



Global Health Science University

School of Medicine

Unmet Healthcare Needs Created by Workforce Shortages in the United States

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Decision makers in both public and private sectors need information about the capacity of the nation's future health care workforce. The goal of the health care system, even the chaotic one we have in the United States, is to provide high-quality, cost-efficient health care while also developing the physicians and other professionals needed to transform the current system to meet future needs and to maximize population health. Institutions of higher learning that undertake medical and health professions education must learn about changing workforce projections and unmet healthcare needs.

AAMC Workforce Prediction Models:

The task of creating reliable analysis of future health care workforce is complex. The pipeline which produces future health professionals is longer than many other professions and quite expensive. Thus, efforts to increase or decrease the number of future graduates will influence the outcomes in a distant, less certain future. In addition to supply and demand factors, one must consider early or late retirement and changing work hours. It must take into account health care delivery reform and finances.

In 2015, the Association of American Medical Colleges (AAMC) made a commitment to publish annual updates of national physician workforce projections. The purpose of this process includes (1) updating projections, (2) presenting new analyses, and (3) identify future directions for workforce prediction research¹. As shown in the following diagram, the prediction models include supply factors such as status quo (not changing the production rate), early and delayed retirement, millennial hours worked (13% fewer), and expansion of graduate medical education (GME). The demand factors include demographic changes, impact of healthcare reform, managed and integrated care, increased use of Advanced Practitioner Registered Nurses (APRN) and Physician Assistants (PA), and the impact of population health goals (e.g. reduced obesity and smoking rates)¹.

Figure 1: Demand and Supply Scenarios

DEMAND SCENARIOS

- Demographic Changes
- Healthcare Reform
- Managed Care
- Retail Clinics
- Increased Use of APRN/PA
- Achieving Population Health Goals



SUPPLY SCENARIOS

- Status Quo
- Early and Late Retirements
- Millennial Hours Worked (17% fewer)
- GME Expansion

Impact of game-changing scientific discoveries was not included in the analysis:

Understandably, the AAMC workforce projection models have not included analysis of the impact of scientific discoveries, e.g. game-changing gene editing technology, medical nanotechnology, robotics and cybernetic engineering, and artificial intelligence on longevity and quality of life. These discoveries and their effects on longevity and quality of life of people served by health professions, while difficult to quantitate, will greatly influence the workforce needs.

Ray Kurzweil, the recipient of the \$500,000 MIT-Lemelson Prize and Chief Engineer at Google, predicts “singularity”, merger of biological life and artificial intelligence by 1945². Based on analysis of current science and technology, Yuval Noah Harari predicts evolution of homo sapiens into a new species, which he calls Home Deus with a 500 to 1,000-year life span and significantly expanded human capabilities.

