

Addressing Dental Workforce Issues in Missouri and Kansas: One School's Initiative

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It is with a real sense of irony that this article, focused on dental workforce issues in the states of Missouri and Kansas as they exist now and with projections through 2020, is offered. The irony lies in the fact that it was only fifteen to twenty years ago when the critical issue was also one of workforce. In the mid- to late 1980s, however, the concern was oversupply of dental practitioners, while today there is a strong indication of a growing undersupply in these two states. The purpose of this paper is to provide a brief history tracing the genesis of the present dental workforce situation in these states, the response to it developed by representatives of dental professional and other organizations from these states, and the action taken by the University of Missouri-Kansas City (UMKC) School of Dentistry based on their findings. It is offered in event that there might be a similar situation in other states, and thus, it is hoped that the approaches outlined here will be relevant to other dental schools in states facing similar workforce issues. Because the UMKC School of Dentistry has been under contract to enroll a substantial number of Kansas residents for the last half-century, Kansas is included in this discussion.

This paper is not an in-depth discussion of the broad scope of the factors underlying workforce problems in general or the variety of approaches to their solution that might be taken. Certainly it is fully understood that such workforce problems include a very complex mix of issues that ultimately will require the involvement of many state, private, and professional entities to realize adequate outcomes. Others¹⁻³ have addressed these issues, including the significant issue of provider productivity, and have provided projections of the dental workforce through 2020. Our projections of dental workforce needs in Missouri and Kansas and recommendations stemming from these projections differ from the recommenda-

tions proposed by other groups. However, we view our recommendations to be reasonable because our focus is limited to these two states unlike the national scope of previous analyses. Our projections are further borne out considering the fact that both of these states, and especially Missouri, were identified by Brown¹ as having declining dentist-to-population ratios during the 1990s.

Background and Problem

The present dental workforce issue in Missouri and Kansas began in the late 1960s when Congress passed legislation offering financial incentives (that is, construction grants and/or grants to be used for essentially discretionary purposes) to existing health professions schools to increase class sizes or create new schools. This legislation was the result of a projected need for greater numbers of health practitioners to care for the quickly growing U.S. population, largely represented by the baby-boomer generation. In the case of the UMKC School of Dentistry, funding for the majority of the present dental building's construction costs came from this legislation. In return for these funds, the school was required to increase dental classes from 120 to 160 students. With a growing and ample supply of qualified applicants in the 1970s, this was not difficult to achieve.

Early in the 1980s it became apparent that, due to a number of factors including a decade of large numbers of dental graduates nationally, a trend toward oversupply of dental practitioners had begun. As a reaction to very vocal appeals from the practicing community, dental schools nationally began to reduce their class sizes, with UMKC decreasing by 25 percent to 120 beginning in 1982 and then to

eighty in 1988. The latter decrease was driven by a precipitous drop in the size of the applicant pool in that period. For classes entering in the 2000 and 2001 academic years, the class size was increased to eighty-six to accommodate a concern of some in Missouri and Kansas that UMKC dental school classes include a greater representation of residents from those states.

The local workforce issue was formally brought to UMKC's attention in December 1999 when the dean's office received a letter from the president of the Missouri Dental Board identifying a major reduction in licensed dentists in the state that began in the mid-1990s. His message was an unqualified appeal to the School of Dentistry for assistance in addressing this problem. Though it was later determined that much of the reported reduction in licensures was not from dentists active in practice but from those inactive dentists maintaining licensure who chose not to meet newly instituted annual continuing education requirements for relicensure, it nonetheless brought the dental workforce issue to the forefront. As a consequence, the school took the initiative to establish a Bi-State Task Force on Oral Health Workforce Issues with the charge of discussing the breadth of the problem and evaluating the need for oral health practitioners now and in the immediate future. Kansas also experiences an aging population of actively practicing dentists (about 70 percent age forty-five or older) and continues to rely on UMKC as a primary provider of dental professionals. Therefore, representatives of both states from dental, dental hygiene, and dental assisting associations, dental practitioners, the state dental boards, state/federal departments of health, primary health care associations, state legislatures, area health education cen-

ters, community health centers, private foundations, and social service agencies as well as faculty members and administrators from the School of Dentistry met several times in 2000 and 2001, resulting in the components of the solution presented here.

