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The ARKANSAS FAMILY PHYSICIAN

Volume 18 • Number 4



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The Importance of Continuing Arkansas' Legislative Mandate for the UAMS College of Medicine Admissions from all Four Congressional Districts

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June 27, 2014

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History and Background

From its early beginnings in 1879, the University of Arkansas for Medical Sciences' (UAMS) College of Medicine was established with a core mission to ensure that all Arkansans have access to excellent health care. Since that time, UAMS has evolved from a small medical school with a charity hospital into a world-renowned comprehensive health sciences center and research institution, including six colleges, seven institutes, eight regional centers, and the UAMS Medical Center. UAMS is the state's largest public employer with more than 10,000 employees in 73 of Arkansas' 75 counties. UAMS and its clinical affiliates, Arkansas Children's Hospital and the VA Medical Center are economic engines for the state with an annual economic impact of \$3.92 billion (UAMS History, 2013).

Regional Programs, formerly the Area Health Education Centers (AHEC) program, was founded in 1973, through combined efforts of UAMS, the Governor, and the State Legislature, as a means to encourage more UAMS medical school graduates to remain in Arkansas, and to help address the state's shortage and maldistribution of primary care physicians. Regional Programs has proven extremely successful in its mission, with its six residency programs having trained nearly half of Arkansas' family physicians. Historically, 70% of Regional Programs' graduates remain in Arkansas to practice, with 40% electing to practice in rural areas and small towns

across the state. As of fall 2013, 719 graduates were practicing in 126 Arkansas communities, including 68 of the state's 75 counties (Howell, Montague, 2013).

In spite of these successes, Arkansas still has a shortage of nearly 500 primary care physicians, with 90% of those needed outside Central Arkansas (Bynum, 2011). Arkansas' most critical health workforce needs have never been as simple as an overall shortage of physicians, but rather the greatest needs have always been related to specific types of physicians, especially in rural areas of the state.

Arkansas' Rural Incentive Programs

Around 1985, when the Arkansas General Assembly increased the College of Medicine (COM) class size from 135 to 150 student admissions per year, they also began requiring that 70% of every class be accepted equally from each of the state's four congressional districts, meaning at least 27 students from each district (Saylor, 2013). Persistent shortages in rural areas over the years have prompted further increase in COM class size (174 students were accepted in 2013), as well as other incentives to encourage rural practice choices, such as the *Community Match* and *Rural Medical Practice Student Loan and Scholarship* programs (UAMS Rural Practice, 2014).

Although Dr. Richard Wheeler, COM Executive Associate Dean for Academic Affairs, has stated that for most applicants, the congressional district mandate does not affect the school's admission decisions (Saylor, 2013), some individuals still occasionally question the need for this law, asserting that the COM should be free to accept only the highest scoring students. Regional Programs agrees that our state's only medical school should maintain the highest academic standards, and shares the conviction that Arkansans deserve only the best physicians providing care for them and their families. However, in this article, we will submit the reasons why an applicant's county of origin is vitally important to ensure future healthcare access for all

Arkansas, and we will challenge the narrow view of how a "quality" applicant has been defined by traditional metrics.

Looking at the numbers

Over the last two decades, the UAMS COM has experienced a large fluctuation in the number of Arkansas applicants, dropping from a high of 450 in the mid-1990s to a low of 262 in 2005. In recent years, applications have settled in at just above 300, ranging from 307 to 324 (Dupuy, 2014). This means that as the COM class size has increased, the number of Arkansas applicants has actually decreased, leaving fewer than two in-state applicants now competing for each slot. The 2013 in-state applicant pool of 310 came from our four congressional districts as listed below; 2,056 out-of-state students also applied, but only 18 of them were admitted (Saylor, 2013).

- District 1 (North/East AR) – 65 applicants
- District 2 (Central AR) – 117 applicants
- District 3 (Northwest AR) – 70 applicants
- District 4 (South/West AR) – 58 applicants

How It Works

When students apply to the COM, a curriculum committee of 15 members interviews each Arkansas applicant. State law dictates that committee members include six from UAMS, two from each Congressional district, and one at-large member. Four must hold UAMS faculty appointments, which can include regional centers' faculty. Once interviews are completed, committee members review applicant files, and rank each student from one to seven. Individual committee member scores are totaled and divided by 15, to come up with an average score for each student. All students are then placed into a single list, according to their score. The committee then counts down to determine the point where they would cut off the list of applicants if they were to admit the previous year's class size of students. At that point, they examine the counties of origin among the top group of students to

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make sure there are at least 27 students from each district. In the event that there are not, then one or more applicants at the bottom of this list may be displaced to make room for another at the top of the alternative list who hails from the targeted rural district (Saylor, 2013).

