

The Complexities of Physician Supply and Demand: Projections From 2021 to 2036

Summary Report

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EXECUTIVE SUMMARY

Introduction

Assessing the capacity of the nation's future physician workforce to meet expected demand provides critical information to the public and the private sectors. Since 2015, the AAMC (Association of American Medical Colleges) has commissioned regular reports of national physician workforce projections prepared by independent experts. These reports include multiple scenarios to help evaluate the likely impact of important trends on the physician workforce and its capacity to meet the nation's complex and varied health care needs.

Key Findings

- Physician demand is projected to continue to grow faster than supply under the most likely scenarios, leading to a total projected shortage of between 13,500 and 86,000 physicians by 2036.
- If communities historically underserved by our health care system had fewer access barriers, the nation would have needed approximately 117,100 to 202,800 more physicians as of 2021 to achieve comparable access for all. This is approximately three to six times the magnitude of current shortfall estimates.
- Looking at supply in comparison to demand within physician categories, by 2036, we project:
 - A shortage of between 20,200 and 40,400 primary care physicians.
 - A shortage of most non-primary care specialties, including:
 - For Surgical Specialties, a shortage of between 10,100 and 19,900 physicians.
 - For Medical Specialties, a shortage of 5,500 to a surplus of 3,700 physicians (if surpluses arise in specialties such as critical care/pulmonology and endocrinology).
 - For Other Specialties, a shortage of 19,500 to a surplus of 4,300 physicians (if surpluses in emergency medicine and other specialties, like physical medicine and rehabilitation, materialize).
- The shortages projected in this report are smaller than in the last report published in 2021. The difference is due to a new set of scenarios based on hypothetical future growth in the number of medical residency positions nationwide. The new scenarios project the impact on physician supply if investments in graduate medical education (GME) continue to grow. **In the absence of such funding increases, the projected shortfalls would be much more severe.** Specifically, without support beyond current levels, GME growth will not continue, and future shortages will be much worse than what is presented in this report - closely resembling those presented in the 2021 report, which projected a shortfall of up to 124,000 physicians by 2034.
- From published studies of specialty-specific shortfalls (physiatry, neurology, rheumatology, vascular surgery, and hospitalists), the increase in physician demand attributed to COVID-19, and the number of primary care physicians and psychiatrists required to remove current Health Professional Shortage Area designations, we estimate a starting-year shortfall of about 37,100 FTEs. This number, which represents the starting point for this year's projections, is likely conservative because no current shortfall estimates exist for most specialties.
- The estimated starting-year shortage of 20,800 primary care physicians includes the number the Health Resources and Services Administration (HRSA) estimates is required to remove the primary-care-shortage designation in currently designated shortage areas plus our estimate of COVID-19-induced increased demand. Thus, under certain scenarios (e.g., later retirement, increased support for GME), the shortage of primary care physicians is projected to be about the same in 2036 as in 2021;

while under other scenarios (e.g., earlier retirement, growth of managed care), the primary care physician shortage is projected to be almost twice in 2036 what it was in 2021.

- Population growth and aging continue to be the primary drivers of increasing demand for physicians. From 2021 to 2036, the U.S. population is projected to grow by 8.4%. The population aged 65 and older is projected to grow by 34.1%, heralding high growth in demand for physician specialties that predominantly care for older Americans.
- A large portion of the physician workforce is nearing the traditional retirement age of 65. Physicians aged 65 or older were 17% of the active workforce in 2021, and those between age 55 and 64 made up another 25% of the active workforce. Therefore, it is very likely that more than a third of currently active physicians will retire within the next decade.
- While there are many unknowns about the long-term implications of the COVID-19 pandemic for physician supply and demand, COVID-19 has become an endemic condition that will persist as a factor requiring workforce resources to treat and manage. We estimate that COVID-19 becoming endemic has increased future demand for physicians by about 1%.

Modeling Method: Changes in Underlying Assumptions

- Graduate medical education (GME) is the supervised hands-on training after medical school that all physicians must complete to be licensed and practice independently. The length of this training varies but generally lasts at least three to five years for initial specialty training; subspecialty training may last up to 11 years after graduation from medical school. This report substantially revises how future GME capacity is modeled. Unlike prior reports, this year's report includes multiple scenarios that assume 1% growth in GME (as opposed to no growth). Projections of future physician supply are higher because of this change.
- This report adopts lower projected U.S. population estimates than in the previous report, modeling that the U.S. population will reach 359.7 million in 2036 (and 356.4 million in 2034), whereas the previous report projected that the U.S. population would reach 363.0 million in 2034. This adjustment accounts for various factors, including declining birth rates, reduced net immigration trends, changing mortality patterns, and excess deaths attributed to the COVID-19 pandemic. Projections of future demand are lower because of this change in population growth assumptions.

