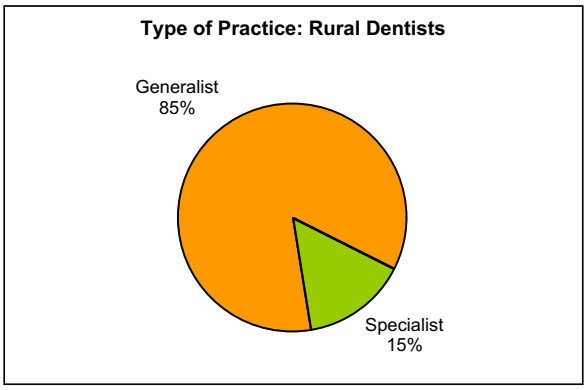


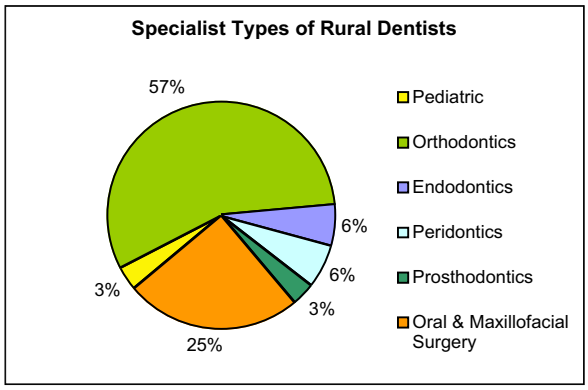
The majority of rural dentists in large rural and isolated small areas in Maine reported growing up in suburban areas. In small rural areas, half of practicing dentists reported growing up in a rural area.



Over 60 percent of Maine's rural dentists attended dental school outside the New England Census Division. 38 percent of Maine's rural dentists attended school in the New England Census Division, which includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

Practice Characteristics of Maine's Rural Dentists

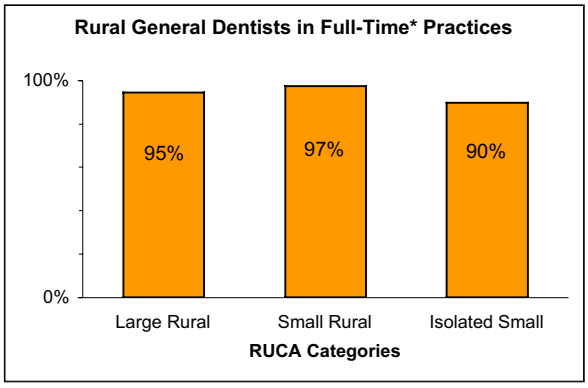




Overall, 15 percent of Maine's rural dentists are specialists. In large rural places, 25 percent of the dentists reported practicing as a specialist. Small rural places have 14 percent specialists. In isolated small rural places, there are no dentists practicing as specialists. In large and small rural locations, orthodontics is the most common specialty.

Maine's Rural General Dentists

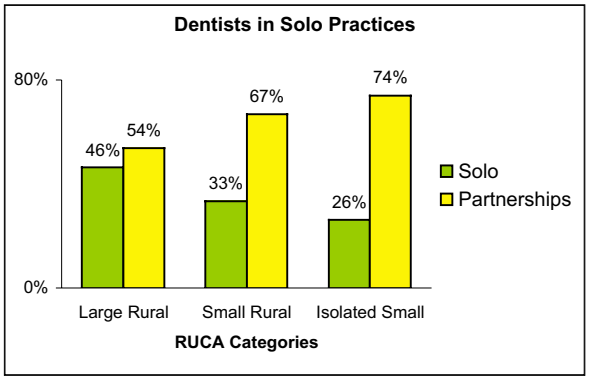
- General dentists in rural areas practice an average of 38 hours per week.
- Direct patient care accounts for an average of 33 practice hours each week.
- General dentists in rural locations work an average of 47 weeks per year.



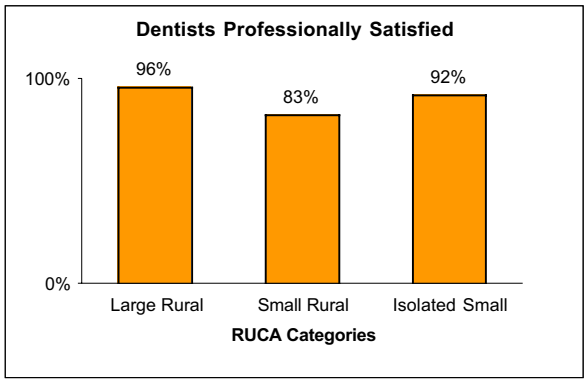
* Full-time work was defined to be actively working as a clinical dentist (seeing patients) 20 or more hours each week.

Practice Characteristics of Rural General Dentists

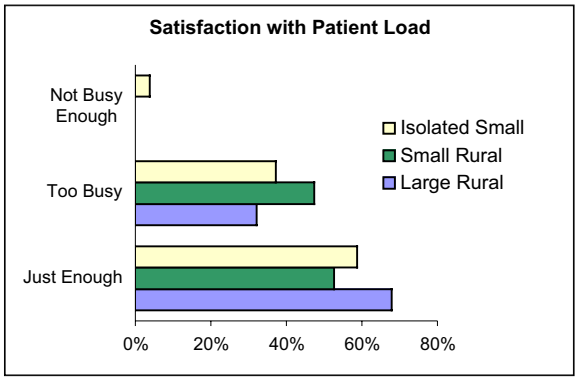
- Dentists practicing in rural areas have lived in Maine for an average of 31 years.
- On average, rural dentists have practiced in Maine for 20 years and have practiced at their current location for 19 years.



