What North Carolina's Health Workforce Data Can—and Can't—Tell Us

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North Carolina has some of the country's best health workforce supply data through cooperation with licensing boards, but the data don't encompass all health care workers. Workforce demand data are more difficult to track, and it's even harder to know how many health care workers are truly needed to improve the state's health.

Introduction

North Carolina has some of the best state health workforce data in the country. A long-standing partnership between the University of North Carolina at Chapel Hill and many of the state's health professional licensing boards provides exceptionally rich health workforce supply data. Still, these data can't tell the whole story. We know how many workers are available in many of North Carolina's health care occupations, but how many workers are sought? This information—health workforce demand data—is more difficult to track, and must be pieced together from multiple sources. And beyond how many workers are sought, how many are truly needed? What mix of workers on what kinds of teams could best reach North Carolinians with the information and services they need to enhance their health? Does the demand reflect the actual underlying need, or is there misalignment between the way the health system is staffed and how it should be staffed? These are questions that don't have clear answers, but any strategic thinking about the ideal shape of the state's health care workforce must begin with an understanding of the available data.

When trying to understand state health workforce data, we usually think about two categories of information: health workforce *supply* data, or how many health care workers are available to work in North Carolina, and health workforce *demand* data, or how many health care workers are sought to work in North Carolina. If the supply of workers is not sufficient to meet the demand for them, that creates a health workforce *shortage*. If there is a greater supply of workers than the demand for them requires, that creates a health workforce *surplus*. If data are available over multiple years, trends in growth or reduction over time can be used to create *projections* of possible shortages or surpluses in the future. High-quality projections are desirable because thoughtful implementation of efforts to avoid shortages or surpluses, like growing the size of training programs for occupations experiencing a shortage or creating new roles for workers in those experiencing a surplus, can take a long time. High-quality projections can also help avoid short-term overreactions, which could cause the state to swing from dire shortage to large surplus, then right back to dire shortage [1]. The quality of workforce projections is dependent on the quality of the available supply and demand data.

North Carolina's best source of health care workforce supply data is the North Carolina Health Professions Data System (NCHPDS), the oldest continuous state health workforce data system in the country [2]. These data are compiled from voluntary annual contributions by North Carolina health professional licensing boards of datasets reflecting the supply of currently licensed North Carolina health care workers, which are then processed and analyzed by staff at the Program on Health Workforce Research and Policy at the University of North Carolina at Chapel Hill's Cecil G. Sheps Center for Health Services Research, made possible by funding from the North Carolina Area Health Education Centers Program (NC AHEC). Because every worker in a licensed profession needs to have information on file with the appropriate state licensing board, these data are the most comprehensive available on the state's licensed health care workforce supply,[a] and are regularly used to inform state health workforce policy decisions.

The NCHPDS data don't just tell us how many health care workers are licensed in North Carolina; those data also tell us about their self-reported demographic, education, practice, and geographic characteristics. For many occupations, the data include information on age, gender, race and ethnic-

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[a] Health care workers in federal facilities, such as Veterans Administration (VA) hospitals, can be licensed in any state, not necessarily the state in which they are currently working [3]. Though the North Carolina licensing board datasets are near-comprehensive, some workers in North Carolina federal facilities—those holding licenses from other states—don't appear in the North Carolina licensing board files.

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ity, specialty, county, and the type of facility where they are employed. This information is important for understanding the state's workforce: for example, knowing the age of workers in a specific occupation helps us estimate the likelihood of retirement and which occupations may be more at risk of shortage if a large proportion of older workers were to decide to retire—a situation that may have become more likely in the context of COVID-19 [4, 5].

Meanwhile, information on the race and ethnicity of a health care occupation's workers helps us understand the extent to which the state's diversity is—or is not—reflected in its health care workers. Even when there is a large statewide supply of workers in an occupation, the workers are not necessarily evenly distributed among the state's population; often, health care workers are maldistributed; often concentrated in some urban regions and deficient rural and underserved communities. Knowing the geography of the workforce can help us identify these maldistributions and craft interventions to address them. You can explore more than 20 years of demographic and geographic trends for the 21 health occupations included in the NCHPDS at this website: https://nchealthworkforce.unc.edu/interactive/supply/.