Periodically, someone will challenge the fairness and validity of the congressional district mandate and will lobby state

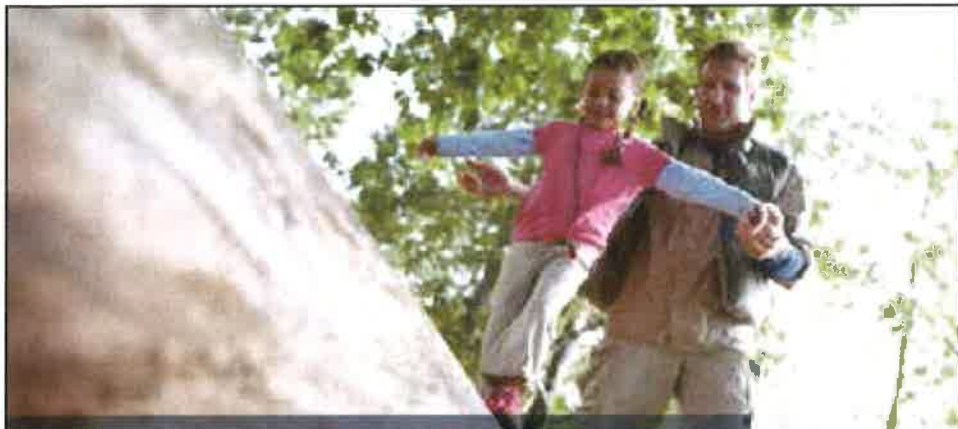
legislators for the removal of this constraint on the COM admissions process. Such claims often operate under a false assumption that the law forces the COM to accept inferior applicants; but this has never been demonstrated. Another charge has been that the law is a failure because only a small percentage of medical school graduates actually return to their home districts to practice (Blomeley, 2007). However, although anything less than 30% might be portrayed by some as failure,

the reality is that even 20% of physicians returning to their home counties or another rural area to practice is a significant showing in the broader context of data. We would further argue that, for small towns in Arkansas, a single returning graduate is indeed very significant and can mean life or death to the local healthcare community.

Social responsibility and mission of state medical schools

Rosenblatt claims that persistent national shortages of rural primary care physicians reflect a dominant medical school culture that is typically urban, technologically intensive, and specialty-dominant. His premise is that rural physician shortages are in large part due to a systematic bias against primary care that tends to be built into the culture, organization, and reward structures on which our national medical care system is built (Rosenblatt, 2010). Historically, there has been little talk of holding state-supported medical schools accountable for producing certain types of physicians, but Chen, et al remind us that the basic purpose of medical schools is to educate physicians to care for the national population (Chen, Fordyce, Andes, Hart, 2010). Thus, beyond their general educational mission, medical schools are also expected to have a social mission to train physicians to care for the population as a whole, taking into account such issues as primary care, an appropriate mix of medical specialties, adequate distribution to underserved areas, and workforce diversity (Mullan, Chen, Petterson, Kolsky, Spagnola, 2010).

Since the 1980s, UAMS has established itself as a comprehensive academic health center and research leader, with our researchers now receiving over \$100 million in research funding, ranking UAMS among the top 18% of all U.S. Colleges & Universities in federal research funding (Mullen et al, 2010). This growth has had far-reaching benefits for all Arkansans, not only through cutting-edge medical innovations and quality health care, but also as an economic engine for the entire state. This article in no way seeks to minimize or challenge the tremendous value of the UAMS research mission. However, as our state's only medical school, we simply



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believe it is important occasionally to revisit its social mission, which is to produce a substantial percentage of rural physicians for our predominantly rural state.