Overall, 65 percent of rural dentists participate in a partnership practice; the remaining 35 percent report practicing alone.

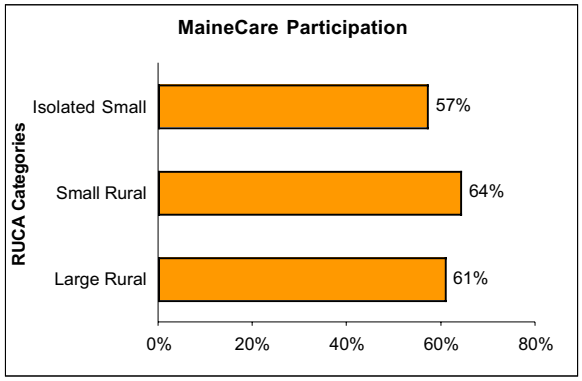


Overall, rural dentists in Maine reported feeling professionally satisfied. Nearly 9 in 10 reported they are “very satisfied” or “somewhat satisfied” with their professional life.

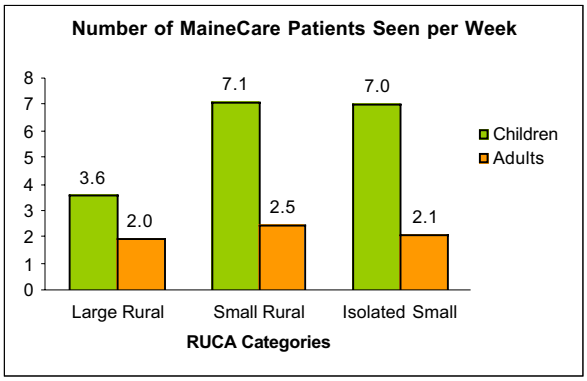


Almost 60 percent of all rural dentists in Maine reported seeing just enough patients, and overall 40 percent of rural dentists said they were “too busy.”

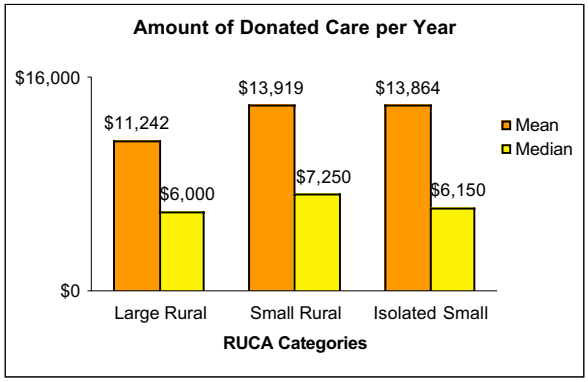
MaineCare Information



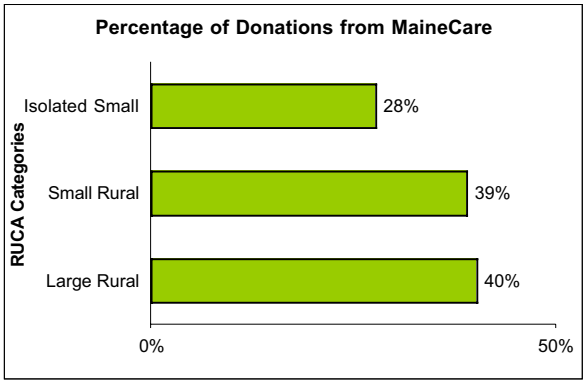
Overall, 61 percent of rural dentists in Maine participate in the MaineCare program.



Rural dentists in Maine who participate in the MaineCare program see an average of 13.3 MaineCare patients (9.7 children and 3.6 adults) each week.

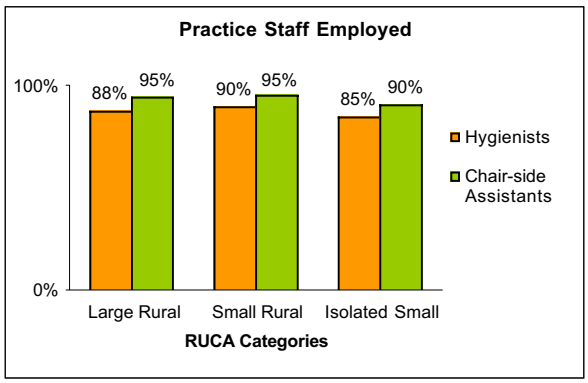


Maine's rural dentists report providing an average of $13,116 of donated care each year.



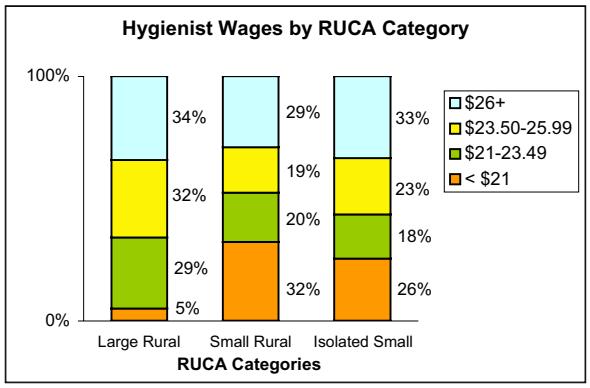
MaineCare reduced payments accounted for 36 percent of care donated by rural dentists. The remaining 64 percent was donated through other programs or by individual dentists.