BACKGROUND

The title of this report, “The Complexities of Physician Supply and Demand: Projections From 2021 to 2036,” reflects the data challenges and uncertainties of projecting future workforce supply and demand. As evidenced by the COVID-19 pandemic, unforeseen events can create substantial disruptions to the health care system with potential long-term implications for physician supply and demand. The pandemic has raised awareness of disparities in health and access to health care services¹, contributed to a rising physical and emotional toll on physicians and other health workers,^{2–5} and exposed vulnerabilities in the health care system that led to some health workers being furloughed and some practices closing. At the same time, other health workers were in high demand to care for surging pandemic-induced health care needs.^{6,7}

Other trends and factors contribute to the complexities of physician workforce modeling. The supply of advanced practice registered nurses (APRNs) and physician associates (PAs) continues to grow rapidly, along with an improved understanding of their value in delivering care and helping improve access to care for underserved populations.^{8–11} The health workforce continues to age. There was growing concern about provider burnout even before the pandemic.^{12–16} At the same time, the U.S. population is growing, aging, and becoming more racially and ethnically diverse.

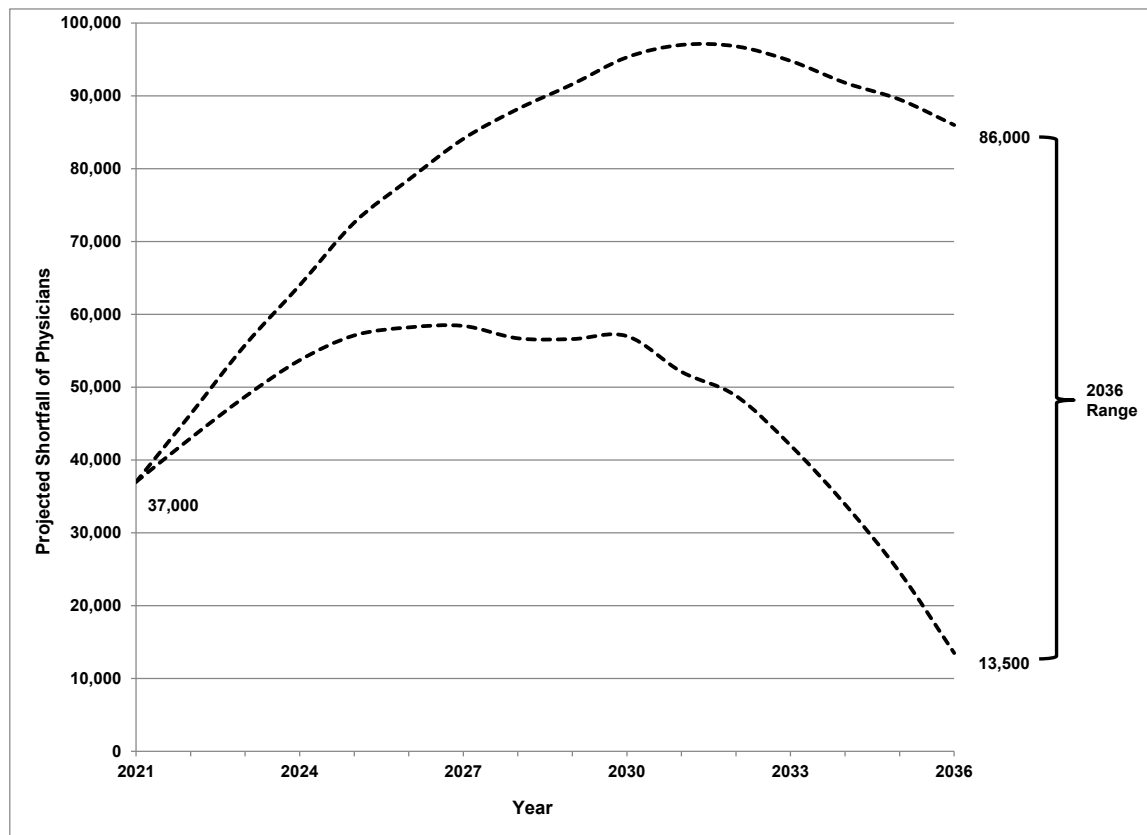
This study models a 15-year time span, 2021 to 2036, given the lead time required to adjust training capacity and produce new physicians. Key trends likely to affect the supply of and demand for physician services were identified and modeled under multiple supply and demand scenarios. Projections for individual specialties were aggregated into five broad categories for reporting, consistent with specialty groupings designated by the American Medical Association (AMA): Primary Care, Medical Specialties, Surgical Specialties, and Other Specialties — with Primary-Care-Trained Hospitalists reported as a fifth category to avoid confounding the Primary Care projections.^a

The Status Quo scenarios for demand and supply extrapolate current care use and care delivery patterns to future populations and current labor force participation patterns for physicians. Alternative scenarios model different assumptions about ongoing and future trends in care delivery. The alternative supply and demand scenarios form the basis of the projection ranges for supply and demand. While in this report we discuss the implications of COVID-19 on physician demand, the demand projections through 2036 assume that patients eventually return to pre-pandemic levels of care use— albeit with a slightly smaller future U.S. population due to excess deaths, lower births, and lower immigration levels associated with the pandemic. Future levels of care also model COVID-19 becoming endemic and physician demand increasing to provide care to patients experiencing COVID-19 and long COVID symptoms.