As the Bi-State Task Force discovered, throughout the last decade the number of actively practicing dentists in Missouri had been relatively stable. Table 1 provides these data. However, during this period the population of the state increased by about 9 percent. Population data are also included in this table along with the dentist to population ratio for each year. It was clear to the task force that the dentist to population ratio had been slowly decreasing, and in the event that the number of active dentists did not increase in the coming years, there would be a much more rapidly decreasing ratio, one that would significantly exceed a historical guideline of one dentist per 2,000 population (or fifty dentists per 100,000 population as another often-used metric). Much of the reason for this projection lies in the increasing age-related loss of practicing dentists, including the changing age distributions among them over the 1990s, accompanied by population growth in the state. Table 2 outlines the age distributions of actively practicing dentists for 1992, 1994, 1996, 1998, and 2000. Over the period indicated, the percentage of the youngest category of active dentists shrank by more than one-half, while the second youngest group had been reduced by slightly less than one-half. This was due at least in part to the closure of Washington University's dental program in 1990; it had previously contributed to the influx of young dentists in practice in Missouri. Despite an assumption to the contrary by some dental professionals in the state,

Table 1. Missouri dentists in active practice, Missouri population, and dentist to population ratios, 1992-2000

YEAR	ACTIVE D.D.S.	MO POPULATION	D.D.S.:POPULATION
1992	2573	5,194,000	1:2019
1994	2609	5,281,000	1:2024
1996	2562	5,368,000	1:2095
1998	2558	5,438,000	1:2125
2000	2563	5,595,211	1:2183

Table 2. Missouri dentists in active practice by age group (percent), 1992-2000

YEAR	AGE GROUP				
	<35	35-44	45-54	55-64	65+
1992	16.4	38.8	23.1	13.2	7.1
1994	13.2	38.4	27.7	13.0	6.4
1996	10.1	32.4	34.9	14.6	7.0
1998	8.2	28.6	38.4	16.3	7.8
2000	6.7	21.8	39.9	21.5	8.7

these age distributions and trends were virtually the same regardless of location of the dentist (major metropolitan area versus nonmetropolitan area). The comparative age distributions by practice location for each of the five years appear in Figures 1-5. Thus, the provider shortage in Missouri is driven primarily by an aging workforce.

Based on these data as well as other factors including availability/supply of dental auxiliaries, the task force concluded that there appeared to be a potentially serious and pervasive workforce problem on the horizon. It was projected that the actively prac-

ticing population of dentists in the state would dwindle to below 2,300 by 2020, barring intervention of some sort. The recently modified Dental Practice Act in Missouri (its counterpart is pending in Kansas) that allows hygienists to perform prophylaxes, apply sealants, and provide fluoride treatment in public health clinics without supervision could help alleviate the problem, but it could not offer a total solution. Thus, the Bi-State Task Force submitted a recommendation to increase the number of Missouri and Kansas dental graduates from UMKC.

Response to the Problem and Recommendation

To begin addressing this workforce problem and task force recommendation, the director of analysis and planning of the UMKC School of Dentistry established a mathematical model to estimate the number of Missouri dental graduates the school had to supply to meet and sustain but not overshoot the one dentist per 2,000 standard by the year 2020, given the age distribution of current practitioners. This

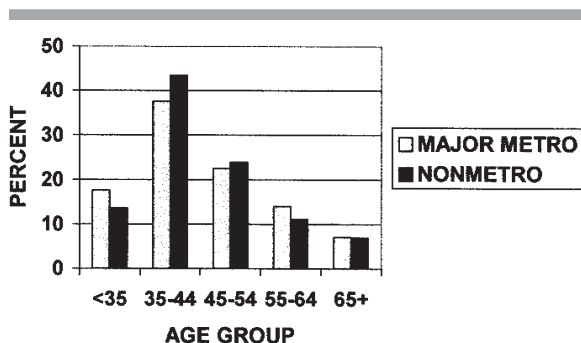


Figure 1. Missouri dentists in active practice (metro and nonmetro) by age group, 1992

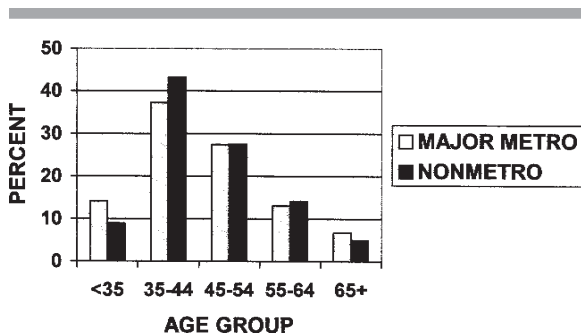


Figure 2. Missouri dentists in active practice (metro and nonmetro) by age group, 1994