Practice Staff Information

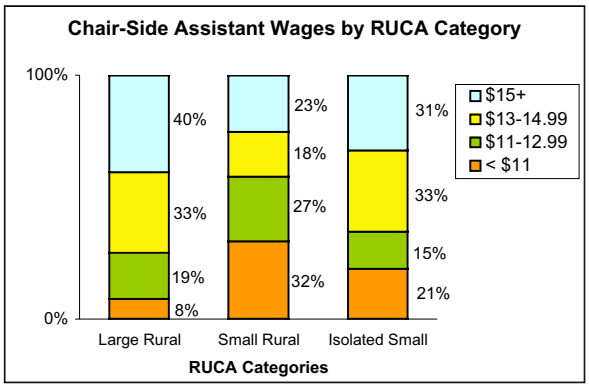


- There is an average of 1.6 dental hygienists employed per dentist in rural Maine.
- The vacancy rate for dental hygienists working in general dentistry offices in rural Maine is 8.8 percent.
- Rural Maine dentists employ an average of 1.4 chair-side dental assistants.

Overall, 88 percent of dentists employ at least one dental hygienist and 94 percent employ at least one chair-side dental assistant.



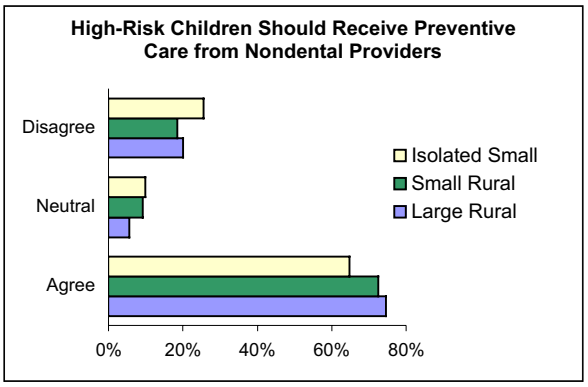
The average hourly wage for dental hygienists employed in all rural areas is $24.25.

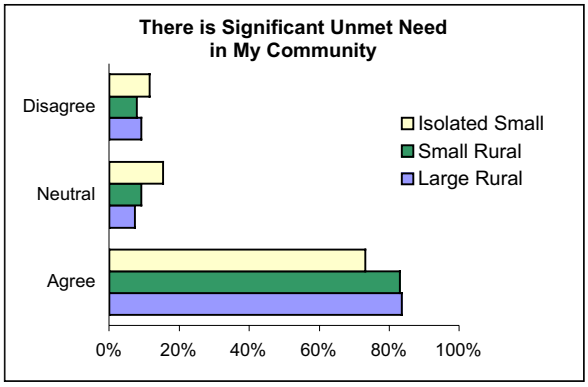


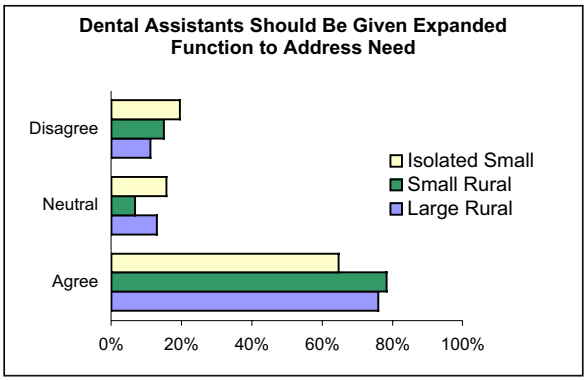
In rural areas, chair-side assistants earn an average of $13.20 per hour.

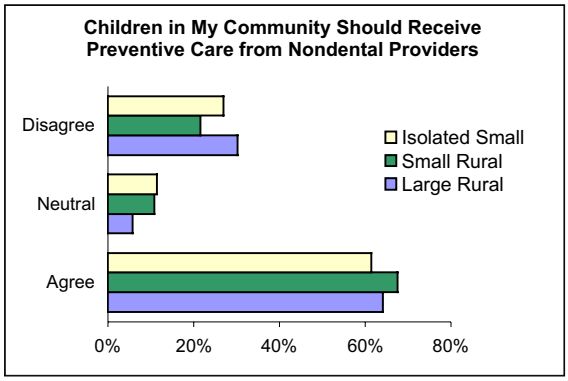
Future of Rural Dental Care in Maine

Maine dentists were asked to give their opinion on several topics related to addressing unmet dental needs. Their responses are shown below. Additionally, dental providers were asked how they thought unmet care needs could best be addressed. The three ideas that were mentioned most often were (1) increase MaineCare compensation levels, (2) recruit more dentists to the area, including using loan forgiveness programs and other educational incentives, and (3) educate children and their parents about the importance of a healthy diet and good oral hygiene.