UPDATED PROJECTIONS

Total Physician Supply and Demand

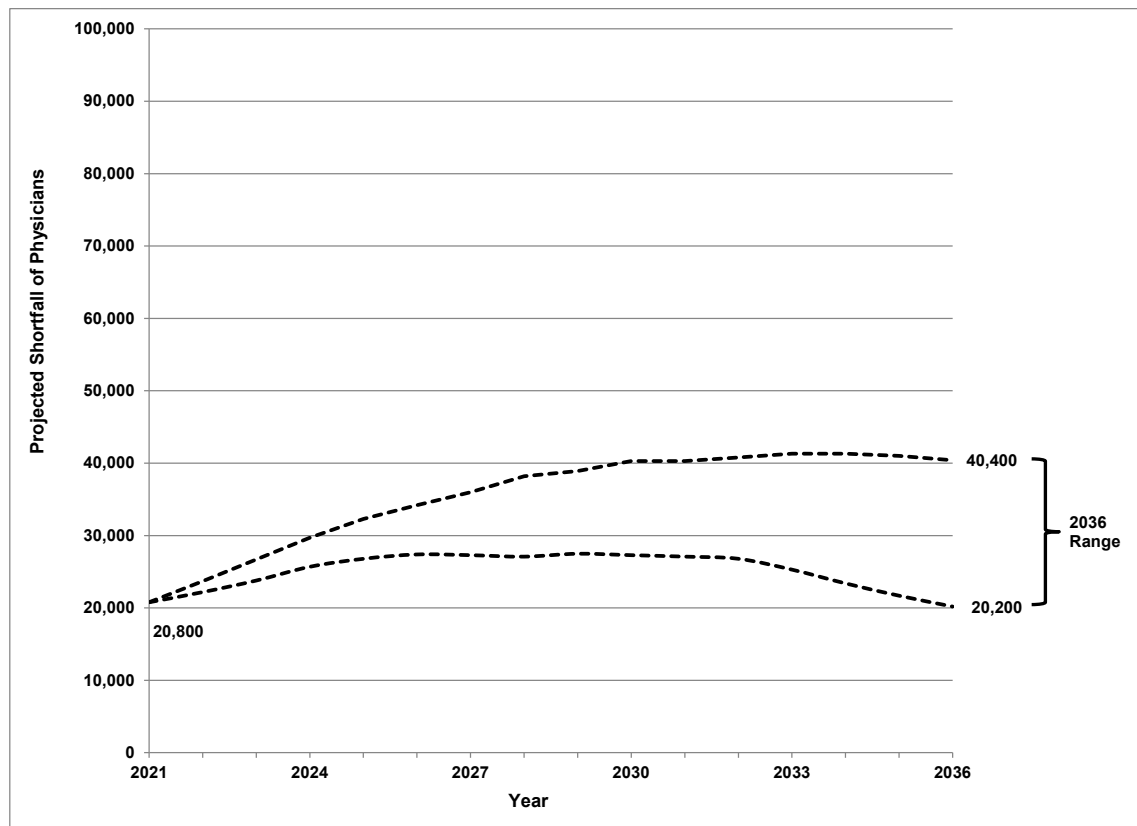
Exhibit 1: Total Projected Physician Shortfall Range, 2021-2036



Comparing each supply to each demand scenario and looking at the 25th-to-75th percentile of supply adequacy for total physicians shows a projected shortage of between 13,500 and 86,000 physicians by 2036 (Exhibit 1).

