Depoliticizing Healthcare Licensure: Making Competence the New Standard for Licensing the Healthcare Workforce

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ABSTRACT

The current system of healthcare licensure contributes to the high cost of and impaired access to medical care. Politics plays a perverse role in maintaining the status quo and prevents the healthcare workforce from adapting to the evolving needs and rapid technological advances of the 21st century. The authors propose a less politicized system modeled after the process for certification of airline pilots. (Pilots, like physicians, are professionals in a highly technical field; like physicians, their competence is a matter of health, safety, life, and death.) We believe such a system would evolve to rely on the demonstration of competence as the standard for licensure—and we argue that this is not necessarily the case in the current system of physician licensure. Training programs for achieving specific, certifiable competencies are likely to be shorter and more modular than those currently available.

JEL codes: I00, I10, I18, I21, I23, I28, J44, J48, J61, J68

Keywords: licensure, certification, physician, doctor, pilot, health, healthcare, medical, education, nurse, technology, innovation

Despite the United States' having the highest per capita healthcare costs in the world, problems of access, cost, and quality continue to plague the nation's policymakers, patients, providers, and payers. White House reports published by both the Obama and Trump administrations contend that state licensing statutes and scope-of-practice laws both reduce the number of competent providers and restrict what they may legally do.[1]

In 2018, Flier and Rhoads discussed the limitations on the supply side of healthcare services.[2] They noted that the "factors responsible for educating, licensing, and credentialing the physicians and other healthcare professionals" (p. 3) were major determinants behind the inability of the workforce to adapt to the evolving needs of the healthcare marketplace. They recommended diversifying, shortening, and decreasing the cost of educating medical doctors (MDs).[3] They also recommended removing the arbitrary restrictions that hinder the incorporation of fully trained international medical graduates into the workforce, as well as "encouraging development and utilization of competency-based approaches to enabling increased scope of practice" (p. 51) for nurse practitioners (NPs) and physician assistants (PAs). (Flier is former dean of Harvard Medical School and Rhoads is a research project manager at the Dartmouth Institute for Health Policy and Clinical Practice.)

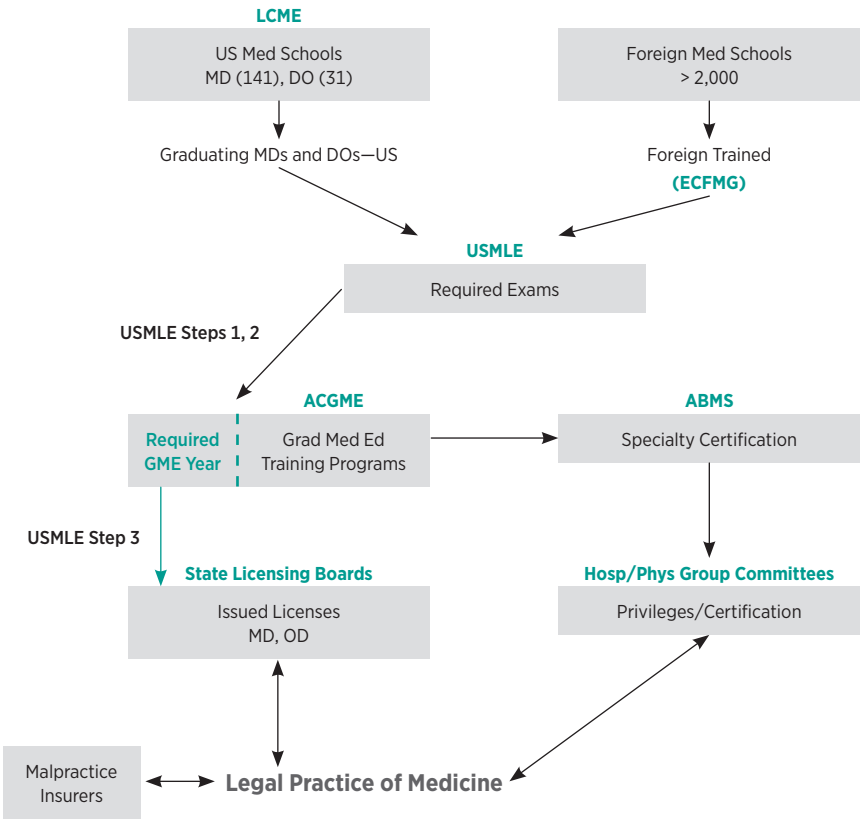
1. Obama 2015: Department of the Treasury Office of Economic Policy, Council of Economic Advisers, and Department of Labor, *Occupational Licensing: A Framework for Policymakers*, July 2015; Trump 2018: US Departments of Health and Human Services, the Treasury, and Labor, *Reforming America's Healthcare System through Choice and Competition*, December 2018.
2. Jeffrey S. Flier and Jared M. Rhoads, "The US Health Provider Workforce: Determinants and Potential Paths to Enhancement" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, 2018).
3. For clarity, when we use the terms medical doctor or physician, we are referring also to osteopathic physicians, as well as MDs, since their training, pathways to licensure, opportunities for specialty training, hospital staff privileges, and freedom from scope-of-practice regulations are nowadays essentially the same as those of MDs.

The avowed purpose of medical licensure is to safeguard the public from incompetent, unethical, or dishonest practitioners. Licensure is purportedly based on the training and competence of healthcare providers. And yet politics of various sorts play a large role in how states grant medical licenses. Lengthy, costly, and wasteful professional turf wars occur regularly, whereby different professional groups vie for the approval of legislators. These machinations often yield politically based limitations on competition by way of licensing requirements and scope-of-practice regulations—in other words, limits on who may practice, where, and how.[4] A complex relationship exists between the various private MD-dominated organizations and those affiliated with the American Medical Association (AMA) that control the number of physicians admitted to medical schools, approve their curricula, accredit their specialty training programs, and administer their licensure examinations. This process was diagrammed by Flier and Rhoads and is reproduced with permission as figure 1.

As we will show, much has been written about the perverse effects of our current system of licensing healthcare workers and the fundamental role politics plays in maintaining the process. In this paper, we suggest a practical alternative that states could enact to facilitate reform. We posit a less politicized model exemplified by the training and certification of airline pilots—professionals who also possess complex, critical skills that people depend on for their very lives. (To put it into perspective, an act of malpractice by a physician can injure or kill one person. An act of malpractice by a pilot can kill hundreds.) We suggest that by making competence the criterion by which various providers are certified for practice, market forces will facilitate the evolution of alternative pathways to identify, train, and regulate a healthcare workforce. Depoliticization could be accomplished by eliminating the exclusivity sections of a state's medical practice act and by permitting a system of state-accredited, private, competitive, professional healthcare certification agencies to replace single state-based licensing boards. Sanctions for dishonest, unsafe, or unethical practitioners would be enhanced by state or professional board decertification, as well as indemnification and tort law.

4. Barbara J. Safriet, "Closing the Gap between Can and May in Health-Care Providers' Scopes of Practices: A Primer for Policymakers," *Yale Journal on Regulation* 19, no. 2 (2002): 301–34; Committee on the Health Professions Education Summit, Board on Health Care Services, "Health Professions Oversight Processes: What They Do and Do Not Do, and What They Could Do," chap. 5 in *Health Professions Education: A Bridge to Quality*, edited by Ann C. Greiner and Elisa Knebel (Washington, DC: National Academies Press, 2003).

FIGURE 1. KEY INFLUENCES OVER THE HEALTH PROVIDER WORKFORCE IN THE UNITED STATES



Note: Not shown are the National Board of Medical Examiners (NBME) and the Federation of State Medical Boards, two of the other MD-dominated nonprofit private organizations that cosponsor the United States Licensing Exam. ABMS = American Board of Medical Specialties; ACGME = Accreditation Council for Graduate Medical Education; ECFMG = Educational Commission for Foreign Medical Graduates; LCME = Liaison Committee on Medical Education; USMLE = United States Medical Licensing Examination.

Source: Adapted from Jeffrey S. Flier and Jared M. Rhoads, "The US Health Provider Workforce: Determinants and Potential Paths to Enhancement" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, 2018). Reproduced with permission.

ROAD MAP TO THIS PAPER

We begin with a brief history of how America arrived at its current system of medical licensure (and licensure of other health professions). We define the distinction between politicized and nonpoliticized licensure. To illustrate the peculiarities of medical licensure, we compare it with the very different process of training and certifying airplane pilots, who, like doctors, hold the lives of others in their hands.

We then compare the differences between how the various states license the healthcare workforce with the way pilots are certified by the Federal Aviation

Administration (FAA). Professional entry is restricted for physicians but not for pilots, leading to a chronic shortage and the need to import doctors trained abroad. Moreover, scope-of-practice laws make it difficult for highly trained healthcare professionals in other fields, such as nurse practitioners, pharmacists, and optometrists, to use their skills to make up for the perceived shortages. (Pilots have no similar mechanisms to restrict potential competitors.) We then compare the differences in the training of healthcare providers (which is sequential, fixed-time/variable-learning) with that of pilots (which is modular, stackable, and variable-time/fixed-learning). Last, we compare the significant differences in the way licensing authorities in healthcare and aviation assess professional competence.

In the latter sections of the paper, we review some of the illogical consequences of politicized healthcare licensure and suggest ways to safely accomplish reform while maintaining state sovereignty. (In brief, states could accredit competitive private professional certifying organizations to define the legal scopes of practice for their graduates.) Finally, we make some predictions about how a more vibrant and cost-efficient healthcare workforce could evolve under such a depoliticized system of licensure—one more adaptable to the rapid technological changes in 21st-century America.

HOW THE CURRENT POLITICIZED SYSTEM OF MEDICAL LICENSURE EVOLVED

Many good histories of the evolution of the current system of medical education and licensure are available to the interested reader—notably Burrow, Starr, and Ludmerer.[5] Very few medical regulations existed after the Jacksonian era.

The American Medical Association was founded in the mid-19th century to correct what it saw as unscientific, poorly trained physicians graduating with MD degrees from over 160 medical schools—many operated for profit. Starting after the Civil War, and progressing for another half century, the AMA led a movement to reform medical education. After the publication of the AMA-influenced Flexner Report in 1910, almost half of the nation's medical

5. James G. Burrow, *Organized Medicine in the Progressive Era: The Movement toward Monopoly* (Baltimore: Johns Hopkins University Press, 1977); Paul Starr, *The Social Transformation of American Medicine: The Rise of a Sovereign Profession and the Making of a Vast Industry* (New York: Basic Books, 1982); Kenneth M. Ludmerer, *Learning to Heal: Development of American Medical Education* (New York: Basic Books, 1985), 9–28.

schools either went out of business or merged with other institutions.[6] Schools for women and African Americans in particular were eliminated.[7] University-based four-year medical schools—requiring a college degree for admission, with permanent faculty and similarly regimented curricula for teaching both preclinical sciences and hospital-centered clinical subjects—became and continue to be dominant.