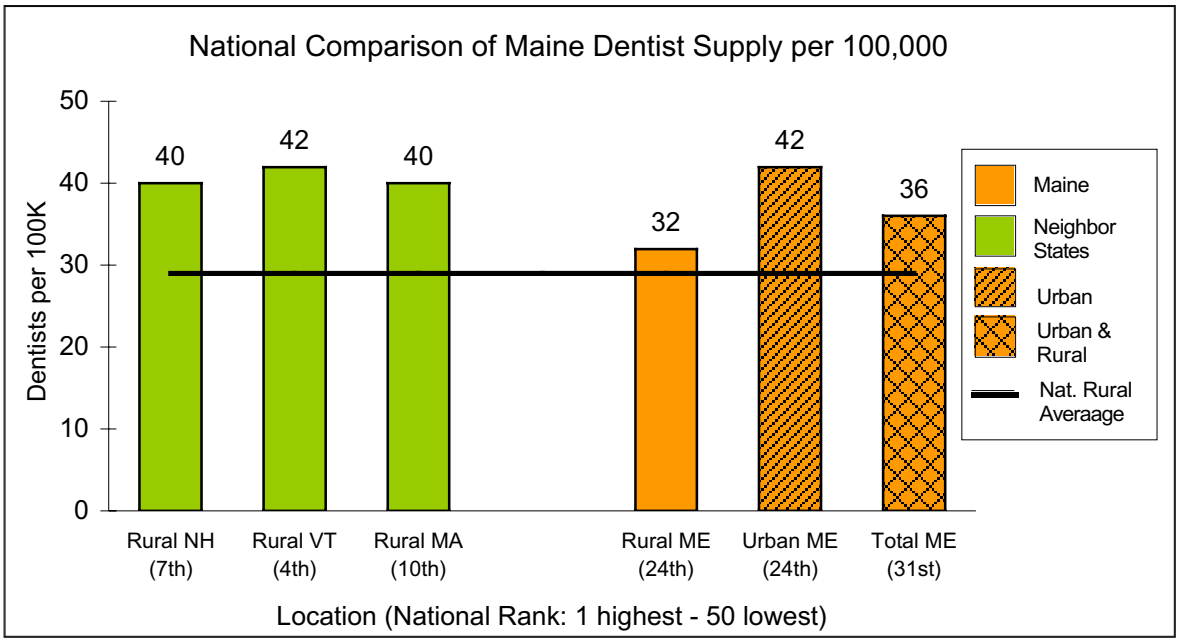








National Comparisons



Maine ranks 24th among the 50 states in rural dentists/100,000 rural population. When compared to its neighboring states (New Hampshire, Vermont, Massachusetts), rural Maine has 20 percent fewer dentists/100,000 population.

National information was obtained from Larson EH, Johnson KE, Norris TE, Lishner DM, Rosenblatt RA, Hart LG; *State of the health workforce in rural America: profiles and comparisons;* Seattle, WA: WWAMI Rural Health Research Center, University of Washington, August 2003.

About this Report:

The Rural Dentist Survey is a four-state (Alabama, California, Maine, Missouri) project conducted by the WWAMI Rural Health Research Center (RHRC) at the University of Washington and is funded by HRSA's Federal Office of Rural Health Policy (grant #5 UIC RH00035). If you have any questions or comments, please contact Holly Andrilla at 206-685-0402 or by e-mail at hollya@fammed.washington.edu. Additional authors: Beth Kirlin, Graduate Research Assistant; Catherine Veninga, Graduate Research Assistant; Eric Larson, Deputy Director, WWAMI RHRC; and Gary Hart, Director, WWAMI RHRC.

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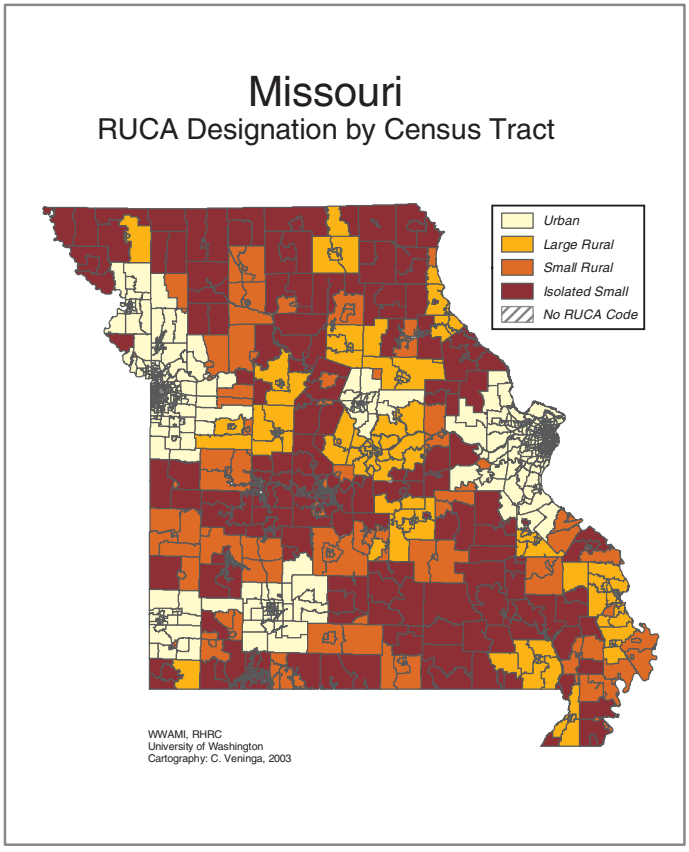
Missouri Rural Dentist Survey 2003

The WWAMI Rural Health Research Center, in cooperation with the Missouri Dental Association, conducted a survey of all dentists practicing in rural Missouri. The survey was designed to provide a comprehensive look at Missouri's rural dental workforce, including its demography, practice staff, practice characteristics, and job satisfaction. Additionally, dentists were asked to provide their opinions on several ideas for addressing unmet dental care needs. Surveys were sent from May 2002 until September 2002 to 534 dentists. The study had a final response rate of 73 percent.