Primary Care Physician Supply and Demand

Exhibit 2: Projected Primary Care Physician Shortfall Range, 2021-2036



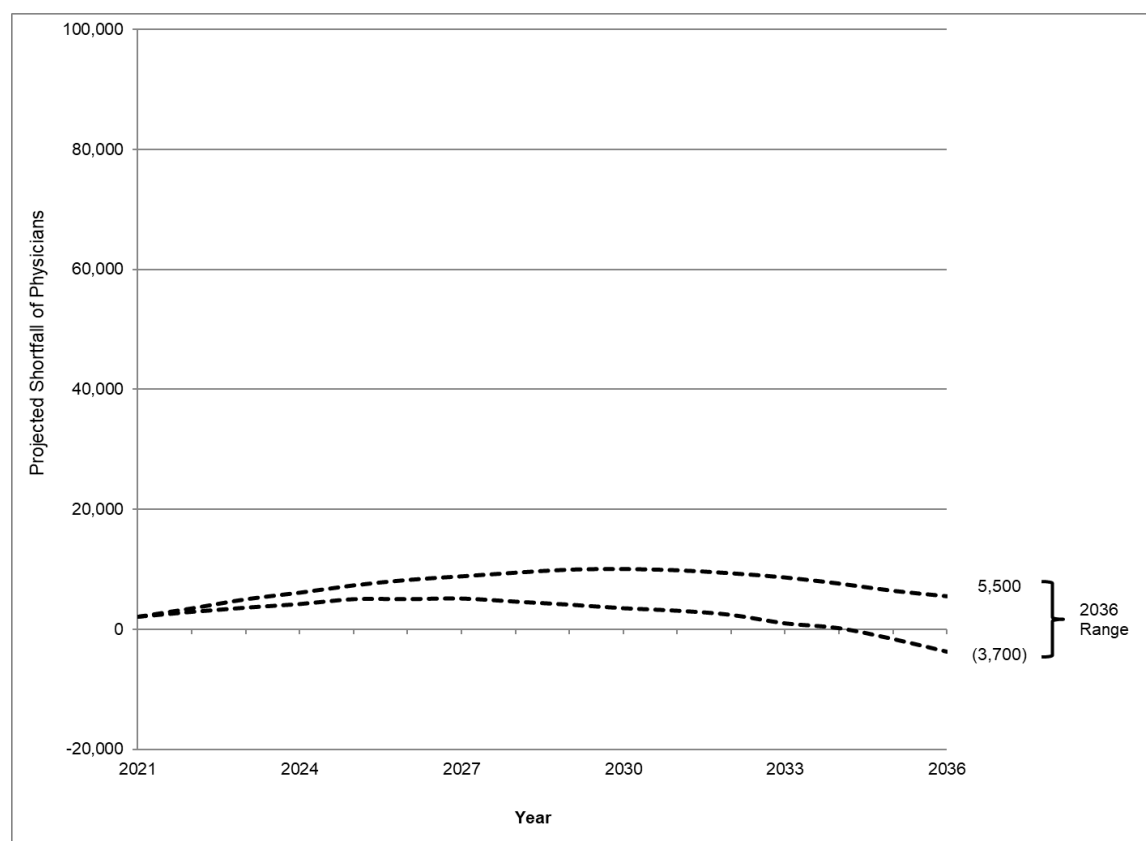
Comparison of projected supply and demand for Primary Care physicians predicts a shortage of between 20,200 and 40,400 physicians by 2036 (Exhibit 2). The estimated starting-year shortage of 20,800 primary care physicians includes 15,184 Primary Care physicians in 2021 that HRSA estimates are required to remove the primary-care-shortage designation in currently designated shortage areas (up from 13,758 physicians in 2019) plus our estimate that COVID-19 has increased demand for primary care providers by about 5,600 primary care physicians.¹⁷ Thus, under certain scenarios (e.g., later retirement, increased support for GME), the shortage of primary care physicians is projected to be about the same in 2036 as in 2021, while under other scenarios (e.g., earlier retirement, growth of managed care), the primary care physician shortage is projected to be almost twice in 2036 what it was in 2021.

Non-Primary Care Physician Supply and Demand

Under the scenarios modeled, we project a shortage of most non-primary care specialties, individually and in aggregate, with overall projections ranging from a shortfall of up to 46,700 physicians to a potential aggregate surplus of 8,300 physicians by 2036, driven by an excess supply of a limited number of specialties. Most of the non-primary care specialties are projected to be in shortages by 2036, but surpluses are projected for a few (e.g., emergency medicine and critical care/pulmonology) have resulted in an overall range that is in surplus under select scenario combinations by 2036. Non-primary care specialties are grouped into four categories: Medical Specialties, Surgical Specialties, Primary-Care-Trained Hospitalists, and Other Specialties.