Another objective of the AMA was to improve the livelihood of allopathic MDs, who found it necessary to compete with naturopaths, pharmacists, eclectics, chiropractors, osteopaths, optometrists, midwives, and other types of practitioners.[8] Starting in the last quarter of the 19th century and extending to the end of the Progressive Era a century ago, some of these professions were subsumed by allopathy, some went out of existence altogether, and others (e.g., chiropractors, optometrists, midwives, and pharmacists) found their ability to practice their professions limited by state legislators who were successfully lobbied by the AMA to pass restrictive scope-of-practice laws.[9]

WHAT WE MEAN BY DEPOLITICIZED LICENSURE

We admittedly make a somewhat arbitrary distinction between politicized and nonpoliticized professional licensing systems: that is, who may practice a particular range of services and who is prohibited from doing so.[10] In our view, the former is illustrated by the American system of healthcare licensure. It is associated with perceived shortages of healthcare providers in some locations, an overabundance in others, and high costs everywhere. Compare this system with the nonpoliticized method for certifying the professional competence of airline pilots. Few concerns have been raised about the number, allocation, safety, or

6. Abraham Flexner, *Medical Education in the United States and Canada: A Report to the Carnegie Foundation for the Advancement of Teaching* (New York, 1910); Mark D. Hiatt and Christopher G. Stockton, "The Impact of the Flexner Report on the Fate of Medical Schools in North America after 1909," *Journal of American Physicians and Surgeons* 8, no. 2 (2003): 37–40.
7. George A. Johnston, guest editorial: "The Flexner Report and Black Medical Schools," *Journal of the National Medical Association* 76, no. 3 (1984): 223–25; Margaret L. Charleroy and Katie Genakdek, "Flexner's Exodus: The Effect of Progressive Era Policy on Women's Participation in Medical Fields" (poster presentation, Population Association of America annual meeting, San Diego, May 2, 2015).
8. In the 19th century, American medicine was characterized by competing philosophical schools. One school, known as "allopathy," eventually prevailed over the others and became what we simply call "modern medicine."
9. Burrow, *Organized Medicine in the Progressive Era*.
10. Murray S. Feldstein, "Reforming Healthcare Licensure for the 21st Century," chap. 7 in *Purple Solutions: A Bipartisan Roadmap to Better Healthcare in America*, coauthored and edited by Daniel Sem (Mequon, WI: Remedium Exchange, 2020).

expenses involved with these professionals who hold the lives of nearly 2 million passengers in their hands each day.

In a politicized system of licensure, such as healthcare, legislators make decisions, frequently motivated by political considerations, that restrict the entry of people into a marketplace. In such a milieu, policymakers place statutory limits on potential competitors regardless of their qualifications. Nonfavored healthcare providers (or potential providers) are effectively presumed incompetent until politicians rule otherwise.

In a nonpoliticized system of licensure, such as that in force for professional pilots, no statutory or de facto limitations are placed on the number of people who may enter the profession. To be licensed (or, more accurately, certified), pilots must meet previously established, transparent, and objective criteria of training, knowledge, and skill. Once they have done so, they are presumed competent until proved otherwise. No political decisions are required once the standards have been met.

HEALTHCARE LICENSURE COMPARED WITH THE CERTIFICATION OF PILOTS

We recognize that caring for patients and flying airplanes are not entirely analogous processes. Murray Feldstein, the coauthor of this paper, has been both a licensed physician and a licensed (or certified) pilot. Nevertheless, we contend that the two fields are similar enough that healthcare can learn much from aviation about the training and licensure of highly skilled professionals. Incompetence in either field can easily injure or kill those employing their services.

It isn't difficult to specify differences between healthcare and aviation professionals. Nor is it difficult to offer counterarguments to the significance of such differences. Here are three areas of difference and similarity.

First, in general, pilots don't need to develop intimate personal relationships with their passengers. There are exceptions. Some pilots—say, those whose full-time job is flying a CEO's corporate jet—may have more intimate relationships with their employers than pathologists or radiologists have with their patients.

Second, treating patients is less commoditized and automated than flying passengers. Changing surgeons at the last moment can cause deep angst. Swapping pilots at flight time is a nonevent. But part of this difference lies in the fact that aviation has spent many decades automating flight processes and constructing fail-safe mechanisms. Healthcare is heading in that direction with increasing

application of algorithmic medicine and telehealth[11]—often with open hostility from healthcare professionals. We suggest "Uberizing" the practice of medicine by automating rote processes, using machine learning for real-time optimization, and lessening micromanagement by government.[12] Graboyes, Bryan, and Berkowitz summarize the prospective roles of telehealth and *autonomous health*—the latter describing patient and provider interaction with intelligent machines.[13]

Pilots were once as resistant to the commoditization and standardization of their jobs as many physicians are today. A recurring theme of Tom Wolfe's *The Right Stuff* [14] was the scorn that test pilots held for automated space flight in which the astronaut was, in their view, more passenger than pilot ("Spam in the can," in Wolfe's memorable phrase). Captain Chesley Sullenberger's success in ditching US Airways Flight 1549 in the Hudson River in 2009[15] dramatically illustrates the surgeon-like role of individual cognition in aviation—as does the dramatic failure of Air France Flight 447's crew after takeoff from Brazil that same year.[16]

Third, some see the Hippocratic oath, its modern versions, and various other pledges (e.g., the Oath of Maimonides) as evidence that physicians engage in a special contract with society. But that is a self-perception without legal standing. Physicians and other healthcare professionals are certainly part of a social contract, as reflected in malpractice law. But one can argue that those who fly planes, build bridges, cook food, and drive automobiles are also part of the same social contract, as reflected in their susceptibility to tortious liability.

Differences do exist between healthcare professionals and pilots; however, there are also important similarities: both had to take extensive training to acquire their skills. Both have to make life-and-death decisions on the basis of those skills. Both are regulated by government bodies that define the limits of their approved practice and use police powers to prevent unapproved providers from competing with them. *It is the differences between the way pilots and healthcare workers are regulated that are the subject of this paper*.

The processes of certification and licensure are different in the two professions. In healthcare, two separate actions are taken at different times by two

11. Robert Graboyes, "Telehealth as Commodity," InsideSources, March 24, 2021.
12. Robert Graboyes and Murray Feldstein, "What Uber Can Teach Healthcare," *Discourse*, May 18, 2021.
13. Robert Graboyes, Darcy N. Bryan, and Lyle Berkowitz, "What Is Virtual Health? The Promise of Technology and the Chaos of Terminology," *The Bridge*, May 20, 2021.
14. Tom Wolfe, *The Right Stuff* (New York: Farrar, Straus, Giroux, 1983).
15. "US Airways Captain the 'Consummate Pilot,'" CNN, January 16, 2009.
16. "Air France Crash: Trial Ordered for Airbus and Airline over 2009 Disaster," BBC, May 12, 2021.

distinctly different agencies. In the airline industry, certification combines these actions.

The *New Oxford American Dictionary* defines *certification* as "the action or process of providing someone or something with an official document *attesting* to a status or level of achievement [emphasis added]." To grant a license is to *allow* an activity to take place. In healthcare, certification is voluntary and is granted by nongovernmental professional boards. MDs are certified by postgraduate specialty boards, such as internal medicine, surgery, or dermatology, after completing a training program known as a residency. Although being certified has market-based advantages, it is not backed by the police power of the state. Uncertified practitioners may legally compete with certified providers.

Healthcare licenses, however, are constitutionally the prerogative of the various states. They are awarded on the basis of having met certain criteria, which are discussed in this paper. Unlicensed practitioners are barred from competing with licensed ones by the police power of the state. The legislation that mandates licenses for most healthcare professionals also defines a scope of practice that the licensee must observe. A healthcare license is issued to physicians earlier in their careers than their specialty certifications are.

Pilot certification is granted by the Federal Aviation Administration, a government agency. It not only recognizes the achievement of particular knowledge and skills, but also sanctions anyone who would attempt to perform tasks requiring those skills without first having been so certified. In this fashion, pilot certification plays a dual role. When people speak of a pilot license, they really mean pilot certification.

Pilots must undergo mandatory periodic testing and training to keep their certification current. Although the practice is controversial, physicians also undergo periodic testing by their specialty boards. This process is known as Maintenance of Certification. The difference is that physicians can still practice even if they are not certified or recertified. Physicians must renew their medical license, but it is not contingent on demonstrating medical competence. A pilot must be certified to legally fly and enjoy the exclusivity that licensure confers to physicians. Physicians must be licensed before becoming certified. Table 1 summarizes the difference between the process of licensure and certification in the two industries.

In Canada, the province of Alberta has required physicians to undergo multisource feedback (MSF) every five years. MSF requires each physician to be evaluated by "8 peer physicians (colleagues), 8 coworkers (eg, nurses,

TABLE 1. COMPARISON OF LICENSURE AND CERTIFICATION BETWEEN MDs, NPs, AND PILOTS

MDs	NPs	Pilots
Each state issues its own professional licenses.	Each state issues its own professional licenses.	Pilot certifications are awarded by the FAA.
State licensure is mandatory and enforced by police powers of state governments.	State licensure is mandatory and enforced by police powers of state governments.	Pilot certification is mandatory and enforced by police powers of the federal government.
MDs have an unrestricted license to practice medicine within a broad standard of care.	NPs have a defined scope of practice defined by state statute.	Pilots fly within the limits of their certification.
Physicians must graduate from a medical school, complete one year of postgraduate training, and pass a state-approved examination to be eligible for licensure.	NPs must graduate from a nurse practitioner program and be certified by a national certifying body to be eligible for licensure.	Pilots must complete a minimum number of flying hours, pass an FAA-approved examination, and demonstrate specified skills before certification.
The medical school must be approved by the state.	Both the teaching program and the certifying body must be approved by the state.	The flight school does not need to be approved by the FAA, but instructors and testers must be FAA certified.
The license is approved before the physician is completely specialty trained or ready for practice.	The license is approved only after training and certification are complete and the nurse is ready for practice.	The certification is approved after the pilot has completed all requirements for that rating and is ready to fly.
Advanced (specialty) training usually requires graduation from an approved medical school.	Nurse practitioners are registered nurses specialized with advanced training.	Advanced training requires prior certification of underlying skills.
Certification of advanced training is optional for licensure and granted by private boards.	Certification of advanced training is mandatory for licensure and granted by private boards.	Certification of advanced training is mandatory and granted by the FAA.
Training is sequential, fixed-time/variable-learning.	Training is sequential, fixed-time/variable-learning.	Training is modular, stackable, and variable-time/fixed-learning (with a fixed minimum).
Certification of advanced training is not required by the state to practice advanced skills; i.e., physicians practice at the top of their license.	A state may refuse to permit practice of certified skills if not within the statutory scope of practice. NPs may not be permitted to practice at the top of their license in some states, but may do so in others.	Certification of advanced training is required to practice advanced skills. Pilots practice at the top of their license.

receptionists and physiotherapists), 25 patients and a self-evaluation."[17] Various analyses indicate the value of such assessment arrangements.[18]

We have used the physician-and-pilot comparison for many years, and we are frequently asked whether the two professions are comparable. There are, of course, distinctions.