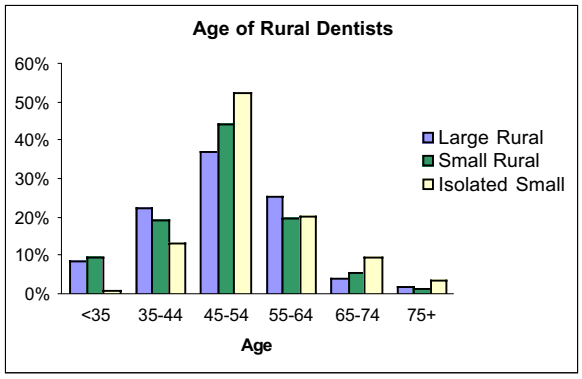
Defining Rural Areas: In this study, we used Rural-Urban Commuting Area (RUCA) codes to define rural and urban areas. The RUCA taxonomy is being widely adopted by the federal government to define rural areas and determine eligibility for programs targeted for rural populations. In the RUCA system, census tracts and ZIP codes are classified based on population density and patterns of commuting for work. For this study we aggregated the 30 RUCA codes into four categories designed to capture the relative isolation of rural places.

1. Urban.
2. Large rural (majority of commuting focused on large rural cities or towns of 10,000 to 50,000 population).
3. Small town rural (majority of commuting focused on small towns of 2,500 to 10,000 population).
4. Isolated small rural (minimal commuting or commuting primarily to small towns).

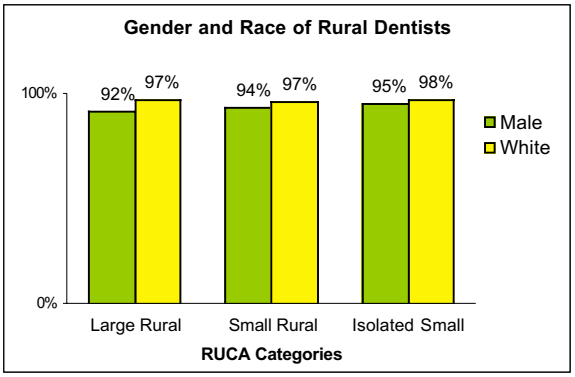
More information on RUCAs can be found on the Web at http://www.fammed.washington.edu/wwamirhrc/.



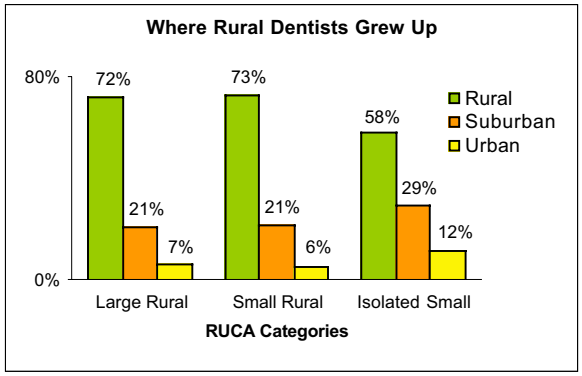
Demographic Information of Missouri's Dentists



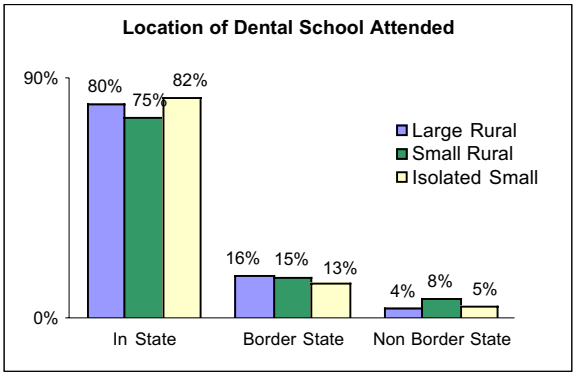
The average age of rural general dentists is 50 years, and 30 percent of the dental workforce is over age 55.



Overall, 94 percent of rural dentists are male and 97 percent are white.



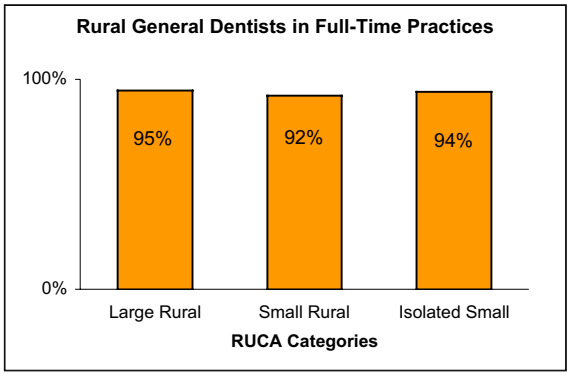
69 percent of dentists practicing in rural places report growing up in a rural place, and only 7 percent report growing up in an urban location.



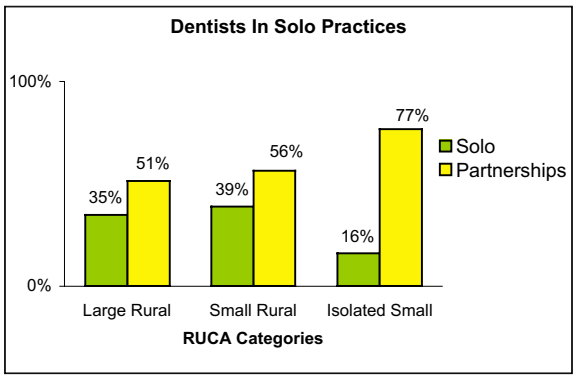
Overall, 79 percent of Missouri's rural dentists graduated from Missouri dental schools. 15 percent attended dental school in a bordering state, and the remaining 5 percent attended dental school elsewhere in the United States.

