

The Sufficiency of Health Care Professional Supply in Rural North Carolina

Mark Holmes

For most health professions, rural North Carolina has lower relative supply than urban parts of the state. Although there are plenty of innovative models addressing this disparity, a holistic approach is necessary if we want to effect real change.

I grew up in rural Michigan. We had two clinics in town; each had one to two family physicians. Our pediatrician was 45 minutes away. Our dentist was half an hour. I had to see a neurologist once; he came to town the third Tuesday of the month. Growing up, this was reality, and we didn't think much of it; seeing a doctor was not unlike going to a first-run movie, or shopping at the mall for those new acid-washed jeans—we had to drive a little farther, but this was the trade-off we (or at least my parents) had made: implicitly, they had decided that the benefits of living in a rural community outweighed the costs.

As an economist, I subscribe to the Tiebout theory: people vote with their feet. If they find a place that is a better fit for their preferences—the mix of taxes and school funding, or the weather, or the labor market—then they move. (This, of course, assumes that everyone has the resources to pay for a move, should they desire.) In this way, a free market economist might not be overly concerned about the distribution of physicians and other health care professionals across a geographic area; we don't consider the absence of certain urban amenities (such as e-bike-sharing or your favorite big box store) a market failure. We recognize that the economics of the area—the ability and willingness to pay, the market size, the degree of competition, the elasticity of demand—all determine whether an organization—be it a fast food restaurant, professional sports team, or health care provider—can generate enough revenue to cover its costs and survive in the area in the long run.

But here is where the traditional neoclassical approach fails us. There are plenty of towns across North Carolina without all the different types of business seen in larger communities. Residents must travel to visit these businesses, and there are few calls for policies to address the inequity. Should we think about health care in the same way as any other business and let the free market philosophy prevail? Or should we think of health care as a different kind of business—something that we can't leave the free market

to settle? The latter assertion is the impetus behind decades of public policy aimed at “nudging” and sometimes “controlling” the market for health care services—whether this is EMTALA, or CON, or the ACA. And although people may disagree about which of these policies are good and which are bad, at the core, we recognize we are using public policy to improve access to health care in places where the market might not support it.

When it comes to the distribution of health care providers across North Carolina, the disparity is readily apparent across most metrics. The federal Office of Management and Budget has a classification system for counties (metropolitan, micropolitan, and “noncore”—“small rural” here). Metropolitan counties [1] of the state had 26.6 physicians per 10,000 population, micropolitan counties (eg, Lenoir, Harnett, and Wilkes) had 15.3 physicians per 10,000 population, and the most rural counties had less than 10 physicians per 10,000 residents (see Figure 1). In other words, metropolitan counties have nearly 3 times the relative supply of physicians as rural counties. What is striking is how this has changed even since 2000—despite the well-documented rapid population growth of the metro areas of our state [2], the even faster growth in the number of physicians has led to an increase in the relative supply in metropolitan areas. Meanwhile, the rate in the most rural counties of North Carolina has remained relatively flat over the same time period.

This general pattern—a disparity that has increased over time—persists across the multiple health professions tracked by the North Carolina Health Professions Data System and is evident through its visualizations tool at <https://nchealthworkforce.sirs.unc.edu>. Three North Carolina counties had no primary care physician and 27 had no general surgeon in 2017. Although the county based approach of calculating rates fails to recognize that there are no border crossings limiting travel between counties for those who need health care [3], the fact is that people travel farther for care when

Electronically published November 5, 2018.

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NC Med J. 2018;79(6):372-377. ©2018 by the North Carolina Institute of Medicine and The Duke Endowment. All rights reserved. 0029-2559/2018/79605

there is no local provider, and this can limit their ability to access care. Previous research [4, 5] has found evidence of positive benefits of physician supply on health, and so the increasing disparity in physician supply is likely one contributor to the widening urban-rural mortality disparity seen across the United States [6]. Beyond the widely recognized (and intuitive) implications of having too few physicians in a community, recent and seemingly intractable trends (opioid overdoses/substance abuse, closure of obstetric units, and a dearth of geriatricians) have many rural areas acutely aware of what it means not to have enough doctors.

How to Respond

The good news is that there are multiple strategies for recruiting and retaining health care professionals to provide care in rural areas (see Figure 2). North Carolina has long demonstrated national leadership in addressing the needs of its rural population through development and deployment of innovative rural health initiatives [7].