Logical correlation has been established between institutional emphasis on research and a corresponding emphasis on and promotion of technology and medical subspecialties. The amount of NIH funding received by a medical school has been inversely associated with social mission score and with output of primary care physicians and physicians practicing in underserved areas (Mullen et al, 2010). It is therefore not surprising that in the last 20 years, with UAMS' emphasis on research, an occasional undercurrent surfaces to move toward strict focus on student test scores as the preeminent basis for COM admission. This bias is also reflected in traditional assessments of medical schools, such as the US News & World Report ranking system, which are inclined to value research funding, school reputation and student selectivity factors over outputs related to the number of graduates entering primary care or practice in underserved areas, or who are underrepresented minorities (Chen et al, 2010).

Since the 1990s, UAMS has placed among the top quarter of US medical schools for percentage of graduates practicing in rural areas and, in Chen's study, UAMS was ranked 52nd out of 141 schools on the social mission score (Chen et al, 2010). So although UAMS is now known for receiving significant NIH funding for cutting edge research, it also still ranks better than nearly two-thirds of other institutions in social mission score. It is the premise of this article that Arkansas' congressional district admissions mandate, combined with quality rural primary care training opportunities offered through UAMS Regional Centers across the state, have been key factors in maintaining this uncommon institutional balance of research and social missions over the last 40 years.

Trends on the Statewide and National Levels

Arkansas' chronic health workforce shortages were discussed by the authors in a previous article published in the winter 2013 edition of the *Arkansas Family Physician* (Mengel, Bynum, Howell, 2013).

With the entire nation facing a shortage of primary care physicians, the specific mix and composition of the medical workforce is under increasing scrutiny. Medical schools that have historically reported high percentages of their graduating classes pursuing "primary care" are being challenged about inflated claims due to the common practice of including all internal medicine and pediatric residents in their "primary care" counts. Coined "the Dean's lie," these inclusions falsely inflate primary care production numbers because, in reality, the vast majority of internal medicine (80%) and pediatric residents (70%) go on to sub-specialize, leaving less than one-third of them to actually practice primary care (Pugno, McGaha, Schmittling, Fetter, Kahn, 2006).

Nationally, the last decade has seen a decline in US medical school graduates choosing to specialize in family medicine. Even though more than 50% of UAMS COM graduates are reported every year as pursuing a "primary care specialty," we must consider that these numbers include not only graduates who match with family medicine residencies, but also internal medicine, pediatrics, and OB/Gyn. Consequently, if the lower practice percentages attributed to Pediatrics and Internal Medicine residency matches cited above are applied, then the numbers of graduates we can expect to actually end up in practice as primary care "generalists" will be much smaller (see graph right).

Thus, it must be noted that simply increasing the number of medical or

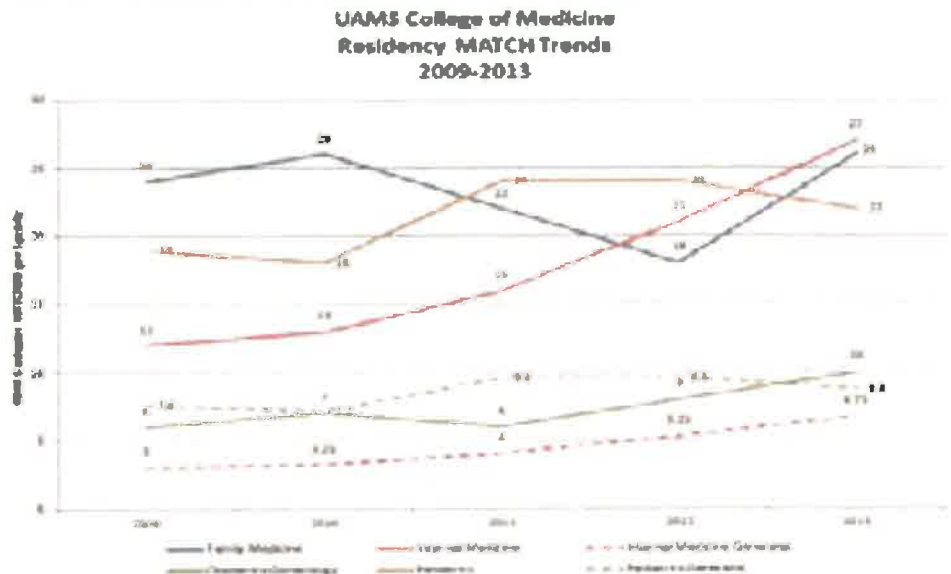
osteopathic school slots in Arkansas will not be an automatic answer to our state's primary care workforce needs. Expanding medical school class size without explicitly targeting and incentivizing primary care residency training and rural practice could ultimately worsen our state's shortage and maldistribution problems. If too few primary care residency slots are available in Arkansas to accommodate new graduates, then many of them will be lost to residencies in other specialties or in other states. Further, without emphasis on rural recruitment, training and placement, new graduates may simply add to the concentration of physicians practicing in urban areas, doing nothing to alleviate chronic shortages in outlying regions where nearly half of our population lives.