Practice Characteristics of Missouri's Rural Dentists

- General dentists practicing in rural areas of Missouri work an average of 36 hours per week.
- Direct patient care accounts for an average of 33 practice hours each week.
- General dentists work an average of 48 weeks per year.



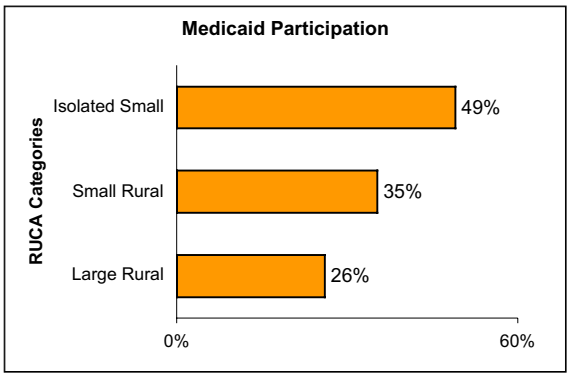
Full-time work was defined to be actively working as a clinical dentist (seeing patients) 20 or more hours each week.



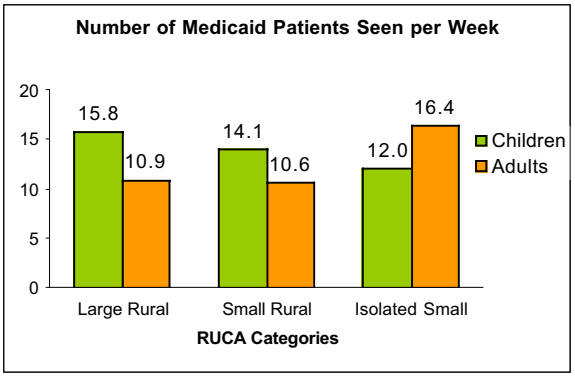
Overall, 65 percent of rural dentists participate in a partnership practice; the remaining 35 percent report practicing alone.

- Dentists practicing in rural Missouri have lived in Missouri for an average of 40 years.
- On average, rural dentists have practiced in Missouri for 22 years and have practiced at their current location for 20 years.

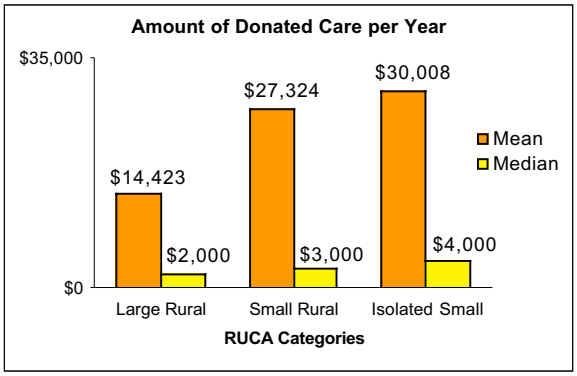
Medicaid Information



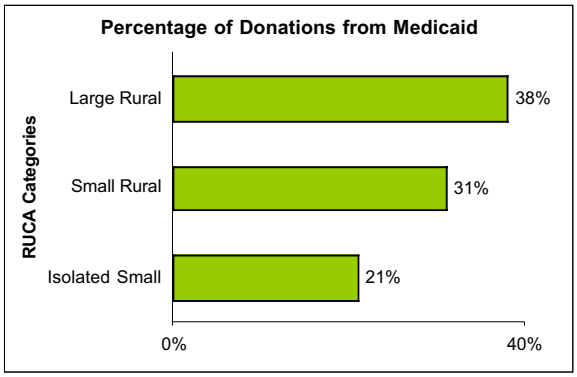
Overall, 36 percent of rural dentists in Missouri participate in the Medicaid program. In large rural places the participation rate is 26 percent.



Dentists that participate in the Medicaid program see an average of 26.4 patients (13.9 children and 12.5 adults) per week.

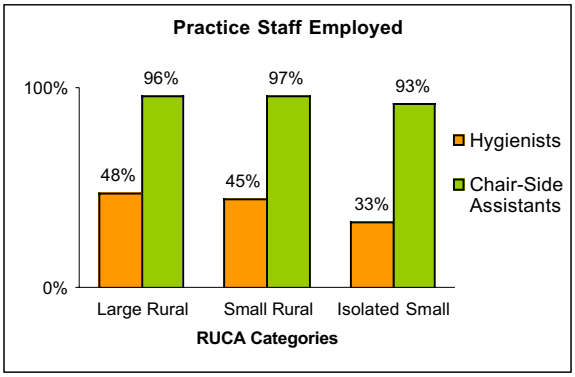


Rural dentists provide an average of $23,205 of donated care each year. This number includes reduced-fee programs such as Medicaid.



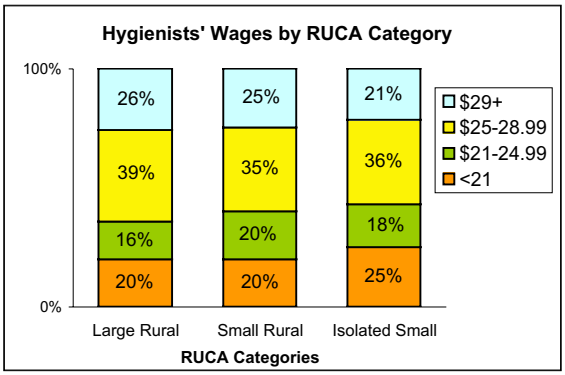
Medicaid reduced-fee payments accounted for 29 percent of the care donated by rural dentists. The remaining 71 percent was donated through other programs.