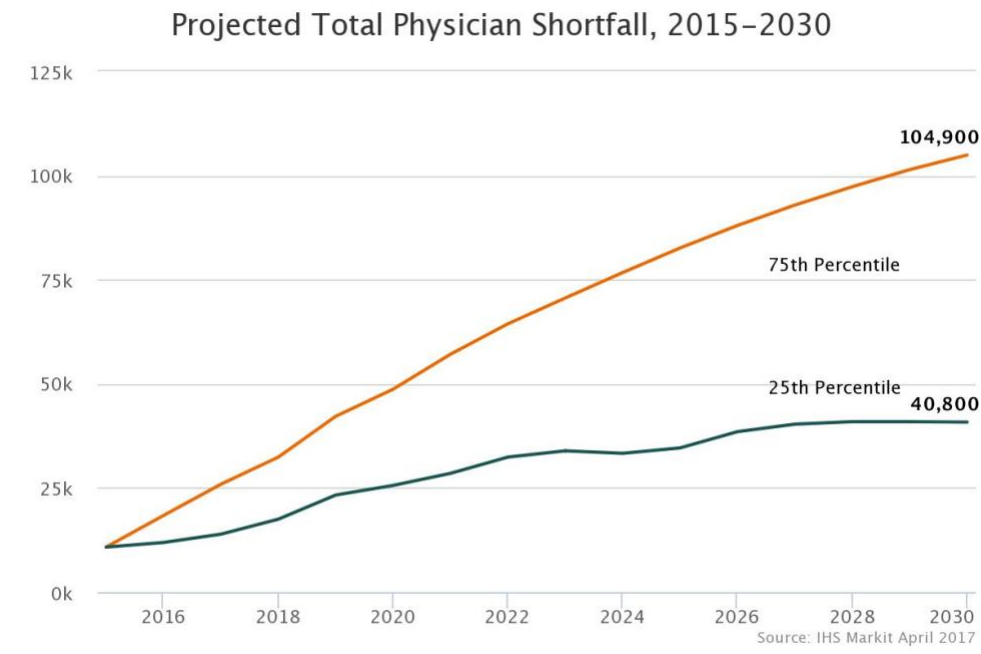
Initial reaction to such predictions is skepticism. After all, flying cars predicted by Jules Verne in 1904 and Henry Ford in 1940 are not around yet. However, in 1940, less than 1 % of population was older than 65 years. In 2018, for women who reach 65 years of age, life expectancy of 80.3 years is already built into the CDC Life Tables, life insurance rates and IRS projections for calculation of required minimum distribution of IRA⁵. In the not so distant future, being 100 years old will become a new normal. Even a modest increase in current population-level life expectancy of 79 years (both sexes combined) to 89 years, increase in the number of centenarians or larger number of persons reaching the age of 110+ is quite probable in the next two decades. Not only will population continue to age and produce a much larger number of people with chronic illnesses, our abilities to diagnose and treat such illnesses will also change

in ways we cannot imagine at this stage. This will not only increase the healthcare work force needs but create a need for new specialties that currently do not exist.

Demand is projected to grow faster than supply

Even without considering impact of game-changing scientific discoveries, AAMC models predict that demand will continue to grow faster than supply as shown in the diagram below¹.