Factors that have been shown to impact rural/primary care practice choice

Over the years, many studies have noted various influences that affect choice of practice location, ranging from gender, social and work opportunities for spouse, schools, lifestyle preferences, and family ties, among others. However, a few commonly cited factors noted below have passed the tests of time and repeated scrutiny as consistent predictors of rural practice choices.

- Medical students from small, rural hometowns are more than TWICE as

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likely (compared to those from non-rural communities) to practice in rural areas (AAFP, 2014) (Hyer JL, Bazemore AW, Bowman RC, et al, 2007) (NRHA, 2006).

- Trainees who experience residency training in rural clinical settings are over THREE times more likely to practice in rural areas (Daniels ZM, VanLeit BJ, Skipper BJ, et al, 2007)
- Family medicine graduates are TWICE as likely as pediatricians and internists to practice in rural areas (Rosenblatt RA, Whitcomb ME, Cullen TJ, et al, 1992).

Connection between Regional Programs' Training and the Congressional District Mandate

Historically, 70% of Regional Programs residency graduates have remained in Arkansas to practice, with 40% of them choosing practice in small towns of less than 15,000 population. This is a much higher percentage than is common among urban-based residency programs. In April 2013, a preliminary study was conducted by UAMS Regional Programs to assess the counties of origin of UAMS COM graduates who had matched to Regional Programs Family Medicine residency programs and ultimately elected to practice in rural communities in Arkansas. Our findings noted that of all medical students from Arkansas (N=3,413), 20% came from a hometown in the Northeast (1st district); 20% came from the South (4th district); 21% came from the Northwest (3rd district), and 37% came from Central Arkansas (2nd district). Of the 279 COM graduates with Arkansas origins who matched with a Regional Programs residency program, 92% remained in Arkansas, and 46% elected to practice in a "rural" Arkansas county. Of those rural practitioners, 70% of them came from hometowns in the more *rural* 1st or 4th Congressional Districts. Students from the 1st and 4th Districts selected Regional Programs residencies at twice the rate of students from the more *urban* 2nd and 3rd Districts. Even though students from the 2nd District comprised 37% of all COM graduates, only 5% of them selected an AHEC residency (Howell, Montague, 2014).

These data were analyzed to test the

relationship between rural status of a person's hometown and the location they chose for practice. Descriptive statistics revealed a statistically significant .26 correlation, thus warranting an additional chi-squared analysis. A Chi Squared test of independence showed that the strong relationship between the rural status of the hometown and the rural status of the town where professionals chose to practice after completing the training program is statistically significant: $\chi^2(1, N = 280) = 20.03, p < .001$ (Martel, 2014).

These preliminary local data confirm national evidence that there is a greater probability for an individual to practice in a location similar to his/her hometown. This further suggests that removing the mandate for COM enrollment from rural districts, combined with a likely subsequent loss of COM graduates training in UAMS Regional Centers, could result in an even greater physician workforce deficiency in rural areas of Arkansas.

Changing Paradigm for Medical School Admissions Criteria

At national and state levels, the traditional premise that a student's GPA or MCAT score is the only legitimate means of identifying a "quality" applicant or future doctor is being increasingly challenged. In light of dramatic paradigm shifts in our nation's historic healthcare practice and reimbursement models, health workforce educators and experts are now recognizing that expanded skill sets are needed to lead our nation through the next era of health system evolution. Issued in 2009, "Scientific Foundations for Future Physicians" noted that a strong background in the basic and natural sciences will always be critical to success in medical school and it defines the scientific competencies that future graduates should possess (AAMC, 2009). However, the companion report, "Behavioral and Social Science Foundations for Future Physicians," found that concepts from behavioral and social sciences are equally important, serving to prepare graduates for comprehensive, patient-centered practice and provide the conceptual framework needed to address complex societal problems that have direct bearing on health and health care disparities (AAMC, 2011).