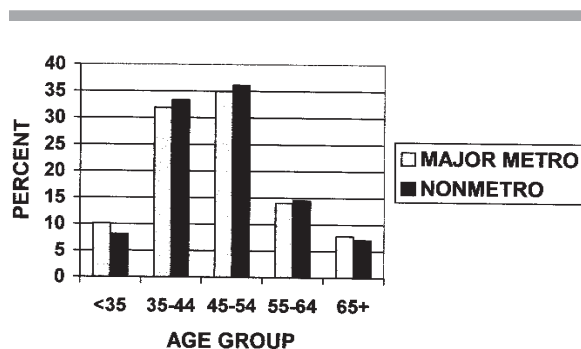


Figure 3. Missouri dentists in active practice (metro and nonmetro) by age group, 1996

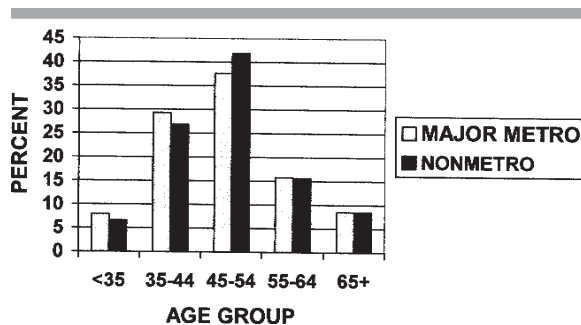


Figure 4. Missouri dentists in active practice (metro and nonmetro) by age group, 1998

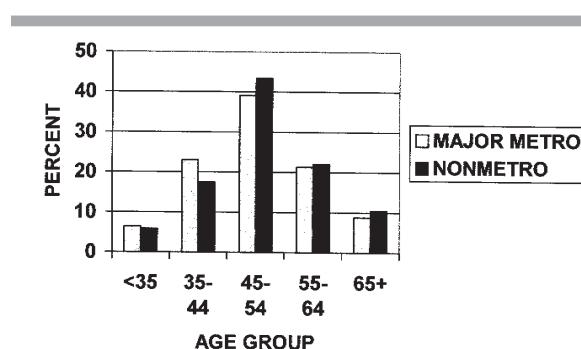


Figure 5. Missouri dentists in active practice (metro and nonmetro) by age group, 2000

guideline was included as a part of the Bi-State Task Force's recommendation, primarily at the urging of the Missouri Dental Association. A number of other assumptions also were made in determining the new and expanded class size at UMKC:

- a stable class size
- thirty years of age at graduation
- all graduates to remain in practice until age sixty-five
- a constant number of practicing dentists in the sixty-five-plus age bracket
- a desired practitioner to population ratio of one D.D.S. per 2,000 population
- no dramatic change in the number of persons served by a single dentist
- accurate estimates of projected Missouri population growth (U.S. Census Bureau Series A model)
- avoidance of an oversupply of dentists
- no change in the demand for dental care in Missouri

Data underlying these assumptions were historically based and appeared both reasonable and necessary for the subsequent computations. Regarding the age at graduation assumption, average age at matriculation to the D.D.S. program at UMKC is approximately twenty-five. Because some students in each class take longer than four years to graduate, thirty was selected as a justifiable compromise age for the calculations.

The resulting model projected a target of 3,068 dentists needed in 2020 to meet the desired ratio. To meet this number while avoiding an oversupply of dentists in later years, an influx of approximately ninety dentists per year in the under-thirty-five age group would be required. Of these ninety, roughly seventy-two were to be graduates of the UMKC School of Dentistry. This estimate incorporates the historical percentage of dentists in the state supplied by UMKC (55 percent) and compensates for the loss of dentists that had been supplied by St. Louis and Washington universities in the past (25 percent). This proposed number of seventy-two Missourians in UMKC dental classes represented an increase of twenty to twenty-five over those in each first-year class (including both incoming four-year D.D.S. stu-

Table 3. Kansas dentists in active practice by age group (percent), 2000

YEAR	AGE GROUP				
	<35	35-44	45-54	55-64	65+
2000	10.6	22.5	36.3	18.8	11.8

dents and those Missourians from the Six-Year Combined B.A./D.D.S. Degree Program⁴ reaching the third year), as was the case during the period when the task force was meeting. It also assumed that all additional students admitted would graduate and would also practice in the state. Surely this assumption would be difficult to defend; thus this estimate to satisfy workforce need can be viewed as somewhat conservative.