Medical Specialties

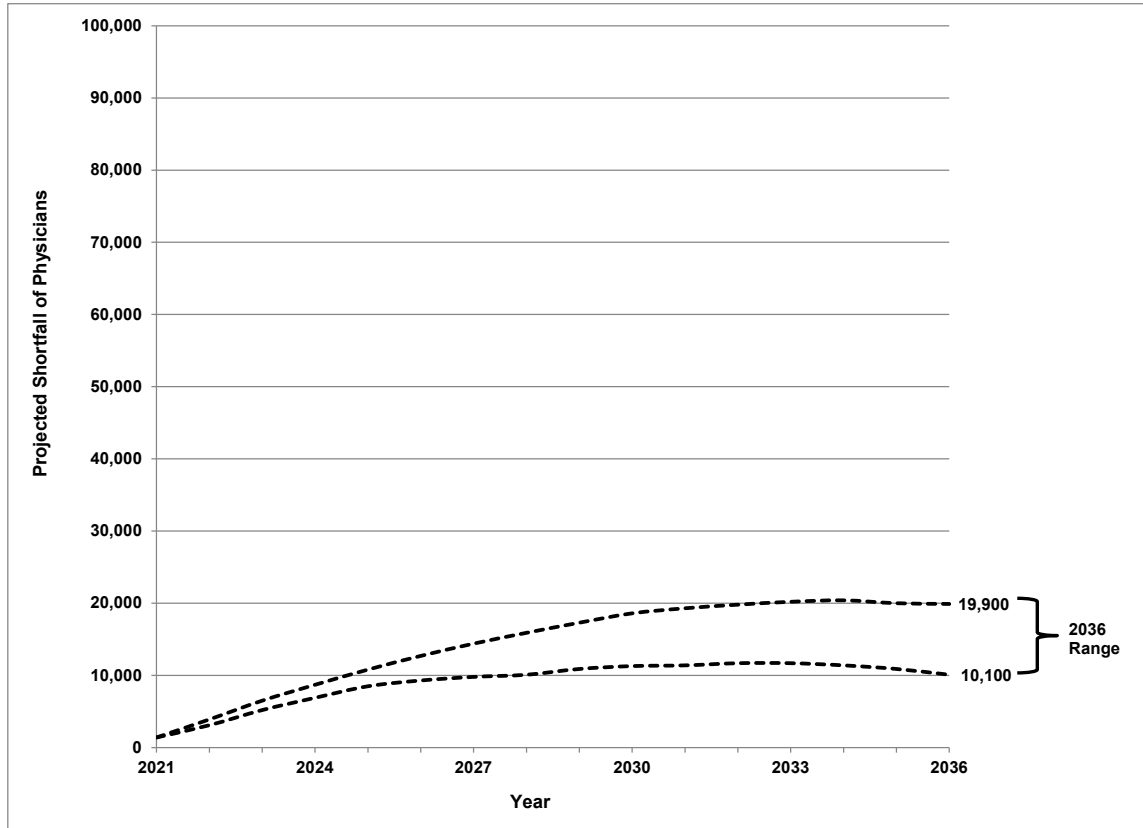
Exhibit 3: Projected Medical Specialist Physician Shortfall Range, 2021-2036



Under the scenarios modeled, this update projects a gap ranging from an aggregate shortfall of 5,500 physicians to a potential surplus of 3,700 physicians by 2036, driven by an excess of a limited number of specialties (Exhibit 3).

Surgical Specialties

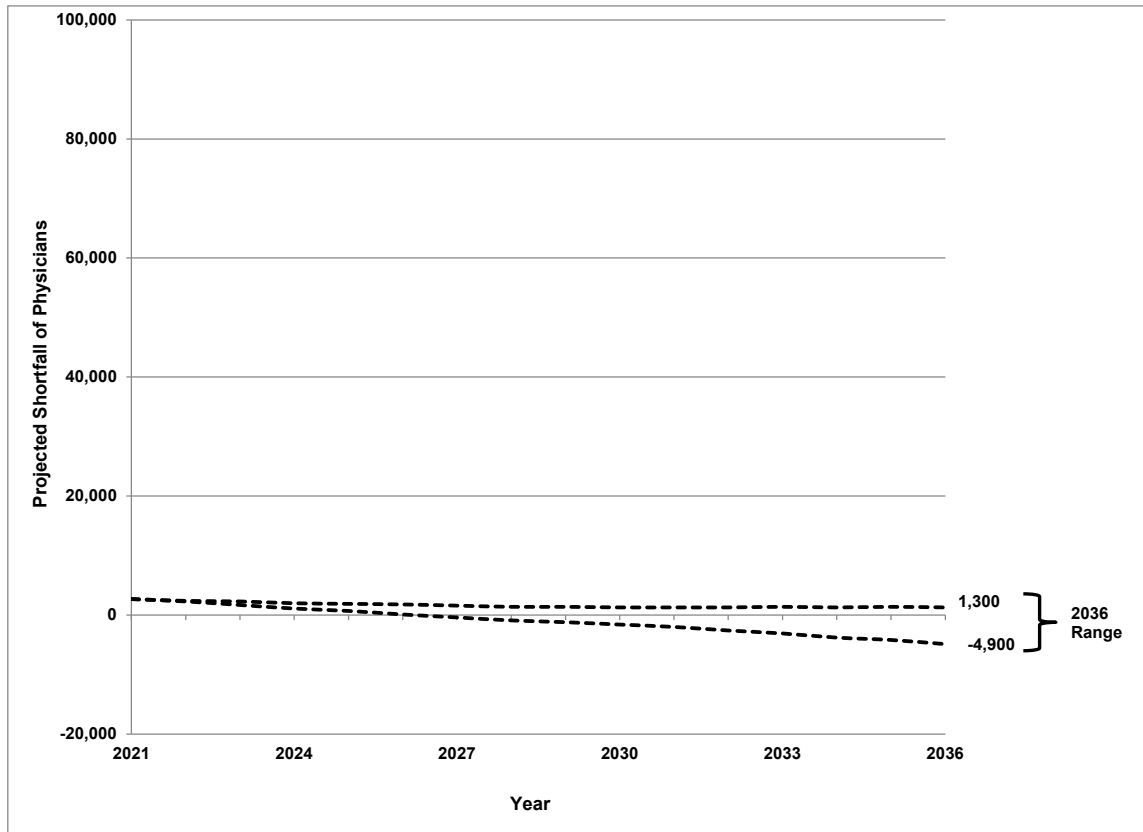
Exhibit 4: Projected Surgeon Shortfall Range, 2021-2036



This update projects a shortage of between 10,100 and 19,900 surgeons by 2036 (Exhibit 4).