Recent healthcare reforms have triggered a system-wide shift toward team-based practice. Physicians who have historically practiced with considerable autonomy are now being required to become members of team-based patient centered care models. Yet, little scholarly attention has been paid to date on how the medical school admission process might adapt to identify individuals best suited for the collaborative, team-based practices of the future. An article in the December 2013 issue of *Academic Medicine*, titled *Selecting Tomorrow's Physicians: The Key to the Future Health Care Workforce* offered some novel recommendations to medical schools that we believe are vital for consideration (Mahon, Henderson, Kirch, 2013). The authors challenge the traditional paradigm for selection of healthcare practitioners within the historical context of medical school admissions, which have placed a premium on grades and standardized test scores. They then explore how admission practices need to undergo fundamental changes in order to select physicians with both the academic, interpersonal, and intrapersonal competencies necessary to operate in the health care system of the future.

The MCAT exam is an important tool for medical student's selection, and revisions are planned to that exam beginning in 2015, with two of the most prominent changes being the addition of a section to test knowledge of concepts from the behavioral and social sciences, and a new section on critical analysis and reasoning skills. In today's environment of big data, the higher educational mindset is finally shifting to recognize that a student's ability to seek and reason through massive amounts of information is more important than their capacity for rote memorization. In 2013, the AAMC identified some of the most desirable interpersonal and intrapersonal competencies for entering medical students as service orientation, cultural competence, reliability, and dependability (AAMC, 2013). The AAMC Admissions Initiative (AI) is aimed at transforming the way in which medical school applicants are assessed and selected in order to identify those who will become the kinds of physicians best suited for our dynamic health care environment (Mahon et al, 2013).

Conclusion

Mullan has challenged all schools to examine their educational commitment regarding the service needs of their states and the nation. He claimed that a diverse, equitably distributed physician workforce with a strong primary care base is essential to achieving quality health care that is accessible and affordable, regardless of the nature of any future health care reform (Mullan et al, 2010).

When a medical school's admissions process is designed to accept students based exclusively on the highest standardized test scores, those policies will always favor students from larger population centers where educational opportunities provide an advantage. However, research has shown that physicians are inclined to practice in areas close or similar to where they grew up and/or where they completed residency training. If the UAMS COM were allowed to accept only the highest scoring Arkansas applicants regardless of origin, the law of averages would expect most applicants to come from our population centers of Central and Northwest Arkansas. Ultimately, the vast majority of those applicants could also be expected to return to Central and Northwest Arkansas to practice, leaving the rural areas of our state to suffer even greater workforce shortages than they currently face. Consequently, we believe the best way to ensure a health workforce pipeline for all areas of Arkansas, especially the most underserved areas, is to maintain COM admissions provisions that require enrollment of a representative number of qualified students from those areas who specifically express intent to return to those areas to practice.

If not enough highly "qualified" applicants are coming from the 1st and 4th districts, then the answer is not to bemoan the congressional district mandate, but rather do a better job of increasing the qualified applicant pool in those districts. There are many students in rural districts who are capable of becoming outstanding doctors and who are more likely to return to practice in an underserved area of Arkansas than their urban counterparts. Our job as educators is to make sure those promising students are identified and provided with the academic options, tools, and support networks to help them succeed.

Like the founders of UAMS, the COM continues to fulfill its unique role as the state's main foundation for education, research, clinical care, and outreach efforts. We can never forget that the fundamental commitment and very heart of the institution was to ensure that all Arkansans have access to excellent health care. As a public institution that has historically been charged with producing physicians to serve all the people of Arkansas, we must never compromise or fail to protect the interests of *all* our citizens ... *not* just the ones living in our population centers.