Though 21 occupations licensed by 11 boards are included in the NCHPDS, this isn't comprehensive of every type of licensed health care worker in the state. Social workers, dieticians, and clinical mental health counselors are a few of the types of licensed workers not currently included. Collecting and processing data from licensing boards is labor-intensive and capacity-limited. Also, in some cases, licensing boards may not collect complete information about the demographics and practice locations of licensees, thus would not be

able to contribute that information to the data system.

There are also many health care workers in occupations that don't require licensure by a state board in North Carolina, such as community health workers [6], peer support specialists [7], patient/personal care aides (PCAs) [8], and direct support professionals [8], among many others. It is often more difficult to find a single source for comprehensive supply data on unlicensed occupations, despite their prevalence and importance, because there is no single state licensing board maintaining that information.

North Carolina's excellent (though still incomplete) health workforce supply data make up only half of the picture needed to understand potential shortages or surpluses. It is harder to obtain the other half: health workforce demand data.

Some demand data estimates are available from government agencies. The Labor and Economic Analysis Division of the North Carolina Department of Commerce produces occupation-level projections of growth and job openings every two years based on unemployment system information, but not all occupations are included, and occupation definitions are not always clearly defined [9]. The Occupational Employment and Wage Statistics (OEWS) program within the United States Bureau of Labor Statistics (BLS) also conducts regular surveys of a sample of employers nationwide, and uses this information to create regional, state, and national occupational outlook reports and employment projections [10]. With survey data, sampling for smaller regions can be less reliable, and it can be hard to know whether occupations are consistently reported by employers in the same way. There are also proprietary datasets developed by private companies from automated compilation of online job postings [11], but proprietary data are often expensive to

access and less transparent in their methodology.

None of those workforce demand data sources provide insight into perceptions about why demand may be changing for certain occupations. Other, less formal data-gathering efforts can provide some of this valuable additional context. The NC Sentinel initiative, a new effort in this category, is a biannual questionnaire that offers health care employers the opportunity to submit information about recent workforce challenges [12]. Data gathered through NC Sentinel are available on a public website by employer type, region, and rurality (https://nc.sentinelnetwork.org/).

Many other demand data sources can be valuable for informing efforts to model state workforce projections, requiring careful project-specific selection and interpretation. For example, in the recently-released NC Nursecast projections of North Carolina's nursing workforce, our team used a variety of data sources, including: state population growth and demographic change estimates from the North Carolina Office of Budget and Management; hospital discharge data; nursing home residency capacity information; and national survey data on ambulatory care, mental health, and home health visits [13].

Another complicating factor in using workforce supply and demand data to assess the sufficiency of the state's health workforce is that workforce data are almost always collected and categorized by occupation, without any information about the dynamics of interprofessional models of care or state supervisory requirements. For many occupations, it doesn't make sense to think about training or hiring those workers without considering how many workers in other occupations are also being trained and hired.

Lastly, even in situations where we have excellent supply data and solid demand data that give us a sense of whether workers are in shortage or surplus based on the state's current health care landscape, it is important to remember that these data still don't tell us how many health care workers we *should* have. What would the state's health care system look like if it was staffed to meet the state's actual underlying need for health services, not just the apparent demand? Filling all the current job openings across the state might meet the state's health workforce demand, but it wouldn't necessarily meet the underlying health workforce need.

North Carolina knows a lot about its health care workforce supply, thanks to early, innovative, and long-lasting partnerships between licensing boards, NC AHEC, and the UNC Sheps Center to create and maintain the NCHPDS, with helpful contributions by many others. We know less about health workforce demand, but we can make use of many demand data options, while remembering to pay close attention to contextual information and each dataset's details. Finally, we should keep in mind that the ideal blend and number of health care workers that would best serve the health of North Carolinians—the workforce for health, not just the health workforce [14]—isn't necessarily reflected by current supply or demand data, but requires a larger strategic vision informed by these data. As health care payment and delivery models change, health workforce data will be critical for decision-making, and maintaining and improving tools like the NCHPDS will continue to benefit all North Carolinians. NCMJ

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