When the Bi-State Task Force was deliberating the workforce problem, dependable data on dentists actively practicing in Kansas were not available and were only then being collected. All that were available were anecdotal data offered by representatives from the array of organizations from that state describing a situation similar to Missouri's. Certainly this concern could not be ignored by the school because of its contractual commitment to Kansas. As a consequence an educated "guesstimate" of an increase of about a dozen Kansas residents to roughly a total of twenty-four per class was determined to be needed to accommodate the assumed future undersupply in that state. As it turned out, data on the Kansas dentist workforce in the year 2000 that recently became available (Table 3 and Figure 6) were similar to those in Missouri for that year. These were subjected to the same projection analysis as Missouri data with results that supported the original guesstimate. Thus, to satisfy the bi-state need, an increase in class size to about 120 was required (the current class size of eighty-six plus thirty-five additional students from Missouri and Kansas).

With a class size of 120, the UMKC curriculum would have been impossible to deliver without significant modifications in scheduling (courses and faculty) and/or in physical facilities (adding onto the dental school building to allow expansion of preclinical laboratories and clinical operatories). It was de-

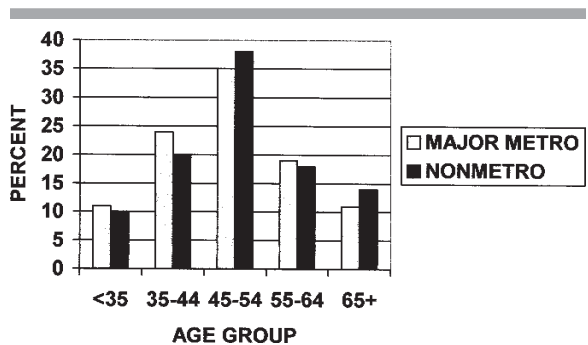


Figure 6. Kansas dentists in active practice (metro and nonmetro) by age group, 2000

terminated that increasing class size to 120 students would severely inhibit the effectiveness of the program and expanding the building would come at an estimated cost of at least \$8,000,000. Several factors made an appeal to the Missouri legislature for funds to support the construction costs particularly unrealistic at this time. Aside from severe revenue shortfalls in the state, even if the legislature had been sympathetic to the appeal, realistically it would be several years before the facility would be available. It was obvious that an alternative solution was necessary, and it had to be developed immediately since there was already a built-in delayed effect of four years (the length of the dental curriculum) from the point of implementation.

Solution

The ultimate solution to this dilemma, crafted by the School of Dentistry, was to increase the four-year D.D.S. program class size to 100 beginning with the class entering fall semester 2002, while phasing out the six-year B.A./D.D.S. program (that is, admitting no new classes of students beginning 2002). The B.A./D.D.S. program enrolled highly qualified individuals directly from high school and presented an intense curriculum that allowed students an opportunity to earn both B.A. and D.D.S. degrees in six years. Students promoted into the third year of this program join with students entering the traditional four-year D.D.S. program to form a graduating class. However, historically the majority (about two-thirds to three-fourths of the twenty-five per class) of the students enrolling in the B.A./D.D.S. program annually were not residents of either Missouri or Kansas. By phasing out the B.A./D.D.S. program and admitting a class of 100 into the traditional four-year D.D.S. program, the school could then accept about seventy students from Missouri and about twenty-four Kansans. The balance would come from other “contract” states including Arkansas, New Mexico, and Hawaii. In addition, our diversity mission would have to be met by enrolling underrepresented minorities from our two primary states rather than from elsewhere. Additional efforts have been implemented to achieve this mission with already promising results.

The proposal to phase out the B.A./D.D.S. program was supported by the university, and thus the first D.D.S. class admitted with additional Missouri-

ans and Kansans entered in fall 2002. However, with this major commitment came a dose of stark reality. In the past the Missouri and Kansas applicant pools have provided sufficient numbers of qualified candidates; but dental applicants, nationally and in Missouri and Kansas, had declined since 1995.⁵ There are indications that this trend of declining applications has reversed, and particularly so in Missouri and Kansas. However, UMKC will need abundant numbers of qualified dental school applicants from these two states annually to achieve the objective of matriculating a class of 100 each year.

Certainly it is the responsibility of the school to recruit candidates, but it can more effectively and efficiently do so with the assistance of those who provide the greatest influence on individuals selecting careers in any profession, namely the practicing professional who serves as a role model to those persons who are seeking career direction. Thus, an ongoing appeal has been made by the UMKC School of Dentistry to dental professionals to promote the profession as a career especially to young men and women while treating them as patients or when meeting with them in other contexts such as school career days. An additional appeal has been made to these professionals to refer those young adults interested in a dental career to the Office of Student Programs of the school. Continuing contact with these potential dental school applicants will help ensure that they will be qualified candidates for admission if and when they decide to apply. To both better direct this process and better assist the practitioner, School of Dentistry administrators, faculty, and staff began meeting with representatives of district dental societies, dental study groups, and individuals from other dental or dentally related organizations or groups throughout the two states in focus groups, beginning in the fall of 2001.