Primary-Care-Trained Hospitalists

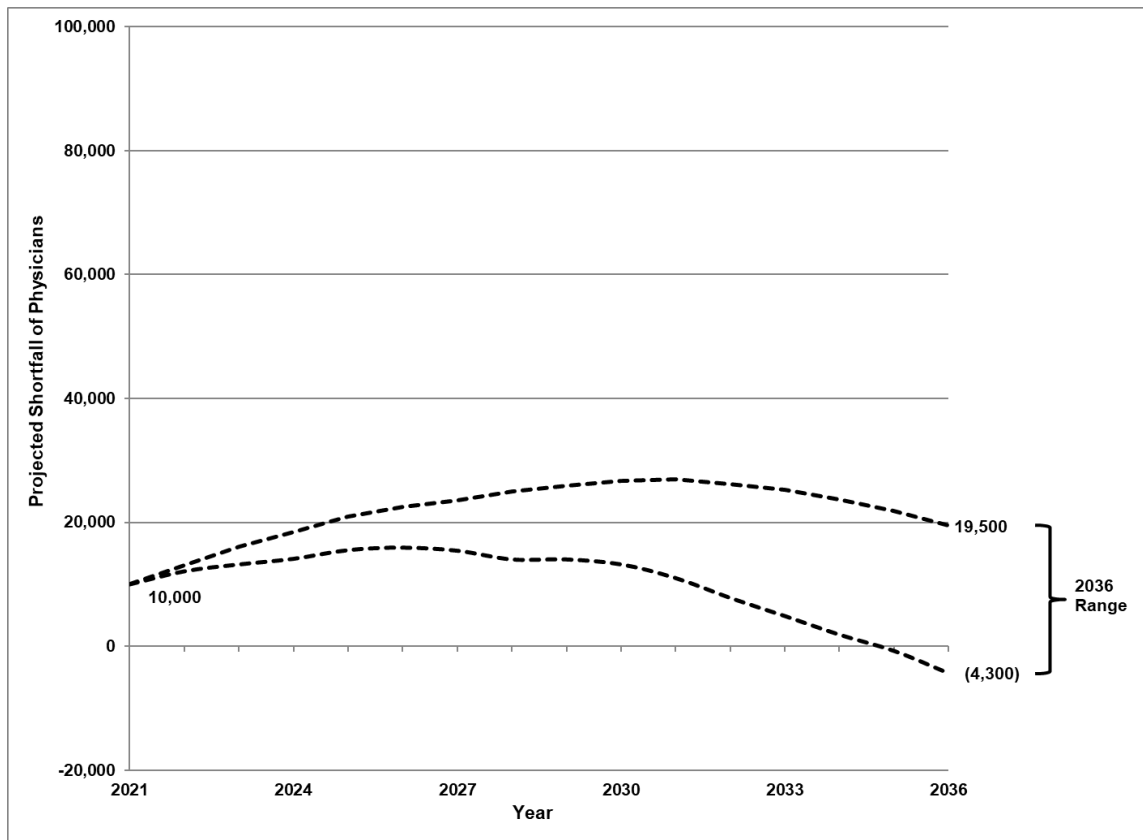
Exhibit 5: Projected Primary-Care-Trained Hospitalists Shortfall Range, 2021-2036



Primary-Care-Trained Hospitalists are analyzed separately from the Primary Care category. Supply is projected to grow by about the same rate as demand for primary-care-trained hospitalists, with supply adequacy projected to be between a shortage of 1,300 physicians and up to a surplus of 4,900 primary-care-trained hospitalists by 2036 (Exhibit 5).

Other Specialties

Exhibit 6: Projected Other Specialist Physician Shortfall Range, 2021-2036



For the Other Specialties category, the projected gap is between an aggregate shortfall of 19,500 physicians and a potential surplus of 4,300 physicians by 2036, driven by an excess of limited number of specialties (Exhibit 6).

PROVIDERS REQUIRED IF U.S. ACHIEVED EQUITY IN HEALTH CARE UTILIZATION

The Health Care Utilization Equity (HCUE) scenarios modeled for this report quantify the implications for physician demand if currently underserved populations had similar care use patterns as populations facing fewer barriers to care — controlling for demographics, lifestyle choices, and disease prevalence.