Practice Staff Information

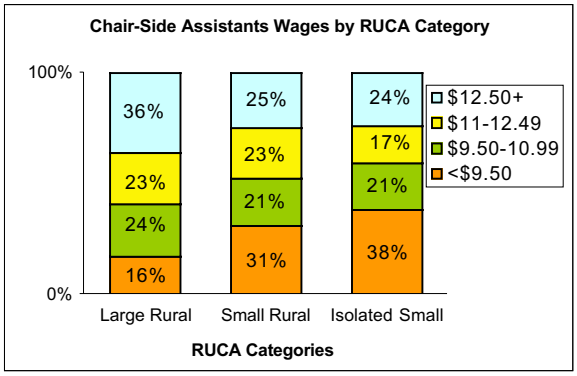


- There is an average of 0.5 dental hygienists employed per dentist practicing general dentistry in rural Missouri.
- The vacancy rate for dental hygienists working in general dentistry offices in rural Missouri is 34.7 percent.
- Rural dentists employ an average of 1.8 chair-side dental assistants.

Overall, 44 percent of rural dentists employ at least one dental hygienist and virtually all (97%) employ at least one chair-side dental assistant.

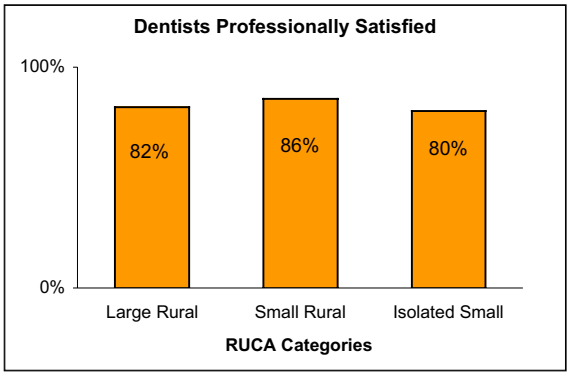


The average hourly wage for dental hygienists employed in general dentistry offices in rural Missouri is $26.68

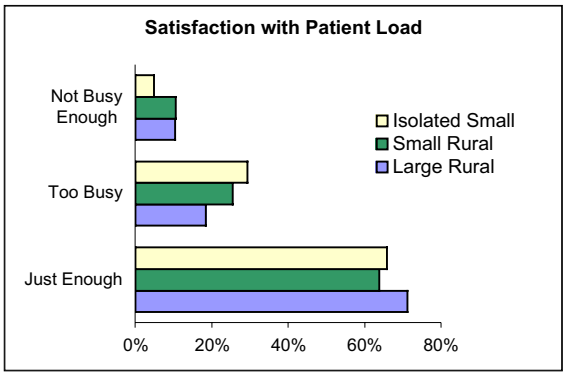


In rural areas, chair-side dental assistants earn an average of $11.09 per hour.

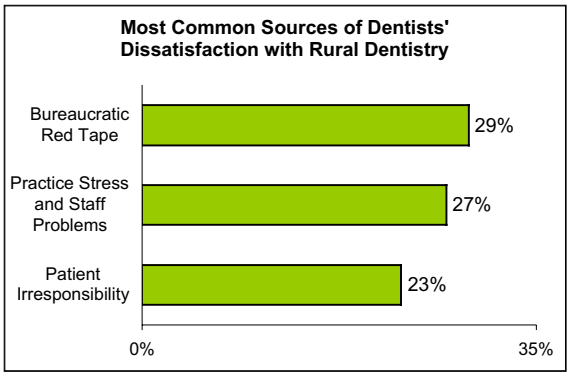
Practice Characteristics of Rural General Dentists



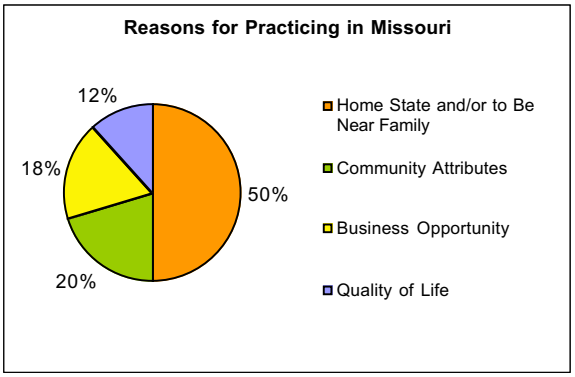
Overall, rural dentists in Missouri reported feeling professionally satisfied. Almost 9 in 10 reported they were “very satisfied” or “somewhat satisfied” with their professional life.



Overall, 67 percent of general dentists reported seeing “just enough patients.” Only 9 percent reported not being busy enough, and 24 percent reported they were too busy.



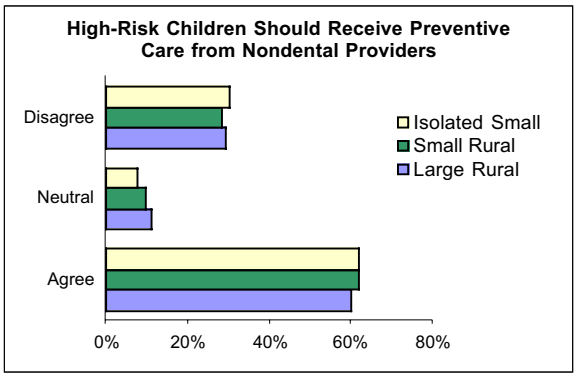
Dentists’ responses were categorized, and the top three responses are shown.