The distinction between healthcare licensure and pilot certification is not the subject of this paper. It is the role that politics plays in the former that is

17. Nigel Ashworth, Nicole Allison Kain, Ed Jess, and Karen Mazurek, "Survey of Physician Attitudes to Using Multisource Feedback for Competence Assessment in Alberta," *BJM Open*, July 19, 2020.
18. For one such study, see Jocelyn M. Lockyer, Claudio Violato, and Herta M. Fidler, "Assessment of Radiology Physicians by a Regulatory Authority," *Radiology* 247, no. 3 (2008): 771–78.

important. In the following sections, we identify six differences between physicians and pilots:

- Professional entry is restricted for MDs but not for pilots.
- Healthcare licensure restricts competition from competent non-MD providers with similar skills. Professional pilots have no such limitation.
- Opportunities for advanced healthcare training are linear and are characterized as fixed-time/variable-learning. Postgraduate training program acceptance is predicated on the basis of a medical diploma. Advanced training for pilots is stacked and modular; it is characterized by variable-time/fixed-learning. Prerequisites for advanced pilot training depend on previously certified competencies.
- Licensing a physician to legally practice assumes broad lifelong competence based primarily on a medical diploma, one postgraduate year of semi-independent supervised training, and a licensing exam taken during training. Pilot certification is based on a demonstration of specific competencies that are periodically reevaluated.
- Compared with pilots, a much larger portion of physician revenues comes from government sources.
- Physicians generally have a far more intimate relationship with their patients than pilots have with their passengers.

Professional entry is restricted for MDs but not for pilots. Since the early 20th century, legislators in all 50 states have granted MDs de facto control over the number of people who are eligible to legally practice medicine. They do this by restricting the practice of medicine, broadly defined, to diplomates (MDs) of accredited medical schools in the United States and Canada. Only these graduates are eligible to apply for a license to practice after one year of postgraduate training. The number and size of these schools, and thus the potential supply of physicians, are controlled by a private organization run by MDs—the Liaison Committee on Medical Education (LCME), an affiliate of the AMA. Only about 40 percent of the roughly 50,000 annual applicants to medical schools are accepted for admission in spite of perceived shortages of physicians. Therefore, the number of students admitted to accredited medical schools is the most important choke point in controlling the number of MDs (see figure 1).

The supply of physicians is augmented somewhat by limited licensing of graduates of medical school outside the United States or Canada. Foreign medical graduates, also called international medical graduates (IMGs), make

up approximately a quarter of physicians in the country today and account for a disproportionate number of primary care providers practicing in areas with a recognized shortage of physicians, such as rural areas.[19] They can be licensed only after applying to another AMA affiliate, the Educational Commission for Foreign Medical Graduates (ECFMG) (see figure 1).

Even fully trained and experienced IMGs must take additional testing and postgraduate training before they are eligible to apply for a license. Many such physicians are deterred by the cost and time required to fulfill ECFMG requirements. Linguistic and cultural barriers (both social and clinical) can adversely affect IMGs' integration into the workforce. There may be 65,000 physicians, some highly trained and experienced, living in the United States and unable to practice because of licensure restrictions on IMGs.[20] Unfamiliarity with the US testing system accounts for additional obstacles.[21] Evidence indicates that IMGs find it more difficult to gain admission to approved graduate programs.[22] Half of the IMGs who apply for postgraduate education are not accepted. The reasons for this are not entirely clear. Concerns over competence are often cited, but what few data exist do not support that contention. Several database reviews have correlated improved clinical outcomes for certain heart diseases as occurring often, or even slightly more often, with IMGs than with American- or Canadian-trained MDs.[23]

Flier and Rhoads wondered why so much potential talent is being squandered.[24] We agree with them that it would be advantageous to have mechanisms for assessing individual competence rather than insisting that nearly all IMGs undergo retraining.

Medical education is expensive and is subsidized by both federal and state governments. The largest share of federal funding goes into graduate medical

19. Brendan Murphy, "How IMGs Have Changed the Face of American Medicine," AMA website, October 19, 2020.
20. Joey Peters, "Highly Trained and Educated, Some Foreign-Born Doctors Still Can't Practice Medicine in the US," *The World*, PRI, March 28, 2018.
21. Salimah H. Meghani and Vijay Rajput, "Perspective: The Need for Practice Socialization of International Medical Graduates—An Exemplar from Pain Medicine," *Academic Medicine* 86, no. 5 (2011): 571–74; Orly Avitzur, "Match Day: The Roadblocks International Medical Graduates Face," *Neurology Today* 21, no. 8 (2021): 24–25.
22. Kevin Dayaratna, Paul J. Larkin, and John O'Shea, "Reforming American Medical Licensure," *Harvard Journal of Law & Public Policy* 42, no. 1 (2019): 267.
23. John J. Norcini et al., "Evaluating the Quality of Care Provided by Graduates of International Medical Schools," *Health Affairs* 29, no. 8 (2010): 1461–68; Dennis T. Ko et al., "Quality of Care of International and Canadian Medical Graduates in Acute Myocardial Infarction," *Archives of Internal Medic*ine 165, no. 4 (2005): 458–63.
24. Flier and Rhoads, "US Health Provider Workforce."

education and was estimated at $16 billion in 2015.[25] Analysis of the effects of this funding is difficult because of the numerous sources of funds flowing into various educational settings.[26] State support for tuition has been criticized for favoring affluent students.[27] In the 1960s, the federal government tried to increase the number of physicians by first providing construction grants and later capitation grants to medical schools. In the 1970s, the federal government began to subsidize graduate medical education to increase the number of primary care physicians and improve access to economically and geographically disadvantaged populations. Neither effort has achieved its goal. Although critics believe the program is underfunded, some commentators have concluded that more fundamental changes to the education of physicians are needed.[28]

In sum, subsidies to medical schools have been large, and it is clear that they have led to some increase in enrollments. But much of the increase has gone toward expenditures other than increasing class enrollments. They include expansion and improvement of medical school facilities, increases in faculty salaries and administrative costs, and scholarships to offset large tuition increases for existing students. In 1973, Pauly and Redisch modeled not-for-profit hospitals as "physician's cooperatives," in which the physicians are self-interested agents whose control over funding renders them as imperfect agents for patients and the public. This hypothesis likely explains some of the disconnect between subsidies and enrollment increases.[29] Again, subsidies have led to larger cohorts of medical students, but they have by no means overcome the artificial (politicized, we argue) constraints on the number of doctors.

Unlike the healthcare profession, no restrictions limit the number of people who enter pilot training. Pilot licenses (technically, pilot certification) are controlled at the federal level by the FAA. Eligibility for certification does not require a student to be trained at an FAA-approved flight school.[30] Any-

25. Congressional Research Service, *Federal Support for Graduate Medical Education: An Overview*, December 27, 2018.
26. Jessica Townsend, "Financing Medical Education," chap. 10 in *Medical Education and Societal Needs: A Planning Report for the Health Professions* (Washington, DC: National Academies Press, 1983).
27. Robert H. Lee, "Subsidizing the Affluent: The Case of Medical Education," *Journal of Policy Analysis and Management* 3, no. 2 (1984): 276–84.
28. John E. Maupin and Wayne J. Riley, "Commentary: Funding the Diversity Programs of the Title VII Health Professions Training Grants: An Urgent Need," *Academic Medicine* 83, no. 11 (2008): 999–1001; Roger A. Rosenblatt et al., "The Effect of Federal Grants on Medical Schools' Production of Primary Care Physicians," *American Journal of Public Health* 83, no. 3 (1993): 322–28.
29. Mark Pauly and Michael Redisch, "The Not-for-Profit Hospital as a Physicians' Cooperative," *American Economic Review* 63, no. 1 (1973): 87–99.
30. "Become a Pilot: Student Pilot's Certificate Requirements," Federal Aviation Administration, last modified November 16, 2020, https://www.faa.gov/pilots/become/student_cert/.

one who meets the transparent standards established by the FAA is eligible for certification. These standards include (a) a physical examination, (b) a written test assessing fundamental knowledge, (c) a period of supervised training, (d) a designated amount of experience (air-hours), and (e) a flight test with certified examiners demonstrating specific competencies. Having met these criteria, a person will receive a Private Pilot Certificate.

The number of training slots for pilots is not limited by legislation, regulation, or guild-like professional entities. Unlike medical schools, there are no limits on the number of flight schools, nor on the number of students each can admit. Rather, flight school enrollments are limited only by the demand for slots and the availability of instructors. Whereas medicine has experienced long-term shortages of medical professionals, aviation has not experienced long-term shortages of pilots. And we reiterate that these professionals hold lives in their hands as much as medical professionals do.

For commercial aviation, the competence of individual pilots is powerfully incentivized by oversight by shareholders and their agents, by the insurers who indemnify airlines against legal action, and by the strictures of tort law and the judicial system. To put things in perspective, the risk of a passenger dying in a crash on a given flight has dropped since the early 1970s from one in 1 million to one in 100 million—a 99 percent improvement.[31] And this period was marked by a great increase in competition among airlines. (Of course, these admirable safety statistics result from pilot competence and from improvements in aircraft and air system design.)

Federal support for pilot training is available for students who attend FAA-accredited flight schools, but it is quite meager compared with physician training. Congress appropriated $5 million for the Aviation Workforce Development Grant Program in 2020.[32] Many pilots get their training in the military, and the airlines pay to have their pilots remain currently trained. Students who train in non-FAA-accredited flight schools will face costs as high as $50,000 per year and will have to look for support through private scholarships.[33]

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31. Steven Johnson, *Future Perfect: The Case for Progress in a Networked Age*, Kindle (New York: Riverhead Books, 2012), location 160.
32. "Aviation Workforce Development Grants: Aircraft Pilots," Federal Aviation Administration, last modified April 5, 2021, https://www.faa.gov/about/office_org/headquarters_offices/ang/grants/awd/pilots/.
33. "Flight School Loans," College Scholarships.org, 2021, http://www.collegescholarships.org/loans/flight.htm.