This analysis is **not included in the ranges** presented above that summarize projected gaps between supply and demand across physician specialty categories. Rather, it is intended as an additional point of consideration when gauging workforce adequacy and to stimulate discussion of how best to address health care utilization inequity.

We modeled two hypothetical scenarios to estimate the anticipated increase in the use of health care services if underserved populations had use patterns similar to a population not perceived as underserved:

1. Scenario 1 assumes people without medical insurance and people living outside suburban^b metropolitan areas had care use patterns similar to their insured peers living in suburban areas. For example, an uninsured male age 50 with diabetes living in a rural area was modeled as having the utilization patterns of an insured male age 50 with diabetes living in a suburban metropolitan area. Under these assumptions, the United States would need 79,900 additional FTE physicians, and when considering the starting-year shortfall, the estimated total physician shortage in 2021 is 117,100 physicians (Exhibit 7). More APRNs and PAs would also be required to meet the additional demand for services.
2. Scenario 2 models the additional physicians required under a hypothetical scenario in which everyone utilized care as if they had equivalent utilization patterns to non-Hispanic White, insured populations residing in suburban metropolitan areas. For example, an uninsured Black male age 50 with diabetes living in a rural area was modeled as having the utilization rate of an insured non-Hispanic White male age 50 with diabetes living in a suburban metropolitan area. Under these assumptions, we estimated an additional 202,800 FTE physicians would be needed (Exhibit 8).

These two modeled equity-based scenarios are not intended to describe what future demand for physicians is likely to be, but rather to highlight the large disparities in use of physician services between people with and without insurance, among people residing in counties across different levels of rurality, and by race and ethnicity.

Exhibit 7: Health Care Utilization Equity Scenario 1, 2021

Specialty Group	Current Supply	Physicians			Additional Providers Required	
		Requirements Under Equity Scenario	Current Gap	% Gap	Advanced Practice Nurses	Physician Associates
Total	854,000	971,100	117,100	14%	27,500	11,900
Primary Care	234,300	278,000	43,700	19%	7,800	1,600
Non-Primary Care	619,700	693,100	73,400	12%	19,700	10,300
Medical Specialties	151,000	169,300	18,300	12%	7,500	1,500
Surgical Specialties	156,500	173,700	17,200	11%	1,000	5,100
Other Specialties	272,300	303,800	31,500	12%	6,400	3,200
Hospitalists*	39,900	46,300	6,400	16%	4,800	500

*Includes only hospitalists trained in primary care; hospitalists in non-primary care specialties are included with their individual specialty.

Exhibit 8: Health Care Utilization Equity Scenario 2, 2021

Specialty Group	Current Supply	Physicians			Additional Providers Required	
		Requirements Under Equity Scenario	Current Gap	% Gap	Advanced Practice Nurses	Physician Associates
Total	854,000	1,056,800	202,800	24%	52,500	24,800
Primary Care	234,300	293,600	59,300	25%	13,100	3,500
Non-Primary Care	619,700	763,200	143,500	23%	39,400	21,300
Medical Specialties	151,000	176,500	25,500	17%	10,800	2,200
Surgical Specialties	156,500	193,100	36,600	23%	2,300	10,900
Other Specialties	272,300	345,100	72,800	27%	18,600	7,400
Hospitalist*	39,900	48,500	8,600	22%	7,700	800

*Includes only hospitalists trained in primary care; hospitalists in non-primary care specialties are included with their individual specialty.

COVID-19 PHYSICIAN WORKFORCE IMPLICATIONS

The many impacts of the pandemic on the population, the health care system, and social systems and priorities are profound and long-term. For this report, we focus on four implications for the physician workforce: (1) impact on the population, (2) acute care implications as COVID-19 shifts from pandemic to endemic, (3) long-COVID implications for demand, and (4) exacerbating physician burnout.

COVID-19 Impact on the U.S. Population

Of the 1,136,000 COVID-19-related deaths the Centers for Disease Control and Prevention (CDC) reported through June 24, 2023, COVID-19 is listed as the underlying cause in 87% of cases and as a contributing cause in 13% of cases.²⁴ Many of these premature deaths were for an older population with chronic health issues — and thus a population that used physician services heavily.

The U.S. Census Bureau's Net International Migration data showed a downward trend in immigration to the United States before the COVID-19 pandemic²⁵, but the pandemic led to sharp drops in immigration.²⁶

Acute COVID-19 Implications as COVID-19 Shifts From Pandemic to Endemic

As COVID-19 shifts from pandemic to endemic, its presence becomes more predictable.²⁷ Based on estimates from recent report by McKinsey & Company that analyzed the potential long-term implications of COVID-19 on the US health care system, we estimate a 2.2% increase in demand for primary care visits in each future year. We estimate a 3,476 FTE increase in demand for primary care physicians (as well as an increase in demand for NPs and PAs in primary care). We also estimate a 1.5% increase in demand for hospital services, or approximately 591 FTE hospitalists, 224 FTE critical care physicians, and 691 FTE physicians across other specialties (e.g., cardiology, endocrinology, infectious diseases, pulmonology, nephrology) in 2021. In total, COVID-19 hospitalizations increased physician demand by about 1,507 FTEs in 2021, with similar levels projected in future years.