Figure 2: AAMC Model on Physician Workforce Shortages

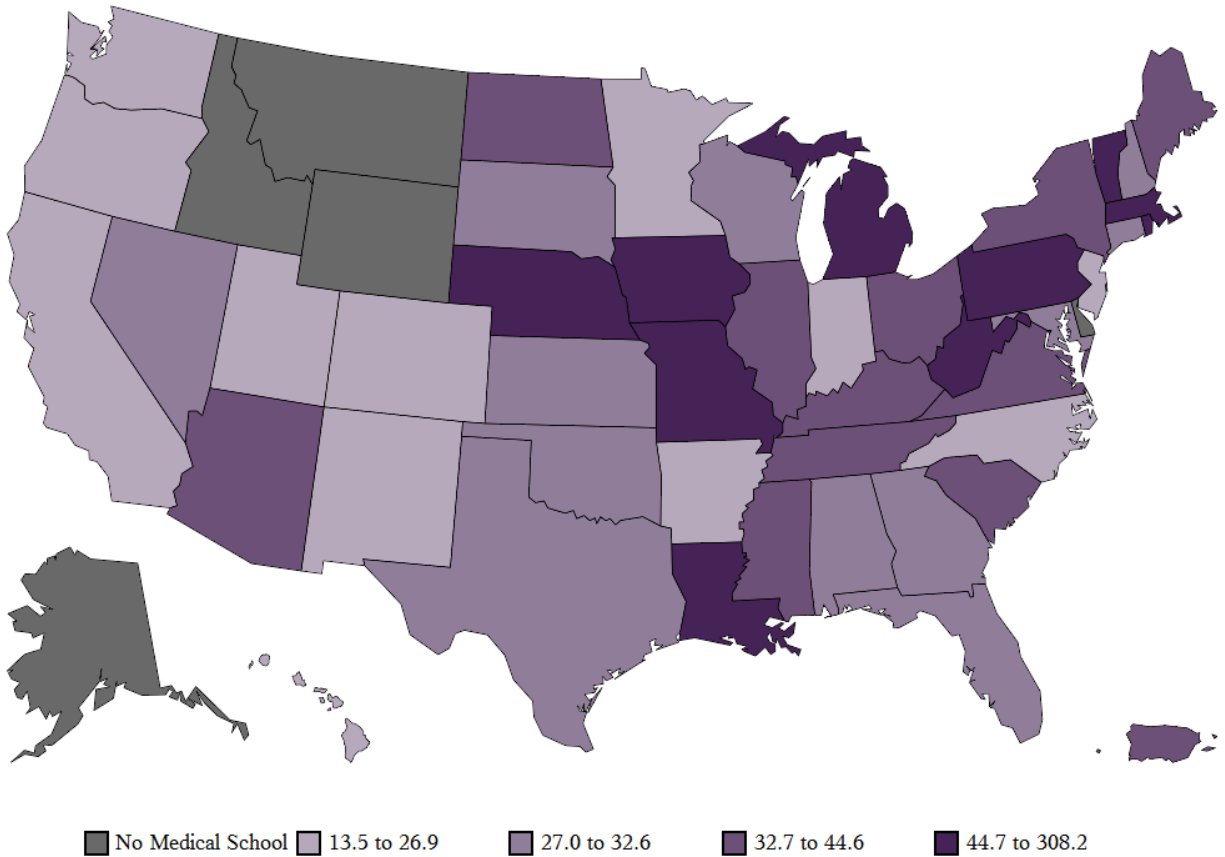


For low estimate (40,800) physicians needed by 2030, 3,400 additional physicians are needed each year. This would require 23 new medical schools with graduating a class size of 150 physicians each year beginning in 2018. For high estimate (104,900 physicians), 8,741 new physicians are needed each year or 58 additional medical schools in 2018. In contrast, only 6 new medical schools appear to be in pipeline in 2018.

Deficit states for medical school graduation rates:

Figure 3 shows graduates per 100,000 population in each of the states⁴. For example, California appears to be a deficit state. There were 18.4 medical students (MD and DO) enrolled in public and private medical schools in California per 100,000 population. The USA median is 30.3 per 100,000 population giving California the rank of 43 out of 50 states.

Figure 3: Medical School Graduation Rates in States



Given the leadership of California in medical and information systems technology, there is a missed opportunity, not only for training the numbers of physicians required but also the new types of physicians who will be needed in the future. This is one reason to locate a new medical school in the State of California, the most populous state in the nation. At the same time, there are many states with no medical school or deficiencies similar to California.

Primary Care versus Specialty Care versus Neo Physicians:

The workforce studies show shortages in nearly all disciplines, primary care as well as specialties. However, with predicted increase in APRN and PA providing significant amount of primary care, the future deficit in primary care may not be as intense as in some specialties. Moreover, there is hardly any emphasis on training physicians, who for lack of a better word, I would call “Neo Physicians”, who can learn new technology and have adaptive skills to deploy science and technology for the benefit of the aging population.

Unmet Global Healthcare Needs:

Similar studies to delineate healthcare workforce needs in other countries are scarce. However, physician to population ratios appear to be woefully inadequate in many developing countries. On a global scale, serious disparities in population health exist. There is a need to systematically align medical education and work force needs in many parts of the world, a challenge consistent with the mission of the Global Health Science University.

Summary:

It is imperative that new institutions of higher learning for education of health professions be created in the United States, especially in California and in other deficit states. Global Health Science University School of Medicine will contribute its share of primary care and specialty physicians but will also focus on teaching adaptive skills to deploy new science and technology. At the same time, new science and technology will create ethical concerns that must be addressed. This cannot be achieved through isolated courses on ethics, doctor-patient relationship or health professions' role in the society. Rather such education must be embedded in all clinical curricula.

References:

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