Healthcare licensure restricts competition from competent non-MD providers with similar skills; professional pilots have no such limitation. Current regulations restrict the supply of healthcare services by limiting the number of graduates eligible for licensure from medical school. They also limit the ability of competent non-MD healthcare providers to satisfy the unmet needs resulting from the shortage of physicians. Physicians (medical doctors and osteopathic physicians) are entitled to practice medicine within a broad but vaguely defined *standard of care* for their professions.[34] (Dentists enjoy this privilege in their profession as well.) Their license is unrestricted; that is, an MD is legally capable of doing anything that is lawfully considered to be the normal practice of medicine. It is also exclusionary. No one else is allowed to practice medicine. Potential non-MD competitors may provide only specific skills and functions, known as their scope of practice. These carved-out limits are established by statute. Non-MDs may not perform outside those limits—even if they have been trained to do so and a public desire exists for their services.

Nurse practitioners, nurse anesthetists, midwives, pharmacists, optometrists, psychologists, and physical therapists most often work as part of a healthcare team alongside physicians. But at times, the skills they have acquired during their training and experience overlap with MDs. These skills are potential areas of competition. Yet non-MDs are assumed incompetent by law, even though the opposite might be the case. For example, it is presumed that newly trained licensed physicians can prescribe medications whether or not they have prescribed them before. However, experienced NPs or pharmacists who are very familiar with a drug may not be able to independently prescribe it unless their state specifically grants them prescriptive authority.

The scope of practice for non-MD healthcare providers varies from state to state. Certified advanced practice NPs in Arizona may practice independently and write prescriptions without consulting an MD. In California or Florida, the same NPs would have to work under a collaborative practice agreement under the nominal supervision of an MD for their entire career. In Delaware, supervision

34. This *standard of care* is a somewhat vague term. It is used in negligence lawsuits. Medical boards charged with oversight of physician practice regularly consider it when investigating complaints. Coauthor Murray Feldstein is a consultant for the Arizona Board of Medicine and is regularly asked to judge whether or not a licensee acted within the standard of care after a complaint is brought against a licensee. Here is one common definition, although others could be used: "The medical standard of care is typically defined as the level and type of care that a reasonably competent and skilled healthcare professional, with a similar background and in the same medical community, would have provided under the circumstances."

is required for the first 4,000 hours of practice.[35] The fact that scopes of practice vary so much from one jurisdiction to another illustrates how healthcare licensure is decided more on the basis of political considerations than on objective measures of professional competence. Legislation is required to increase a profession's scope of practice, and organized medicine and dentistry often oppose such legislation. Physicians may get their way in one state, whereas nurse practitioners get their way in another state. One powerful state politician can prevent an entire profession from being licensed by blocking a bill in a legislative subcommittee. The Mercatus Center's Healthcare Openness and Access Project offers data on state-by-state differences in such policies.[36]

The airline industry has no similar restrictions. Coveted positions working as an airline pilot can be filled by pilots who were initially trained in the military and flew combat jets, or by pilots who were initially trained on weekends at a local flight school. Both would have to log the number of air-hours and pass the same practical and written tests to obtain airline pilot certification before they would be considered legally eligible to fly for the airlines. No politician has the right to declare one more competent than another in the eyes of the law. The market forces of supply and demand will play a much greater role in determining their careers in aviation. There is more efficient use of human capital than in healthcare.

Opportunities for advanced healthcare training are linear, characterized as fixed-time/variable-learning, and require a medical diploma. Advanced training for pilots is stacked and modular, is characterized by variable-time/fixed-learning, and requires only previously certified competencies as a prerequisite. How many surgeons, internists, pediatricians, obstetricians, or family practitioners should be trained, and in what proportions? How long should it take to train them to do tasks they are expected to do in their particular practice? The answer to these questions depends more on the available positions in various accredited training programs than on market forces of supply and demand.

The number, size, and length of the programs are regulated by another private AMA affiliate, the Accreditation Council for Graduate Medical Education (see figure 1). Only MDs (and now osteopathic physicians) may apply for

35. "State Law Chart: Nurse Practitioner Prescriptive Authority," AMA, 2017, https://www.ama-assn.org/sites/ama-assn.org/files/corp/media-browser/specialty%20group/arc/ama-chart-np-prescriptive-authority.pdf.
36. Jared Rhoads, Darcy N. Bryan, and Robert Graboyes, "Healthcare Openness and Access Project 2020: Full Release" (Mercatus Research, Mercatus Center at George Mason University, Arlington, VA, December 2020).

these postgraduate programs, so the pool is fixed. The number is determined by the size of graduating medical school classes. The programs are from one to six years in length depending on the specialty. An MD is eligible for licensure in most states after one year of postgraduate training. American medical education at both the undergraduate and graduate levels implicitly assumes that all students will learn at the same rate—hence, the identical course lengths for all students. Christensen, Grossman, and Hwang refer to this model as "fixed-time/variable learning" to reflect the fact that all students complete the course at the same pace, with some understanding the material better than others.[37]

Lucey, Thibault, and ten Cate argue for variable-time/fixed-learning models of medical education to ensure that "every physician is capable of providing high-quality care."[38] As they put it (using "competency" in lieu of "learning"), "While the medical education community has embraced the notion of competencies as a guiding framework for educational institutions, the structure and conduct of formal educational programs remain more aligned with a time-based, competency-variable paradigm."[39] The authors outline the rationale behind this recommended shift to a competency-based, time-variable education system.

Powell and Carracio argue similarly for variable-time/fixed-learning pedagogic models, saying, "Competency-based medical education holds the promise of producing a better-trained workforce—and for many physicians, this training could be accomplished within a shorter time frame."[40]

Hirsh, Holmboe, and ten Cate argue, "With the advent of competency-based education, explicit milestones, and improved assessment regimens, overseers will increasingly evaluate students, trainees, and other learners on their ability rather than relying solely on time spent in an activity."[41]

The amount of time to complete the training is specified, regardless of the skills the trainees expect to use in their particular practices. For example, if MDs know they will settle in a smaller community, they may not need to spend additional years learning complex procedures that are done infrequently or should only be done at tertiary medical centers. But what if, after beginning a practice

37. Clayton M. Christensen, Jerome H. Grossman, and Jason Hwang, *The Innovator's Prescription: A Disruptive Solution for Health Care*, Kindle (New York: McGraw-Hill, 2009).
38. Catherine R. Lucey, George E. Thibault, and Olle ten Cate, "Competency-Based, Time-Variable Education in the Health Professions: Crossroads," *Academic Medicine* 93, no. 3 (2018): S1.
39. Lucey, Thibault, and ten Cate, "Crossroads," S1.
40. Deborah E. Powell and Carol Carraccio, "Toward Competency-Based Medical Education," *New England Journal of Medicine* 378, no. 1 (2018), 378: 5.
41. David A. Hirsh, Eric S. Holmboe, and Olle ten Cate, "Time to Trust: Longitudinal Integrated Clerkships and Entrustable Professional Activities," *Academic Medicine* 89, no. 2 (2014): 201.

in those small communities, the surgeons find not only that they have no need to do all the procedures they spent years learning, but that they are untrained to perform other simple, commonly performed procedures that are done by different specialists who are not available in the area? Unless those surgeons want to take another entire two- to four-year residency or fellowship program in another specialty to be able to safely perform the procedure, either patients will have to be referred to specialists in other communities or those specialists will have to be recruited to the surgeons' communities.

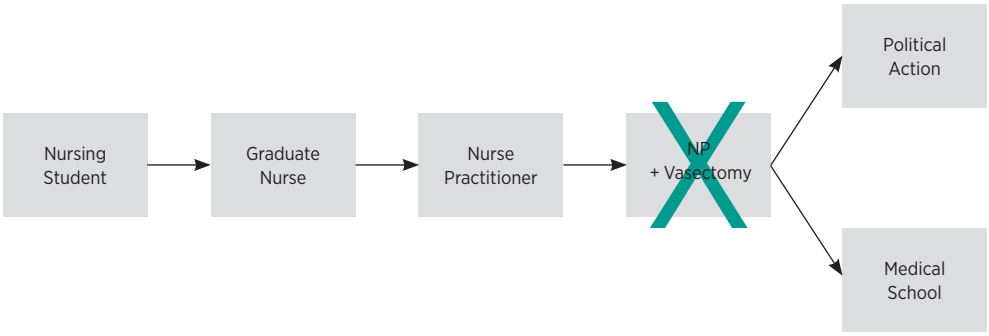
This same problem is made even more difficult for non-MD providers with arbitrary restrictions in their scope of practice. NPs in several states perform vasectomies, a safe and simple procedure for male sterilization.[42] Physicians from developed countries regularly instruct local mid-level practitioners in developing countries how to do the procedure in less than a week.[43] If NPs with the requisite knowledge, experience, and aptitude want to take the short amount of training required to achieve vasectomy competency in a state that currently excludes it from their scope of practice, they have one of two choices: (a) they can petition the state legislature to change their scope of practice, or (b) they can apply to medical school. NPs in Oregon recently chose the first approach, and after a multiyear contentious turf war, they finally were approved to do the procedure.[44]

It would be foolish for NPs to take five additional years out of their lives to go to medical school in order to be licensed for only this one procedure. Medical licensure is based on an all-or-nothing linear educational system leading to the diploma that determines eligibility to practice legally. The politicized healthcare licensing regime has a direct bearing on a misallocation of human capital in this country. The healthcare profession is organized into rigid professional silos that developed from medieval guilds. The linear nature of healthcare training and the difficulty of adapting to perceived public needs when it violates professional boundaries are diagrammed in figure 2.

Professional pilots have no institutions to prevent other pilots from obtaining the advanced training that enables competition. The Private Pilot Certificate discussed earlier permits pilots to fly under defined weather conditions that allow

42. We use vasectomy as an example only because coauthor Feldstein is very familiar with the procedure and has taught it to many students. Hundreds of other discrete tasks that might have an even greater market impact could be used as examples as well.
43. Michel Labrecque et al., "Strengthening Vasectomy Services in Rwanda: Introduction of Thermal Cautery with Fascial Interposition," *Contraception* 87, no. 3 (2013): 375–79.
44. Tara Bannow, "Oregon Nurse Practitioners Can Now Perform Vasectomies," the (Central Oregon) *Bulletin*, August 1, 2017.