Long-COVID Implications for Demand

A recent study by McKinsey & Company estimates that 3% of COVID-19 cases will result in long COVID lasting three to 12 months, or about 6.6 million visits annually. If these visits were proportionately distributed across physicians in family medicine, internal medicine, geriatric medicine, neurology, pulmonology, cardiology, infectious diseases, nephrology, and endocrinology, this would result in a 1% increase in annual visits to each of these specialties. In 2021, this 1% increase in additional demand associated with long COVID amounts to 2,747 FTE physicians (as well as an increase in demand for NPs and PAs working in these specialties).

Combining the increased demand for physicians to provide ambulatory care to patients with acute COVID-19, office visits for long COVID, and COVID-19-related hospitalizations, we estimate that COVID-19 becoming endemic will increase demand for physicians by about 1% in future years (or 7,730 FTEs in 2021).

COVID-19 Exacerbating Physician Burnout

Physician burnout was already high and well-documented before COVID. However, the increase in stresses from higher risks of illness, larger attended losses of life, and seeming indifference of the public to provider safety and well-being have exacerbated the problem.²⁻⁵ Preliminary data suggest that the increase in burnout that occurred during the 2019-2022 period may be associated with physicians retiring earlier than previously anticipated.

CONCLUSIONS

Once again, this year's projections show a shortage of physicians in the next 10-15 years, but this shortfall is smaller than previously reported. The primary driver of this change is the addition of four new scenarios, each of which asks, "What if GME capacity continues to grow?" These new scenarios model the impact of funding increases from health systems, states, and the federal government to sustain growth in the nation's GME capacity (such as the critical investments in additional medical residency positions in the Consolidated Appropriations Act of 2021 and Consolidated Appropriations Act of 2023). **In the absence of such funding increases, the projected shortfalls would be much more severe.** This year's projections thus show that if continued investment in training new physicians is realized, then the projected gap or shortage of physicians needed to meet the health care demands of our country will be mitigated relative to earlier projections. But if this continued investment fails to materialize, then projected shortfalls will be larger than presented here — closely resembling those presented in the 2021 report, which projected a shortfall of up to 124,000 physicians by 2034.

Of note, the modeled Health Care Utilization Equity scenarios presented in this report demonstrate that even while the shortages are being ameliorated by a combination of slower population growth and increased investments, and rapidly increasing numbers of PAs and APRNs, inequity in health care does continue to worsen. The numbers of physicians and other health care professionals needed to begin to address these inequities are, in fact, greater than the shortages projected if we simply continue on our current course, i.e., maintain the status quo.

The COVID-19 pandemic illustrated how quickly conditions within the health care system and national priorities and programs related to health care delivery can change. While there are still many unknowns about the long-term implications of COVID-19 for the physician workforce, COVID-19 has become an endemic factor that will persist as a condition requiring workforce resources to treat. We estimate that COVID-19 becoming endemic has increased future demand for physicians by about 1%.

Although there continue to be highly polarized debates around the organization, regulation, finance, and technological evolution of health care delivery, the essential drivers of physician supply and demand are changing much less dramatically. We continue to project physician demand will grow faster than supply under most of the scenarios modeled, leading to a projected shortfall of between 13,500 physicians and 86,000 physicians in 2036, including a shortage of between 20,200 and 40,400 primary care physicians.

NOTES

- a. **Primary Care** consists of family medicine, general internal medicine, general pediatrics, and geriatric medicine. **Medical Specialties** consist of allergy and immunology, cardiology, critical care, dermatology, endocrinology, gastroenterology, hematology and oncology, infectious diseases, neonatal and perinatal medicine, nephrology, pulmonology, and rheumatology. **Surgical Specialties** consist of general surgery, colorectal surgery, neurological surgery, obstetrics and gynecology, ophthalmology, orthopedic surgery, otolaryngology, plastic surgery, thoracic surgery, urology, vascular surgery, and other surgical specialties. The **Other Specialties** category consists of anesthesiology, emergency medicine, neurology, pathology, physical medicine and rehabilitation, psychiatry, radiology, and all other specialties. **Hospitalists** trained in adult primary care are modeled as their own category and have been moved out of the Primary Care category. Hospitalists trained in non-primary care specialties are modeled within their trained specialty.
- b. This geographic designation is for large fringe metropolitan counties in metropolitan statistical areas (MSAs) of 1 million or more population that do not qualify as large central medium metro counties in MSAs of 250,000-999,999 population based on the 2013 NCHS Urban-Rural Classification Scheme for Counties.
https://www.cdc.gov/nchs/data_access/urban_rural.htm#2013_Urban-Rural_Classification_Scheme_for_Counties

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