The key is to start from a statement that is somewhat controversial: We don't have a national physician shortage; we have a national physician distribution problem. Policies that aim to resolve distribution problems by increasing the

overall number of physicians (or any health profession) and trusting the free market to use a "sandpile"-type mechanism¹ to spur supply in underserved areas [8] are unlikely to deliver the results we need. As an example, among 2,009 physicians who graduated from North Carolina residency programs in 2008, 2009, 2010, and 2011 with medical specialties identified as being in shortage by the North Carolina General Assembly, only 3% (65) were in practice in a rural North Carolina county 5 years after graduation. A strategy of training 31 physicians to obtain one for the target location is not very efficient.

We need to approach undersupply of health professions with the wine glass paradigm [9]. This model posits a temporal view of the distribution of a cohort of health professions as a wine glass: they grow up in a variety of locations (the base of the glass), locate in a central position for training (the stem), and then distribute across the country post-training (the bowl). The degree to which a profession

¹The sandpile theory, overly simplified, envisions a pile of sand with more sand added to the top. That pile dissipates along its base even as additional sand is added to the peak of the pile. Applied here, the model envisions that even as physicians disproportionately locate in urban areas, eventually some dissipate to rural communities.

distributes widely after training can be conceptualized by the shape of the bowl; a profession in which people remain close to their training location might be viewed as a champagne flute, while a profession that tends to travel farther might be a wide-rimmed margarita glass. With this paradigm, it is easy to visualize two strategies that might help with distribution: 1) We can increase supply in rural areas by putting health care professional training (the stem) closer to where we want professionals to ultimately practice, or 2) We can increase supply by making the bowl tighter—more “champagne flute” than “margarita glass.”

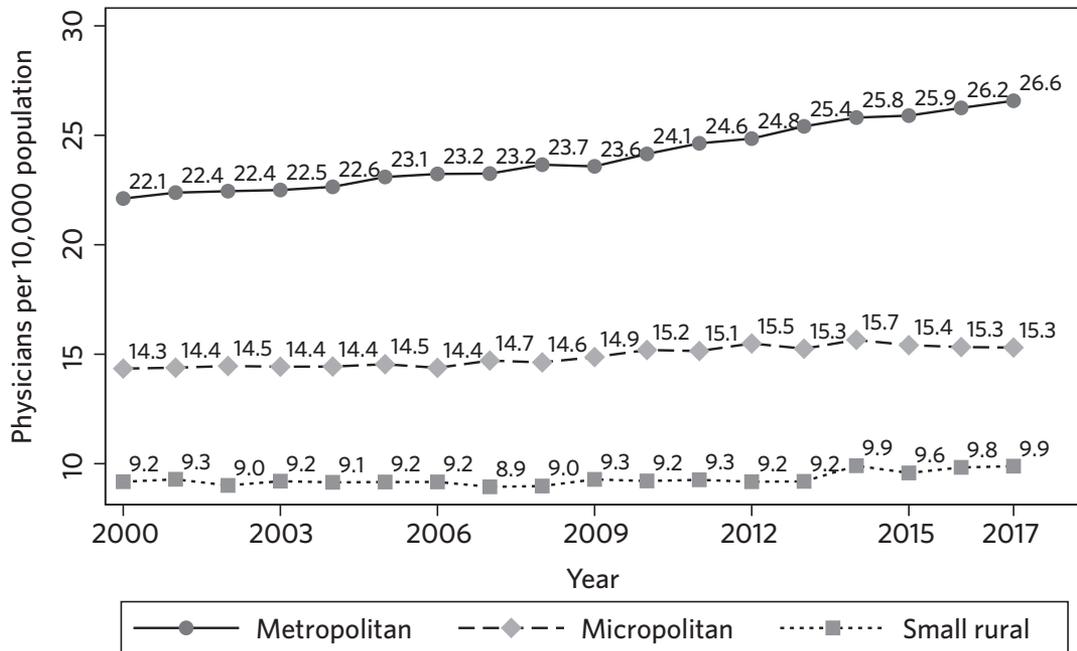
Following this model, some strategies focus on placing residencies and other training opportunities in rural and underserved areas—something North Carolina medical (and other health professional) schools are exploring to various degrees. These strategies move the stem closer to the target location (the resident develops an affinity for the area) as well as narrowing the bowl; by gaining relevant experience in rural areas, the physician is more likely to practice in similar communities in the future, thus practicing closer to the training site [10]. As such, some strategies focus on developing a pipeline to identify and cultivate middle and high schoolers from the target population (here, rural) by exposing them to the profession and providing support to pursue training. This strategy recognizes that people who grow up in rural areas

are more likely to practice there as physicians than people who grow up in urban areas. Efforts in other health professions follow similar principles, whether that involves training dentists in Eastern North Carolina or pharmacists in the Western part of the state.