FIGURE 2. HOW LINEAR HEALTHCARE TRAINING AND ARBITRARY POLITICIZED SCOPE-OF-PRACTICE LAWS PREVENT HEALTHCARE PRACTITIONERS FROM ADAPTING TO MARKET NEEDS



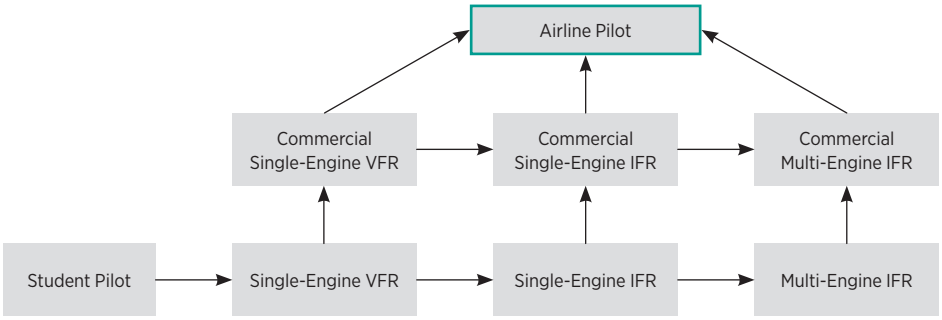
Note: Nurse practitioners may attend graduate nursing training, as well as advanced practice nurse training. They are certified family practice nurse practitioners and may also have received a doctorate in nursing. After these seven or eight years of training, the NPs decide that an easily learned discreet medical task such as a vasectomy could benefit their community. Depending on the NPs' experience, this procedure could be taught in a week. Figure 2 illustrates the situation in a state that forbids NPs from performing the procedure because of its arbitrary scope-of-practice laws. Two choices are now available: (a) convince the legislature to increase the scope of practice and incite an expensive and protracted turf war or (b) quit practice and spend the next five years obtaining a medical license in order to be legally entitled to perform the procedure.

Source: Murray Feldstein and Shirley V. Svorny, "Depoliticizing State Licensure by Competency-Based Certification" (presentation at Council on Licensure, Enforcement, and Regulation 2017 Annual Educational Conference, Denver, Colorado, September 14).

navigation using visual flight rules (VFR). They are also certified to fly a specified kind of aircraft, usually a single-engine fixed-winged plane for beginners. Many different optional training pathways enable pilots to acquire advanced skills, such as flying in foggy and cloudy conditions by instrument flight rules (IFR). Pilots must be subsequently certified to fly planes with different ratings, such as sea-planes, multi-engine aircraft, or jet engine aircraft. Commercial pilots wishing to fly smaller privately chartered aircraft must become proficient in the advanced equipment (avionics) required to fly into the controlled airspace of large airports. The pinnacle of the profession is the airline pilot flying jumbo jets with hundreds of passengers. At each of these steps is the requirement to log in additional supervised air-hours of experience in both simulators and the actual aircraft. Each certificate requires additional written and flight examinations.

Pilot certification is modular. One may choose to fly multi-engine aircraft under VFR and later train to fly by IFR, or vice versa. A beginner may take continuous training from the initial private pilot certificate to the final airline pilot certificate. Or a pilot could choose to break up the training over the years by stacking the IFR certificate, a commercial certificate, and hundreds of logged hours toward the additional skills and over 1,000 hours required for the final goal. Although a specific minimum number of air-hours are required for each step, the overall time frame to acquire that experience is not. In the end, it is

FIGURE 3. THE MODULAR AND STACKED SYSTEM OF CERTIFICATION FOR PROFESSIONAL PILOTS



Note: A student pilot finishes the requirements of flight school and becomes certified as a private pilot. Usually, this certification will be for a single-engine land airplane in defined clear weather conditions using VFR. The arrows do not signify a fixed order. One may progress horizontally in any order but will require stacked certification as prerequisites to progress vertically. An airline pilot will have to be instrument rated. The various ratings and variable types of different aircraft—such as helicopters, sports planes, seaplanes, jet engines, and various weight categories—are not shown. IFR = instrument flight rules; VFR = visual flight rules..

Source: Murray Feldstein and Shirley V. Svorny, "Depoliticizing State Licensure by Competency-Based Certification" (presentation at Council on Licensure, Enforcement, and Regulation 2017 Annual Educational Conference, Denver, Colorado, September 14).

the demonstrated competence that counts. The training is variable-time/fixed-learning. See figure 3.

Christensen, Grossman, and Hwang discuss how medical education could be made modular in their chapter titled "The Future of Medical Education."[45] They describe how the "Toyota methods" of training—variable-time/fixed-learning in lieu of fixed-time/variable-learning—can be applied to medical education. Outside America, modular teaching methods are already extant in medical education.[46]

Licensing a physician to legally practice assumes broad lifelong competence based primarily on a medical diploma, one postgraduate year of semi-independent supervised training, and a licensing exam taken during training. Pilot certification is based on a demonstration of specific competencies that are periodically reevaluated. Many people believe that a medical license is the most important factor protecting the public from incompetent physicians. It may be surprising, therefore, that states never test MDs for competence in their chosen specialty. Coauthor Murray Feldstein actively practiced urology in Arizona for

45. Christensen, Grossman, and Hwang, *Innovator's Prescription*.
46. Tanza Hitzblech et al., "The Modular Curriculum of Medicine at the Charité Berlin: A Project Report Based on Across-Semester Student Evaluation," *GMS Journal for Medical Education* 36, no. 5 (2019).

over 40 years. The state never required him to demonstrate knowledge or competence in the urological skills he actually used daily. In most states, doctors are granted an unrestricted license to practice medicine one year after graduation from an American or Canadian medical school. A few states require two years of postgraduate training.[47] The fact is, *physicians are licensed years before they are completely trained*. Moreover, the unrestricted license means that physicians are not legally required to perform only medical procedures that they have been trained to do. Technically, the medical license grants psychiatrists who have never been in an operating room the legal right to perform surgery. Psychiatrists would not do that, of course, but it is not the license that prevents them from doing it. Assessment of physician competency is more reliant on nongovernmental institutions and market-sensitive processes, such as specialty board certification, hospital privileges, malpractice actions, compensation panels, and branding.[48]

History reveals the reason for this anomalous granting of a medical license before the completion of training. When the AMA was working to convince each state to pass medical licensing laws a century ago, most doctors went into general practice after spending their first year after graduation from medical school in a supervised training program known as the internship. They were expected to set fractures, treat colds, deliver babies, and remove appendixes. (Of course, there was a great deal of what we would today call "specialty knowledge.") Now, for most doctors, the first year of postgraduate training has been subsumed into the first year of a postgraduate specialty training program known as the residency. Residencies may take anywhere from three to more than six years to complete. However, the eligibility for licensure has remained the same: one year (or in a few states, two years) of postgraduate training following graduation from medical school.

Originally, each state would administer to applicants for licensure its own written state licensing examination. But for more than a half century, the states have outsourced the examination to a private MD-controlled nonprofit organization, the National Board of Medical Examiners (NBME). Technically, this board awards candidates who successfully pass the United States Medical Licensing Examination (USMLE) the certification of Diplomate of the NBME. But to take the examination and be eligible for certification, the candidate must first attend

47. See the state breakdown at "State Specific Requirements for Initial Medical Licensure," Federation of State Medical Boards, accessed October 20, 2018, https://www.fsmb.org/step-3/state-licensure/.
48. Shirley V. Svorny, "Beyond Medical Licensure," *Regulation*, Spring 2015.

and then graduate from a medical school certified by the LCME and thereafter complete 12 months in a postgraduate program approved by the Accreditation Council for Graduate Medical Education. The USMLE is a series of examinations indicating general knowledge of basic science and clinical science.[49] It is cosponsored by both the NBME and another MD-dominated nonprofit organization, the Federation of State Medical Boards. These exams are taken during and shortly after medical school, even though the certification is lifelong and never has to be updated. Figure 1 summarizes the sequence and the private governing boards that are responsible for supervising it.

Renewing a medical license every year or two is now a simple online procedure that takes less than an hour. It involves paying a fee and answering a few questions about problems that might have occurred since the time of the last renewal. In Arizona, physicians attest that they have not been convicted of (or pleaded no contest to) a felony or the misdemeanor of moral turpitude. There are questions regarding whether physicians' clinical privileges were reduced or suspended by a hospital or other healthcare provider, or whether they have been disciplined by any other government agency. The physicians attest that they are physically and mentally fit and have not required treatment for substance abuse. The physicians also attest that they had taken a certain number of continuing medical education courses. No physical or mental assessment is required other than this attestation.

Requirements for specific pilot certifications and maintenance are detailed in the FAA regulations.[50] Pilots are certified for different classes of aircraft, depending on airplane weight and types of engines. Airline transport pilots meet the most strenuous requirements: ground courses and testing in aeronautical theory, meteorology, aerodynamics, and aircraft loading and balance. They must log 1,500 hours of flight time, with certain minimum amounts for cross-country, instrument, and night flying. Hourly requirements may differ, depending on where the pilot is trained. For example, airline pilots may train at a college with an aviation curriculum, in the military, or in a private flight school. Airline pilots

49. The details of the USMLE are complicated and can be reviewed at the USMLE website (https://www.usmle.org). The sequence of testing is as follows: The first test (step 1) is a one-day computerized test taken during medical school that assesses foundational knowledge. Step 2 is taken during medical school or shortly afterward and is composed of two subtests: step 2-CK is a one-day computerized examination for clinical knowledge; step 2-CS uses simulations of clinical scenarios with actors. Step 2-CS has been discontinued during the pandemic, and its future is uncertain at the time of this writing. Step 3 is a two-day written examination generally taken during or after the first 12 months of the first postgraduate year. "Announcements," USMLE, https://www.usmle.org/announcements/default.aspx?ContentId=67.

50. Federal Aviation Administration, Airline Transport Pilots, 14 C.F.R. §§61.151–170.

must remain "current" to maintain their certificate by taking check rides several times a year. They must perform three takeoffs and landings every 90 days. Maintenance of certification includes periodic time spent in flight simulators performing specified maneuvers. Regular physical examinations by FAA-certified physicians are mandated as well.

Compared with pilots, a much larger portion of physician revenues comes from government sources. Some might note that in present-day America, a substantial amount of physicians' revenue comes from government sources (e.g., Medicare, Medicaid), whereas most civilian pilots' revenue comes from private sources. We would note, however, that little such distinction existed between the issuing of the Flexner Report (1910) and the passage of Medicare (1964). In that period, most, though not all, physicians and civilian pilots obtained their revenues from private sources. And yet, the differences between physician licensure and education and pilot certification prevailed in that period as well. Perhaps someone would argue that the licensure/certification distinction and limited medical slots between 1910 and 1964 were not justified because of the preponderance of private payers for healthcare, but that now the distinction and the limited slots are reasonable because of the heavy presence of government in healthcare. We are unaware of anyone's having made this argument, and we are not persuaded. If this were the case, then parallel systems could exist—licensure and limited slots for those taking government revenues and certification plus unlimited slots for those taking only private revenues. But we see no such pattern.