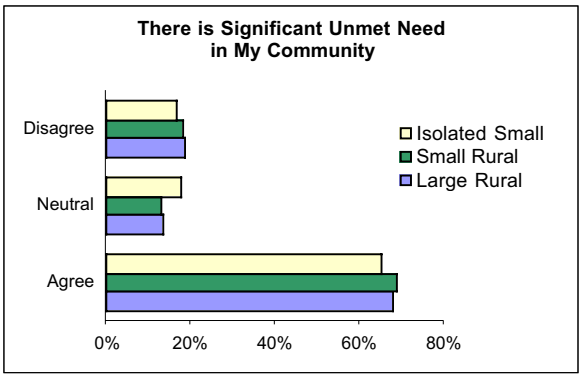


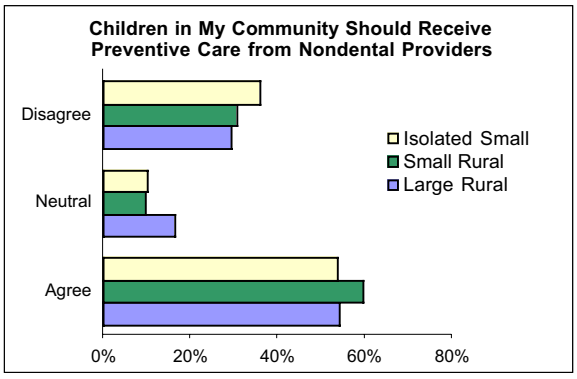
Half of Missouri dentists reported that being from Missouri or having family in Missouri was their primary reason for choosing to practice in Missouri.

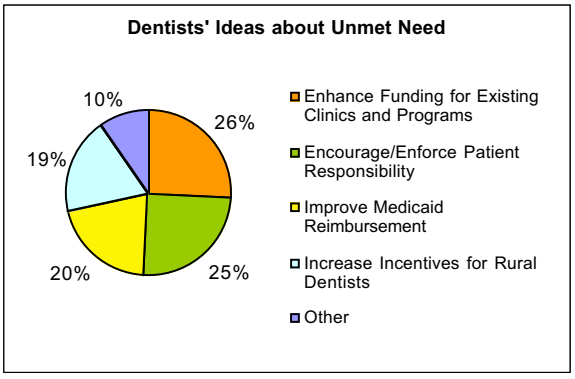
Future of Rural Dental Care in Missouri

Dentists were asked to give their opinion on several topics related to addressing unmet dental needs. Their responses are shown below. Additionally, dentists could provide their own ideas as to how unmet dental needs could best be met. These ideas were categorized and are shown below.

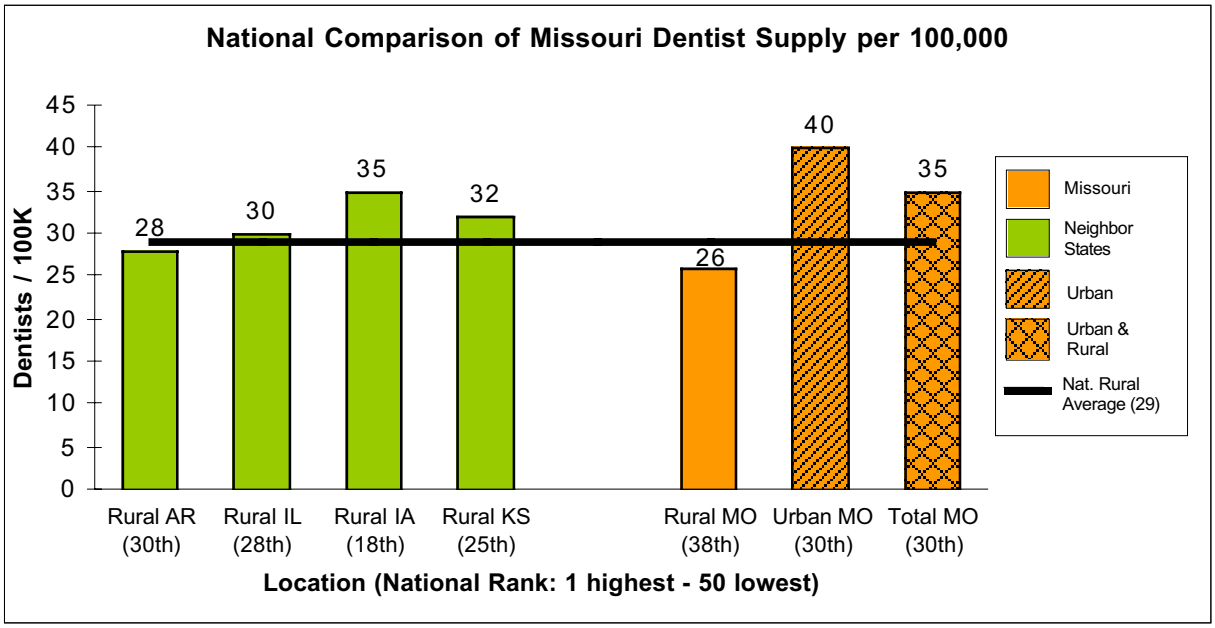








National Comparisons



Missouri ranks 38th among the 50 states in rural dentists/100,000 rural population. When compared to its neighboring states (Arkansas, Illinois, Indiana, and Kansas), rural Missouri has 17 percent fewer dentists/100,000 population.

National information was obtained from Larson EH, Johnson KE, Norris TE, Lishner DM, Rosenblatt RA, Hart LG; *State of the health workforce in rural America: profiles and comparisons;* Seattle, WA: WWAMI Rural Health Research Center, University of Washington, August 2003.

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