One enormous challenge when addressing workforce issues is the very long time frame required to effectuate change. Programs that identify middle and high schoolers will pay off two decades later. In an era of heightened accountability and transparency, a program with such a long payoff may find it difficult to make its case for continued funding. It will require leaders—policymakers, to be sure, but also training programs, health systems, and others working in this space—to balance accountability and vigilance with the patience to wait for the investments to bear fruit. Short-run programs (eg, loan repayment programs, telehealth) can be effective in the interim and round out a portfolio of strategies available to North Carolina.

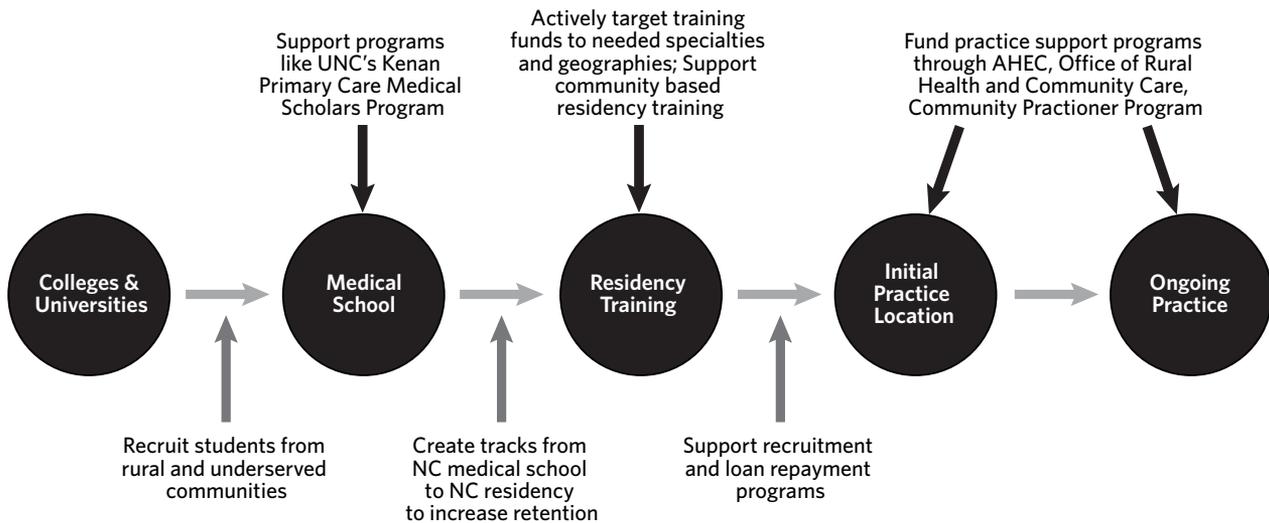
Rural areas always have and likely always will face a lower relative of supply of health professionals. A distribution such that every area, despite its population density and number of residents, has equal relative supply would likely be inefficient. But an increasing disparity is untenable. The uncomfortable truth, of course, is that workforce strategies alone are insufficient to reverse the trend.

FIGURE 1.
North Carolina Physician Supply by Level of Rurality



Source. Authors calculations using NC HPDS. <http://nhealthworkforce.sirs.unc.edu>.
Rurality defined by 2015 classifications.

FIGURE 2.
The Pipeline and Intervention Examples



Source: Fraher E, Spero J, Cecil G. Sheps Center for Health Services Research. The State of the Physician Workforce in North Carolina: Overall Physician Supply Will Likely Be Sufficient but Is Maldistributed by Specialty and Geography. Chapel Hill, NC: Program on Health Workforce Research & Policy, Cecil G. Sheps Center for Health Services Research; 2015. Available at <http://www.shepscenter.unc.edu/wp-content/uploads/2015/08/MedicalEducationBrief-ShepsCenter-August20151.pdf>. Accessed August 28, 2018.

Many of our rural communities are facing challenges that make it difficult for businesses to survive. In order to resolve the health workforce disparities in our rural communities, our approaches need to recognize that the environment needs to be fertile—the transportation system has to allow patients to get to the care they need; the education system has to be one parents want their kids to attend; the community culture needs to be welcoming. If we are serious about increasing access to health care in rural North Carolina, it will take a concerted effort from multiple stakeholders over a long period all pulling in the same direction with a common vision. I hope we are up to the challenge. **NCMJ**

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Acknowledgments

Potential conflicts of interest. M.H. has no relevant conflicts of interest.

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