Physicians generally have a far more intimate relationship with their patients than pilots have with their passengers. It is often noted that medical care involves direct interaction with people, whereas pilots largely interact with equipment. That is certainly a fair distinction to draw, and it is easy to see why this difference would suggest different ways of monitoring the two classes of professionals in the workplace. For example, unseen sexual abuse or exploitation of patients occurs regularly—as evidenced by cases involving physicians who serve sports teams. It is far more difficult to imagine the equivalent problem with respect to pilots. But, although these differences may suggest vastly different modes of professional monitoring, it is unclear why that would affect the optimal structure of medical education. Medical schools might well argue that they can properly supervise only a limited number of medical school students (who have personal contact with patients). But that would suggest an opportunity to expand the number of medical school faculty members to meet the rising cadre of medical

students. At any rate, this argument would not justify *prohibiting* private entities from establishing new schools or enlarging current ones to meet the needs of additional medical students. We can already see this dynamic in the medical schools in the Caribbean Basin and elsewhere that train American medical students outside the United States.

THE ILLOGICAL CONSEQUENCES OF POLITICIZED LICENSURE

We have seen that MDs exert de facto control over the private, nongovernmental institutions that specify the number of medical schools and postgraduate training programs in the country. The number and specialties of American MDs are dependent on the total number of medical school positions open for matriculation. This also determines the number of physicians who are eligible for a medical license, which confers a legal right to the unrestricted practice of performing any procedure or treatment considered to conform with a vaguely and broadly defined standard of care in the practice of medicine. We have also seen that this license is most often granted before physicians complete their training, and that the state never evaluates the actual skills that physicians perform daily. This license is—barring unacceptable behavior—issued for the length of an MD's career, with no need to demonstrate current medical competency on periodic renewal of the license.

Nothing in the preceding paragraph is germane to Flier and Rhoads's concern that today's healthcare workforce is "insufficiently responsive to the current needs and future opportunities" of a changing healthcare environment.[51] MDs should be free to organize their own educational and training institutions in a manner that is most suitable for their own practices. In a competitive market, we would expect alternative healthcare professionals to step in and ameliorate whatever deficiencies result from MD manpower production. *It is only because MDs have gained control over the political process of licensure that competition is prevented from providing relief.* Economists as disparate as Uwe Reinhardt and Milton Friedman agreed that the AMA and its affiliates act as a cartel, exerting monopoly power over the legal practice of medicine.[52]

Physicians have always justified their right to stifle competition by claiming that their longer training programs justify their exclusive practice. Little

51. Flier and Rhoads, "US Health Provider Workforce," 2.
52. Uwe E. Reinhardt, "The Dubious Case for Professional Licensing," *Economix*, October 11, 2013; Milton Friedman and Rose Friedman, "Who Protects the Worker," chap. 8 in *Free to Choose* (New York: Harcourt Brace Jovanovich, 1980).

factual data support this contention. Consider this: Not only does it take more time to train American MDs than to train NPs, PAs, and pharmacists, but also it takes two years longer than the training of MDs in other developed countries.[53] After high school, it will take eight years of education for an American to graduate medical school, whereas it will take only six years in England, Germany, or Italy. NPs follow the European medical school model.[54]

The increased length of training leading to MD licensure nine years after graduation from high school is accounted for by the additional college years required for entry into most medical schools. The difference is because basic physics, math, biology, and chemistry required for medical school admission are taught in a four-year college premedical program. Courses extraneous to medical practice therefore account for some of the extra training time that MDs use to justify their right to exclusive practice. European MDs take the basic sciences in their medical schools. Therefore, although similarly trained European MDs graduate medical school two years earlier after high school, their medical school is two years longer. (It is worth noting that Europe and America have divergent views on the value of undergraduate education. We only mention that in passing and leave that discussion for another forum.)

American MDs also take additional years of training in their postgraduate programs, but mainly after they are licensed. The explosion in both medical knowledge and therapeutics has been a driving force for specialization. A century ago, newly graduated MDs served as interns for one year before being granted a license, entering medical practice nine years after high school. Today, few postgraduate residency programs are less than three years, and many are five years or longer. Moreover, an increasing number of physicians take postresidency fellowships to subspecialize. It is not unusual nowadays for entry into practice to be deferred until 15 or 16 years after high school.[55] However, the license does not take these additional years into account, and as mentioned earlier, the state never tests for specialty skills.

The one area of American medical education that has not changed in the past half century is the length of time it takes to graduate medical school, which, with few exceptions, remains at four years. This time is roughly divided into

53. *An Overview of Education and Training Requirements for Global Healthcare Professionals*, Global Knowledge Exchange Network, September 2009.
54. For example, see "Nursing, BSN Curriculum, Class of 2019 and 2020," University of Pittsburgh School of Nursing.
55. The breakdown for coauthor Feldstein's specialty (urology) is as follows: four years of college, four years of medical school, four to five years of urology residency, and one to three years of surgical subspecialty training (fellowship).

two years of preclinical studies and two years of clinical rotations into various medical disciplines: internal medicine, surgery, pediatrics, obstetrics, psychiatry, and the various subspecialties. And since the medical school diploma is the major qualification that enables both postgraduate training and the exclusive, unrestricted license to practice medicine, one might expect this process to be extremely comprehensive with intensive exposure to all disciplines and increasing responsibility for independent patient care.

Quite the opposite is true. The knowledge explosion has made it impossible for any medical student to master anything more than a rudimentary understanding of each of the medical disciplines. Moreover, medical school is less regimented than it was several decades ago. There are more electives and opportunities to get combined degrees, such as MD-PhDs or MD-MPHs for those interested in academics, research, public health, or healthcare administration. Medical students are increasingly pressured to decide on a specialty as early as their second or third year. They may take elective rotations in that specialty, and they are often given free time to explore independent research or prepare for licensing exams. But since medical school is only four years and fixed-time/variable-learning, they must forgo training in everything else.

There is less time during the four years of medical school for the kind of supervised practical training in the common problems most generalists would have encountered a century ago when the post-Flexnerian licensing regulations were being enacted. Today, most medical students have already decided on their specialty by their fourth (and last) year of medical school. They chose their electives accordingly. It is not unusual for those who intend to go into a nonsurgical specialty, such as psychiatry, never to have sutured a laceration, seen an appendectomy, delivered a baby, or set a fracture.

Coauthor Murray Feldstein taught a generation of medical students and residents during his career. Some graduating medical students may never have performed a female pelvic exam or a male prostate exam.[56] And yet, although their state does not legally bar them from diagnosing or treating diseases dependent on those skills, it might prohibit experienced advanced practice NPs or midwives from independently doing so unless they are contractually "supervised" by a physician who may be less experienced than they are. Illogically, these restrictions vary from state to state. These unnecessary regulations were in full view when, early in the pandemic, state after state waived absurd residential and scope-of-practice regulations in order to marshal all the available medical talent

56. Coauthor Feldstein's anecdotal personal experience.

needed during the emergency. The challenge is to not reimpose these arbitrary restrictions once the pandemic is over.

HOW HEALTHCARE LICENSURE MIGHT BE SAFELY DEPOLITICIZED

Physicians justify their restraint of competition by their longer length of training. A pilot who attempted to prevent other pilots from competing because they acquired the same skills in less time would be laughed out of the skies.

The depoliticized nature of pilot certification can serve as one model to guide how to safely reform healthcare training while ensuring market competition. We summarize the essentials of that regime as follows:

1. There are no de facto or de jure restrictions on the number of candidates who may apply for training. (There may be reasonable prerequisites, such as visual acuity for student pilots.)
2. Courses are taken to teach the fundamentals of the discipline.
3. Students are examined to ensure that those fundamentals have been mastered.
4. Students undergo a period of supervised practical training.
5. Students take practical examinations to demonstrate transparent and objective competencies before being certified for independent practice.
6. After successful training, the government permits practice to the full extent of the certified competence.
7. Advanced professional training is available to whoever is qualified by prior certification.

Each state would have to amend its own medical practice act to eliminate the exclusivity that allows only MDs the right to practice medicine. In Arizona, the state could amend the section of its statute (Arizona Revised Statutes 32-1421) that defines who is exempt from the act and thus is permitted to practice medicine. Currently, among Arizona's many exemptions are religious healers, federal healthcare physicians, and Native American shamans. Nurse practitioners, optometrists, and pharmacists, among other legally recognized healthcare professionals, could be exempted as well. In a second step, the state could amend the professional practice acts applying to the newly exempted healthcare providers to permit their professional boards to define the various

scopes of practice for those certified as competent, as Alaska recently did for its state board of optometry.[57]

The result would be that a number of potentially competitive private professional certification boards would each define its own diplomate's competency rather than a single state-run medical board that rubber-stamps the unrestricted and exclusionary competency defined by the MDs' own private certification board, the NBME. This change would allow for the evolution of a parallel system of healthcare to offer innovative training programs leading to state-certified, and legal, practice opportunities. Schlomach has written model legislation for fraud-protected private certification that augments traditional occupational licensure.[58] It is applicable to healthcare licensure as well.[59] Svorny and Cannon advocate this reform to prevent the shortages in qualified healthcare providers experienced in the COVID-19 pandemic.[60]

If states chose to depoliticize their healthcare licensing regime, they could approve accredited, private, professional certification organizations to define the permissible legal scope of practice for each of their practitioners.[61] State governments already maintain approved registries of healthcare certification organizations. Accreditation is an emerging science in its own right. The criteria for assessing competence are increasingly becoming evidence-based and outcome-based. The states can rely on respected oversight organizations—such as the U.S. Department of Education and the Council for Higher Education Accreditation, as well as the Institute for Credentialing Excellence and its National Commission for Certifying Agencies—to accredit the accreditors and maintain a registry of

57. State of Alaska, House Bill 103, An Act Relating to the Practice of Optometry, 2017; "Governor Bill Walker Signs HB 103 into Law," Alaska Optometric Association, 2017, http://akoa.org/news_manager.php?page=14408; Bryce St. Clair, "Alaska, the Last Frontier: A Leader in Scope of Practice," Optometrystudents.com, August 23, 2018.
58. Byron Schlomach, "Six Reforms to Occupational Licensing Laws to Increase Jobs and Lower Costs," *Policy Report*, no. 247, July 10, 2012.
59. Byron Schlomach, Christina Sandefur, and Murray Feldstein, "A Win-Win for Consumers and Professionals Alike: An Alternative to Professional Licensing," Goldwater Institute, November 18, 2018.
60. Shirley V. Svorny and Michael F. Cannon, "Health Care Workforce Reform: COVID-19 Spotlights Need for Changes to Clinician Licensing" (Policy Analysis no. 899, Cato Institute, Washington, DC, August 4, 2020).
61. Murray Feldstein, "Why Should Politicians Be Deciding Who Can Practice Medicine—and Who Can't?" *In Defense of Liberty*, June 18, 2020; Murray Feldstein, "Depoliticizing Medical Licensure by Competency-Based Certification: Vasectomy as an Example" (PowerPoint presentation, Council on Licensure, Enforcement, and Regulation 2017 Annual Educational Conference, Denver, CO, September 14).

certifying organizations whose graduates can be expected to provide competent service within their scope of practice.[62]

Each profession would have its own organizational structure for its practitioners' training and certification. Nurse practitioners, for example, can rely on several.[63] Training programs that are accredited by these organizations would adhere to the standards they set for their members.[64] Successful graduates would then be eligible to take their profession's national certifying exam. The components of each examination are publicly available, comparable, and transparent.[65] Using standards set by national certifying boards in each state would eliminate the arbitrary differences in scopes of practice between states and yet preserve state sovereignty over occupational licensure.