Apart from enrolling sufficient numbers of qualified Missourians and Kansans to meet the target number of practitioners is the issue of encouraging recent graduates to remain in these states to practice, as well as to seriously consider practicing in underserved communities. It is not uncommon for recent Missouri (and to a certain extent Kansas) dental graduates to begin their professional careers in other states. For example, in the classes of 1999 and 2000 about 30 percent of the Missouri graduates went into practice out of state. There is not a simple solution to this problem, especially as licensure regulations allow for greater mobility of dental graduates.

Working toward a solution will require all in the profession as well as others who might also affect the process to be creative and forward-thinking to establish attractive options for new graduates so they will remain in their home states, and especially in high need areas.

As far as accommodating underserved communities, two recently implemented Missouri state programs should assist in the solution of this problem. One has extended the provisions of Missouri's PRIMO (Primary Care Resource Initiative for Missouri) program to dental students. Essentially this is a state-sponsored student loan program wherein these loans are forgiven on a year-by-year basis for graduates practicing in a designated health provider shortage area. Available to dental students for the first time during the 2002-03 academic year, six second-year students have been selected for participation in this program. The second program provides incentives for dentists who agree to a four-year commitment of service in designated underserved communities. Funded through the Missouri tobacco settlement bill, the Healthy Initiatives program provides as much as \$100,000 for the dentist who makes the commitment. Considering the high level of indebtedness of our graduates (average slightly over \$100,000 in recent classes), these programs offer real attraction. Unfortunately, similar programs do not exist in Kansas.

Another issue of great importance as the number of students per class has increased to 100 is the financial support for and the recruitment of additional clinical faculty in the coming years. Obtaining additional faculty, along with the necessary university financial support for them, will require a major effort. Work toward both has already been initiated.

Conclusions

The UMKC School of Dentistry's plan to address the workforce problem offers a significant challenge, one that will continue to require great effort and ongoing support of the administration, faculty, and staff of the university, school, and the dental professional community. There is little doubt that the access to oral health care issue is quite complex. What the school has initiated, albeit only one segment of a multifaceted solution, was suggested by the best data available and provides an attempt to better ensure continued access to quality oral health care in Missouri and Kansas. Other components of this com-

plex issue (comprehensive mechanisms for recruitment of dental practitioners to underserved areas, for example, or enticing Missouri/Kansas dental graduates to begin practice in these states) are beyond the domain and responsibility solely of a dental educational institution and will also require the involvement of private, governmental, and professional entities for a comprehensive solution.

Because of the built-in four-year lag time to realize additional dental graduates, the school felt it incumbent to act immediately on the Bi-State Task Force's recommendation; otherwise, the gravity of the situation would have been exacerbated. In this regard, it is fully recognized that the assumptions underlying the model that produced the projected workforce data are tenuous. This workforce analysis was based upon historical data, but there is no presumption that they are completely accurate, in particular the use of the traditional guideline of the 1:2,000 dentist to population ratio as the primary criterion. Thus, what was applied was essentially a "supply" model with its accepted "difficulties and short-falls."⁶ Indeed, recently published work³ indicates that, by some measures, dental office productivity has increased over the last decade, a factor that certainly influences workforce need both now and in the future as revised productivity figures are estimated. However, it is noteworthy that even taking productivity-adjusted dentist to population ratios into consideration, Missouri was one of a few states that lost production capacity from 1993 to 1999.¹ Regardless, the very nature of assumptions dictates that their accuracy be carefully monitored over time so that the effects of faulty assumptions may be corrected. In doing so, sustained cooperation among organized dentistry, state agencies, and public dental schools seems to be the responsible way to ensure there is as close a match as possible between need for health care providers and the supply of those providers.

In conclusion, based on the experience of this institution, a similar investigation of dental workforce data, certainly by other publicly supported schools of dentistry in their respective states, is strongly recommended. Though the data nationally might not indicate any change from the status quo when viewed collectively, the situation in a given state may require greater attention and subsequent action. And if this is the case, another recommendation is that full assessment of this workforce issue be initiated by the pertinent dental school and be studied by representatives from the broad scope of relevant state, fed-

eral, private, and professional agencies and organizations as was the case with UMKC. Doing so will better ensure a widespread collaborative and ongoing effort toward a common goal.

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