Recommendations

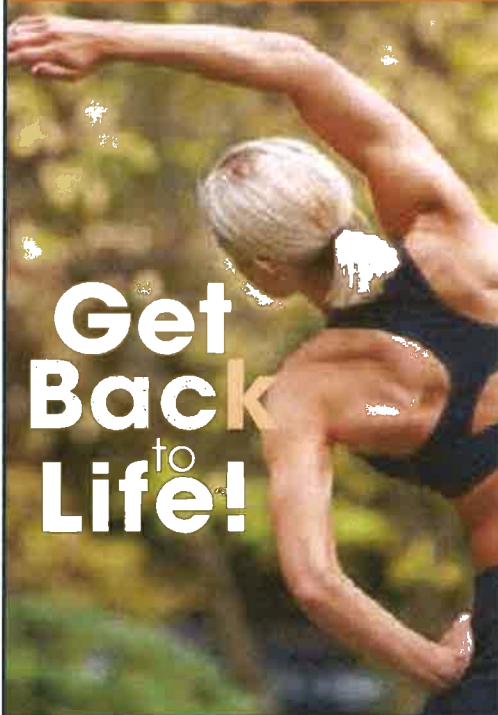
1. **Maintain Congressional District Mandate.** Maintenance of the Congressional District mandate for the COM admissions process is essential to ensure the most basic level of student representation from all regions of our state. Removing that mandate and allowing admissions to be based purely on academic scores will always give advantage to a larger pool of applicants from population centers in

central and northwest Arkansas, whose students enjoy the greatest educational opportunities.

2. **Maintain primary care representation on COM admissions committee.** Maintaining the balance of perspectives among faculty representing all aspects of healthcare including primary care, rural practice, and urban sub-specialists is required to ensure a fair and balanced admissions process.
3. **Pay attention to the institutional environment.** All UAMS faculty have a responsibility to maintain an institutional atmosphere that values, esteems, and promotes primary care equally with other subspecialties. With the implementation of team-based care and emerging initiatives in Interprofessional Education (IPE), the importance of creating and maintaining an atmosphere of mutual respect and value for every member of the team cannot be overemphasized.

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4. **Ensure that future COM applicants are evaluated according to a more holistic grid.** Holistic admissions refers to a “flexible, highly individualized process by which balanced consideration is given to the multiple ways in which applicants may prepare for and succeed as medical students and doctors.” Holistic review has three goals: 1) to assess applicants’ academic readiness for medical school, 2) to identify and assess applicants’ interpersonal and intrapersonal competencies, and 3) to encourage diversity in medical education.
5. **High quality clinical, practicum, and peer support mechanisms throughout the medical school years.** Peer and professional interest groups and events such as the Family Medicine Interest Group and Rural Medical Student Leadership Association provide important support and encouragement for students interested in primary care and rural practice. Clinical and mentoring opportunities in every year of medical school help to ensure consistent reinforcement of the primary care and rural mission.
6. **Additional Study is needed in the following areas:**

- a. The primary limitation of our preliminary COM graduate analysis above is that it only included data from Regional Programs residency programs. In order to generalize and make informed policy decisions, additional study is needed to examine residency and practice choices of UAMS COM graduates who matched to both AHEC and Non-AHEC residencies, with the ability to compare between groups the numbers that ultimately selected rural practice locations.
- b. It would be helpful to know the number of COM applicants and enrollees per Congressional District each year over the last 5-10 years, comparing GPA, MCAT scores, as well as GPA and USMLE scores throughout medical school. The differences in test scores and performance could then be

compared among rural vs. urban, as well as congressional districts. This data would help identify groups with specific challenges, and would inform stakeholders regarding how academic and support networks might strategically begin to address regional and/or cultural barriers.

- c. Regional Programs is currently planning with UAMS partners to conduct a retrospective assessment of various academic enrichment programs that have been offered over the years to scrutinize student outcomes of these program. **The goal is to identify specific interventions and best practices that have been successful in improving students’ chances of acceptance into medical school (c.g., MCAT prep), as well as those focused on improving specific skills needed to equip them to navigate through all the rigors of medical school to successful graduation.**
- d. It would be helpful to know the counties of origin and the success/failure/default rates of those who have received state-funded rural loan and scholarship or community match awards over the years and which of them entered and remained in rural communities to practice.
- e. In a future article, Regional Programs plans to propose some recommendations for strengthening strategic and targeted recruitment and pipeline programs to more directly address the long-term healthcare workforce needs of our state.

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