States would retain the option to accept or reject the proposals offered in this paper. States would maintain the right to decide which certifying agencies they place on their registry. States would still have the power to decide on the legality or illegality of contentious issues, such as elective abortion. Each state would have to decide on issues of reciprocity, whereby it accepts the credentials of licensees moving from other states. Justice Louis Brandeis referred to federalism as constituting "laboratories of democracy," and under our proposals, that would remain the case.

What we suggest is neither revolutionary nor unprecedented. States already accept one private certifying organization's scope of practice as the basis for MD licensure. The states decided almost a century ago to accept the "unlimited scope of practice" of diplomates of a private certifying board, the NBME. The NBME and the Federation of State Medical Boards, both private MD-dominated organizations, own the USMLE. Only graduates of medical schools accredited by another private organization, the Liaison Committee of Medical Education, are eligible to take that examination and thus enjoy their exclusive unlimited license. Our proposals merely extend the state's recognition of certified competence to the graduates of other accredited healthcare professions.

We also recognize some of the inherent problems associated with our proposal. Political interference in formulating a registry is still possible. If the

62. "NCCA Accreditation," accessed June 14, 2018, http://www.credentialingexcellence.org/Accreditation/Earn-Accreditation/NCCA.
63. "Nurse Practitioner (NP) Certification," American Association of Nurse Practitioners, 2021; "The Essentials of Doctoral Education for Advanced Nursing Practice," American Association of Colleges of Nursing, October 2006.
64. For example, the Arizona Board of Nursing has approved the Doctor of Nursing program at the University of Arizona. "Doctor of Philosophy (PhD)," 2021, https://www.nursing.arizona.edu/phd.
65. "ANCC vs. AANP: Which FNP Exam Should I Take," *BoardVitals* (blog), January 5, 2021.

criteria for accepting a certification board to the state registry are transparent and based on its being accredited by one of the aforementioned oversight organizations, there is more assurance that it is using best practices for assessing competence. Most importantly, states should be willing to accept newly organized private boards that meet those criteria. Competition among the private boards themselves will impede regulatory capture and is in the best interests of a board's practitioners and the patients they serve.

We are not arguing for revolutionary changes in the way MDs currently are granted unrestricted licenses. Nor are we taking any position regarding the way the medical profession accredits its medical schools or postgraduate programs. We are hopeful that depoliticization of licensure would encourage evolutionary changes based on how the profession assesses its place in the new regulatory milieu. Having a more competitive system of professional boards could also assuage the controversy now raging over Maintenance of Certification (MOC) requirements promulgated by the American Board of Medical Specialties (ABMS). The ABMS is a private organization comprising 24 different specialty certification boards.[66] It is run by MDs and is closely associated with the other powerful private institutions of American medicine we have discussed.[67] Large numbers of physicians complain that the boards are taking advantage of their monopoly position to charge excessive fees, and noncompliance could result in loss of hospital privileges and possibly an MD's medical license.[68] The critics argue that there has been no convincing evidence that MOC improves clinical outcomes. The tests are irrelevant and time-consuming, do not test a physician's clinical skills, and detract from patient care.[69] A more competitive system of third-party professional boards could provide physicians who oppose the current regimen the alternatives they desire.

Another possibility would be to internationalize American institutions, such as the American Association of Medical Colleges (AAMC), whose mission is to evaluate the quality of American medical schools. The AAMC accredits schools only in the United States and Canada; there is no international body that accredits

66. American Board of Medical Specialties website, https://www.abms.org.
67. "ABMS Member Boards," American Board of Medical Specialties, accessed September 3, 2020, https://www.abms.org/about-abms/member-boards/. Associate members of the ABMS include the AMA, American Association of Medical Colleges, Accreditation Council for Graduate Medical Education, American Hospital Association, National Board of Medical Examiners, and Federation of State Medical Boards, among others. "ABMS Associate Members," https://www.abms.org/about-abms/associate-members/.
68. "AAPS Comments on ABMS Vision Initiative Draft Report," January 15, 2019.
69. Paul S. Teirstein, "Boarded to Death—Why Maintenance of Certification Is Bad for Doctors and Patients," *New England Journal of Medicine* 372, no. 2 (2015): 106–8.

medical schools worldwide. Students graduating from medical schools outside those two countries therefore face higher hurdles (e.g., the USMLE) to obtain a US license. An international arm of the AAMC could, for example, accredit medical schools outside North America, and state licensing authorities could waive those higher hurdles for students graduating from US-accredited international medical schools. The arrangement would parallel the US and overseas hospital accreditations of the Joint Commission and Joint Commission International. In a recent interview, Dr. Devi Shetty, CEO of India's Narayana Health, envisioned a situation in which the West opens its doors more widely to Indian-trained physicians (and other healthcare providers), with India responding by doubling its medical schools from 500 to 1,000.[70] In such an environment, US accreditation of Indian medical schools might benefit both countries by easing the task of importing doctors into the United States and offering new and existing Indian medical schools a strong incentive to aspire to the quality levels of US hospitals.

Such accreditation could conceivably be enhanced or instituted entirely by insurers partially indemnifying international medical graduates against medical liability judgments. This action would in some ways mirror the system of international indemnification of shipping vessels—a protection that has helped ensure high-quality shipping since the mid-1700s.[71] In effect, the system of qualifying IMGs for US licensure would be an ongoing process throughout medical training, rather than a process that begins only after completion of medical school. Ten Cate, Snell, and Carraccio describe a system of competency-based testing of "entrustable professional activities" that might be applicable to such an international certification regime.[72]

HOW DEPOLITICIZING LICENSURE MIGHT BE EXPECTED TO CHANGE THE HEALTHCARE WORKFORCE

The present system of licensure resists innovation. Thierer discusses the phenomenon of permissionless innovation, when disruptive technologies circumvent traditional regulatory systems.[73] Arguably, the emotional gravity of health-

70. Robert Graboyes, "Fortress and Frontier: The Narayana System and Innovations in Healthcare," *Discourse*, June 4, 2021.
71. International Association of Classification Societies, "Classification Societies—What, Why, and How," October 2020, 12.
72. Olle ten Cate, Linda Snell, and Carol Carraccio, "Medical Competence: The Interplay between Individual Ability and the Health Care Environment," *Medical Teacher* 32, no. 8 (2010): 669–75.
73. Adam Thierer, *Evasive Entrepreneurs and the Future of Governance: How Innovation Improves Economies and Governments* (Washington, DC: Cato Institute, 2020).

care makes medicine a more difficult target for technological civil disobedience. Yet the exigencies of the pandemic led to the widespread waiving of traditional healthcare regulations, either by state governments or by citizens taking matters into their own hands.[74] We believe that analogous technological disruptors can also exist in healthcare—telemedicine and artificial intelligence being two prime possibilities.[75] Depoliticized licensure would likely be more conducive to disruptive innovations.

It is impossible to predict exactly how much of a difference our suggestions would make in the short run. The effects would be market-driven and would depend on both the public's demand and the reaction of the various professions to the changes in regulation. Great technological changes usually come from unknown geniuses in unexpected places—and shock the rest of us. A lot also depends on how the various states react to innovation, and that will depend on the politics in each of them.

The long-run effects of our proposal are more predictable and involve the education and training of the healthcare workforce. There is some consensus that training programs are too long.[76] Efforts have been made to reduce training times.[77] However, politicized licensure incentivizes entrenched healthcare professions to lobby for longer programs, effectively raising barriers to entry in their fields.[78] Every healthcare profession has discreet skill sets that can be learned safely in a short time, but they are only taught to a relatively small number of trainees who first must complete the entire training programs. As a result, these skills are restricted in supply and partitioned into professional silos. Svorny and Cannon call this "wrong-skilling," and it leads to higher costs without a commensurate benefit. The competition brought about by the system we envision would incentivize training programs to "right-skill"—that is, strike a balance between too little and too much education and training.[79] Our illustration of NPs who wish to increase their scope of practice to perform a vasectomy is an example of a discreet skill set that can be learned in a short time. If healthcare licensure

74. Adam Thierer, "Evasive Entrepreneurialism and Technological Civil Disobedience in the Midst of a Pandemic," *Cato at Liberty*, April 27, 2020.
75. Graboyes and Feldstein, "What Uber Can Teach Healthcare."
76. Leslie Fall, "Disrupting Medical Education," *Pacific-Standard*, June 14, 2017; Ezekiel J. Emanuel and Victor R. Fuchs, "Shortening Medical Training by 30%," *Journal of the American Medical Association* 307, no. 11 (2012): 1143–44.
77. Joan Cangiarella et al., "Three-Year MD Programs: Perspectives from the Consortium of Accelerated Medical Pathway Programs (CAMPP)," *Academic Medicine* 92, no. 4 (2017): 483–90.
78. Shirley V. Svorny, "Medical Licensing: An Obstacle to Affordable, Quality Care" (Policy Analysis no. 621, Cato Institute, Washington, DC, September 17, 2008).
79. Svorny and Cannon, "Health Care Workforce Reform."

were depoliticized and a large enough market for additional vasectomy providers existed, it is likely that NP training programs could include it in their curricula and anticipate a benefit to their diplomates. No longer would an NP be forced to choose between lobbying legislators to change laws or going back to medical school and starting over again.

Were states to adopt aviation-like certification methods for healthcare professionals, we imagine it likely that different proposals for training curricula would be suggested and tried. Newer curricular models might be shorter and more modular—something analogous to pilot training modules.[80] As with pilots, there would most likely be a core curriculum: fundamental knowledge comprising basic and preclinical sciences, along with a basic practical assessment of a person's health status. Following this introductory curriculum, a menu of modular and stacked programs offering advanced training would likely become available.

We do not pretend to know which curricular model or models would emerge. That is the unpredictable nature of innovation. But here is one of many possibilities:

After high school, any person desiring to enter the healthcare field could enter an 18- to 24-month accredited program offering instruction in the kind of math, chemistry, physics, and biology that might be needed by any healthcare worker—be they emergency medical technicians (EMTs), doctors, nurses, pharmacists, physician assistants, or physical therapists. Such programs could be offered at universities, community colleges, or private institutions. Classroom portions could be taken online. Practical skills could be taught at affiliated local hospitals or clinics. Importantly, nontraditional educational institutions, such as the military, could also be resources for training. The National Board of Surgical Technology and Surgical Assisting already accepts military on-the-job training when it awards the title of Certified Operating Room Technician. A graduate who successfully completes the program would be certified as a basic healthcare practitioner, much as an entry-level pilot is awarded a Private Pilot Certificate for a single-engine aircraft under visual flight rules. Such certificates could be useful for becoming an EMT, nursing assistant, medical assistant, pharmacy assistant, or professional physical trainer.[81]

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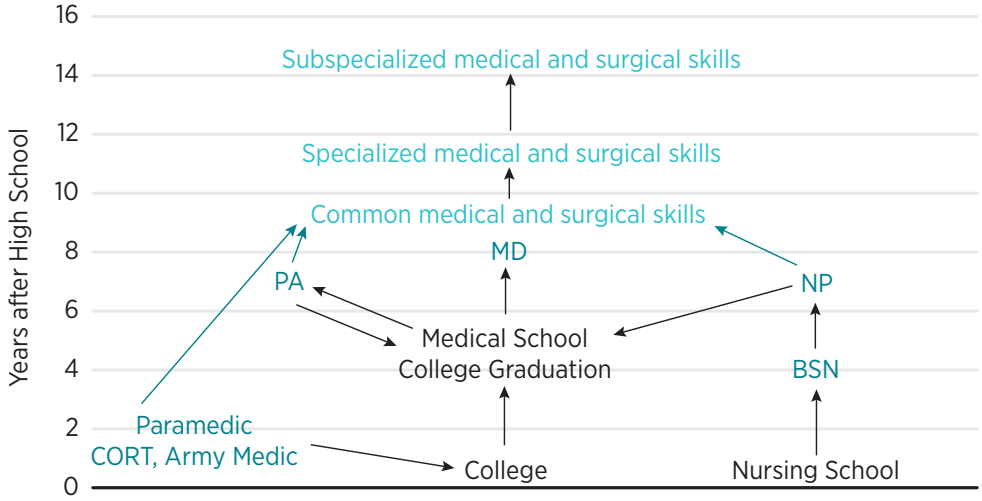
80. Murray Feldstein and Shirley V. Svorny, "Depoliticizing State Licensure by Competency-Based Certification" (presentation at Council on Licensure, Enforcement, and Regulation 2017 Annual Educational Conference, Denver, CO, September 14). Slides available upon request.

81. The terms *physical trainer* and *personal trainer* are sometimes used interchangeably, but physical trainers have accreditation boards and frequently become physical therapy assistants or work with sports teams.

FIGURE 4. TRAINING PATHWAYS UNDER POLITICIZED LICENSURE



Note: Current legally permissible pathways to professional licensure are diagrammed with black arrows. The dark blue arrows demonstrate pathways that could lead to beneficial competency acquisitions that are now either legally impermissible or possible only in some states. They are politically dependent. The number of years following high school graduation required for current certifications are depicted vertically from the base. If states amended their healthcare regulations to permit healthcare workers to practice at the top of their license, the dark blue arrows would be diagrammed in black. The pathways to gradations of increased competencies in light blue text at the top of the diagram would become available to more healthcare professionals. PAs and NPs would have the option of increasing their competency without having to attend medical school. The "choke point" of the number of medical school admissions would be ameliorated. Other professionals that would potentially be affected are pharmacists, psychologists, optometrists, physical therapists, and international medical graduates, among others. Training would most likely become more modular, stackable, and accomplished in fewer years from the time of high school graduation. BSN = associate nurse (Bachelor of Nursing Science); CORT = certified operating room technician; MD = allopathic physician; NP = nurse practitioner (either a Master of Nursing Science or a Doctor of Nursing Science); PA = physician assistant.

Using this basic certification, one could then opt for additional advanced or specialized training. The exact pathway would be determined by future healthcare needs and innovations. If there were competitive advantages, medical, nursing, and pharmacy schools could choose to moderate their admission qualifications and curricula to take such basic certification into account. Graduates of those schools could be awarded an intermediate healthcare certificate qualifying them for even more specialized training.

Shorter programs of focused skill sets could provide "residency" or specialty training programs to any applicants who have earned intermediate healthcare certification regardless of what title—MD, RN, NP, PA, or other—is behind their name. Instead of a diploma, certified competence would become the requirement for acquiring additional skills and then legally employing them in practice. A nurse could qualify to learn how to perform a vasectomy without having either to start a three-year lobbying effort or to apply to medical school, as diagrammed in figure 4. Future healthcare workers should be able to tailor their practice to the actual needs of the community in which they choose to live.

Training programs, in turn, will also have to adapt to the needs of trainees, and by extension, of the market rather than vice versa.

In our present-day system, significant concern exists that non-MDs lack a core curriculum that teaches a holistic approach to the complicated interaction between patient and caregiver. Modern educational methods, technology, and testing regimens deconstruct this process. The regard for the "whole patient" is not unique to MDs. If anything, recent studies show that NPs get equivalent or even higher grades for quality care than MDs.[82] Actors playing the role of patients are used to assess clinical competence in the USMLE (until the pandemic put a stop to student–subject interaction). The use of surgical simulation centers is becoming more common. Virtual reality and artificial intelligence allow surgical teams to operate and encounter problems with software rather than living patients. The team then practices the cooperative measures necessary to rapidly correct the problem. Technology already impels healthcare training and testing toward the pilot trajectory.

States would likely require provisions for settling malpractice claims against certified non-MDs. Perhaps the certification agencies would be required to indemnify victims of malpractice wrongfully injured by one of the agency's certified practitioners. Lloyd's of London pioneered this model in the 1700s by certifying ship safety and indemnified those using shippers so certified.[83] In a sense, the government of New Zealand does this via a no-fault insurance arrangement covering all providers and all residents.[84]

The states will still need to weed out and sanction the small minority of unethical or incompetent practitioners of any discipline. This function would be enhanced in a less politicized system of licensure. For example, the Arizona Medical Board regularly reviews complaints against licensed physicians.[85] The review process is overly lengthy and opaque. At times, malfeasance is obvious: the physician was working under the influence of drugs or deceitfully altered the medical records to cover up mistakes. Those infractions are easy to define and punish. But more often, the problems are complex and devolve into a "he

82. Sue Horrocks, Elizabeth Anderson, and Chris Salisbury, "Systematic Review of Whether Nurse Practitioners Working in Primary Care Can Provide Equivalent Care to Doctors," *British Medical Journal* 324 (2002): 818–23.
83. This arrangement is described in Richard Williams, Robert Graboyes, and Adam Thierer, "US Medical Devices: Choices and Consequences" (Mercatus Research, Mercatus Center at George Mason University, Arlington, VA, October 2015).
84. Marie Bismark and Ron Paterson, "No-Fault Compensation in New Zealand: Harmonizing Injury Compensation, Provider Accountability, and Patient Safety," *Health Affairs* 25, no. 1 (2006): 278–83.
85. Coauthor Feldstein serves as an outside medical consultant for the Arizona Board of Medicine.

said, she said" kind of argument. Were the patient's complications caused by incompetence, bad luck, or the poor health of the patient? Did the physician purposely mislead a patient into undergoing surgery that failed to achieve its intended results, or did the patient have unrealistic expectations? Many times, a reviewer has no objective indicators by which to judge other than the vaguely defined "standard of care," or clinical guidelines that change from year to year and are partially based on incompletely proven opinions of a panel of experts. It may take a medical board a year or more to decide to sanction a provider, and it is done in meetings behind closed doors.

By contrast, stripping a provider of specific certifications on the basis of the demonstration of failure to meet specific standards of competence will never be easy or perfect, but it would be a more objective and transparent process. This process is akin to how hospital credentialing committees specify or remove a practitioner's hospital privileges. It is the system by which pilots are disciplined, because the criteria used by the enforcement agency to review problems are spelled out for all to see in the legal code, and the disciplinary proceedings are publicly available.[86]

CONCLUSION

Our current politicized system of healthcare licensure was adopted a century ago, the result of years of lobbying by a private organization, the American Medical Association and its affiliated institutions, on behalf of MDs. An MD is a diploma awarded to a graduate of an AMA-approved program. The government's granting the exclusive right to earn a living by practicing medicine on the basis of that diploma is similar to a nobleman, the church, or a university's granting an exclusive right to learn or practice an occupation to a medieval guild.[87] The competence is assumed from the diploma, not from proven performance. Twenty-first-century healthcare is hobbled by a medieval mentality that creates professional silos. Our healthcare system is unable to maximally use its vast potential of human talents because of politically erected barriers.

86. "Legal Enforcement Actions," Federal Aviation Administration, last modified September 1, 2020, https://www.faa.gov/about/office_org/headquarters_offices/agc/practice_areas/enforcement/enforcement_actions/; Federal Aviation Administration rules are cited at https://fsims.faa.gov/wdocs/8900.1/v05%20airman%20cert/chapter%2007/05_007_001rev1.htm.
87. Claudio Violato, "A Brief History of the Regulation of Medical Practice: Hammurabi to the National Board of Medical Examiners," *Wake Forest Journal of Science and Medicine* 2 (2016): 122–29.

Removing exclusivity from physician licensure begins the process of tearing down those medieval barriers. In its place, we propose a more modern model, similar to the certification of airline pilots: (a) a model characterized by modular training and progressively stacked competencies leading to the safe acquisition of more advanced skill sets; (b) one that will have evolved at a time when the power of market competition was understood and harnessed to take advantage of technological advances; (c) one that is more capable of meeting the changing needs of consumers; and (d) one that makes competence a more important consideration than political concerns. The relaxation of antiquated licensing regulations in response to the shortage of skilled manpower revealed by the COVID-19 pandemic makes this an opportune time to consider such a system.

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